HONDURAS POVERTY ASSESSMENT

Toward a Path of Poverty Reduction and Inclusive Growth

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Abbreviations and Acronyms

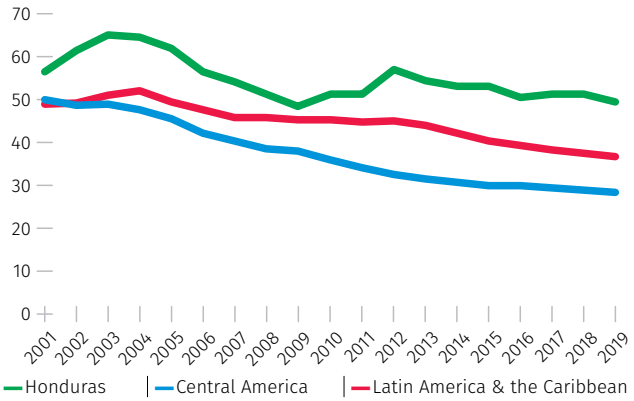
BVM	Bono Vida Mejor
BCH	Honduras Central Bank (Banco Central de Honduras)
CABEI	Central American Bank for Economic Integration (Banco Centroamericano de Integración Económica)
CCT	Conditional Cash Transfers
CENISS	Center for Information on the Social Sector (Centro Nacional de Información del Sector Social)
CEPAL	Economic Commission for Latin America and the Caribbean
CEQ	Commitment to Equity
DES	Directorate of Higher Education (Dirección de Educación Superior)
ENCOVI	National Living Standard of Measurement Survey (Encuesta Nacional de Condiciones de Vida)
ENEE	National Electric Energy Company (Empresa Nacional de Energía Eléctrica)
EPHPM	Annual Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples)
FISE	Fondo de Inversion Social de Emergencia
FODE	Fund for the Economic and Social Development of Municipalities (Fondo para el Desarrollo Económico y Social de los Municipios)
FRL	Fiscal Responsibility Law
FSU	Unique Socioeconomic Form (Ficha Socioeconómica Única)
GDP	Gross Domestic Product
GIDD	Global Income Distribution Dynamics
GIZ	German Agency for International Cooperation (Gesellschaft für Internationale Zusammenarbeit)
GP	Global Practice
HFPS	High-Frequency Phone Survey
IADB	Inter-American Development Bank
INE	National Institute of Statistics (Instituto Nacional de Estadísticas)
ICEFI	Central American Institute of Fiscal Studies (Instituto Centroamericano de Estudios Fiscales)
IMF	International Monetary Fund
INPREMA	National Pension Institute for Teachers (Instituto Nacional de Previsión del Magisterio)
IP	Indigenous Population
IHSS	Honduran Social Security Institute (Instituto Hondureño de Seguridad Social)
INE	National Institute of Statistics (Instituto Nacional de Estadísticas)
INJUPEMP	Institute for Public Officials and Government Employees (Instituto Nacional de Jubilaciones y Pensiones de los Empleados y Funcionarios del Poder Ejecutivo)
MFMoD-C	Macro Fiscal Model Framework with climate feature extension
MPI	Multidimensional Poverty Indicator
OECD	Organization for Economic Co-operation and Development
PIT	Personal Income Tax
PPP	Purchasing Power Parity
RRA	Risk and Resilience Assessment
RUP	Unique Registry of Participants (Registro Único de Participantes)
RCP	Representative Concentration Pathway
SAE	Small-Area Estimations
SAIPE	Small Area Income and Poverty Estimates
SAG	Ministry of Agriculture (Secretaría de Agricultura)
SAR	Tax Office (Servicio de Administración de Rentas)
SAR Model	Spatial Autoregressive Model
SCD	Systematic Country Diagnostic
SE	Ministry of Education (Secretaría de Educación)

SEDLAC	Socioeconomic Database for Latin America and the Caribbean
SEDESOL	Ministry of Development and Social Inclusion (Secretaria de Desarrollo e Inclusión Social)
SEFIN	Ministry of Finance (Secretaría de Finanzas)
SEP	Secretary of State for the Presidency (Secretaría de Estado de la Presidencia)
SESAL	Ministry of Health (Secretaría de Salud)
SFP	School Feeding Program
SNU	Office of the Coordination of the United Nations System in Honduras (Oficina de la Coordinación del Sistema de Naciones Unidas)
STSS	Ministry of Labor and Social Security (Secretaría de Trabajo y Seguridad Social)
UNDP	United Nations Development Programme
UNDRR	United Nations Office for Disaster Risk Reduction
UNHCR	United Nations High Commissioner for Refugees
US	United States
USAID	United States Agency for International Development
VAT	Value Added Tax
WDI	World Development Indicators

Honduras, already among the poorest countries in the Latin America and Caribbean (LAC) region, experienced weak poverty reduction in 2014–19 compared to other countries in the region. International and official poverty estimates suggest that poverty reduction was stagnant in 2014–19 and not commensurate with the consistently higher economic growth rates relative to the rest of the region. Nearly half of the Honduran population (49.5 percent) was living with less than US$6.85 per day (2017 PPP) in 2019. This proportion was higher than the LAC and Central American average in 2019 (figure ES1). New official poverty estimates[1] based on a revised methodology still show that 48 percent of Hondurans were considered moderate poor in 2019, and over a quarter (25.2 percent) lived in extreme poverty (figure ES2).[2]

Figure ES1: Trends in international poverty headcount, 2001–19

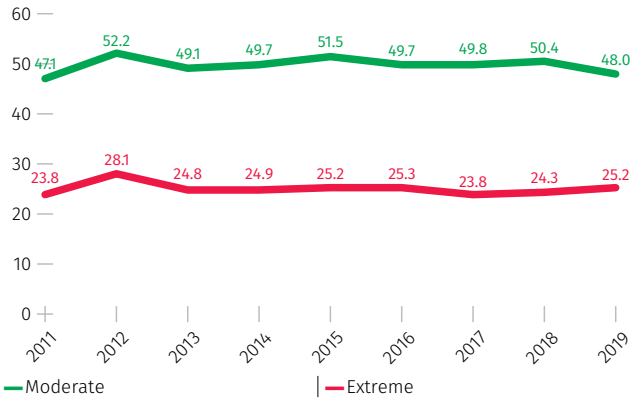
US$6.85 per day (2017 PPP), percent



Source: World Bank 2019.
Note: Central America consists of the following countries: Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, and Panama.

Figure ES2: Trends in official national poverty, moderate and extreme, 2011–19

Percent



Source: World Bank estimates based on EPHPM.

The COVID-19 pandemic and Hurricanes Eta and Iota led to a rise in poverty from 2019 to 2020; it is likely that poverty will remain above prepandemic levels in 2021. The COVID-19 pandemic and hurricanes Eta and Iota resulted in sizable output and welfare losses, and moderate national poverty increased from 48 percent in 2019 to an estimated 55 percent in 2020. Agricultural production systems in seven departments in the south and west of Honduras (Choluteca, Francisco Morazán, El Paraíso, Santa Bárbara, Lempira, Copán, and Ocotepeque) were substantially affected by the hurricanes. The government measures to counteract the negative impacts of the COVID-19 pandemic were insufficient to mitigate the welfare impacts on the poor. People's limited ability to work from home[3] and a sharp urban-rural digital divide represented significant challenges during the lockdown periods in 2020. Likewise, recent evidence highlights the vulnerabilities many Hondurans faced, especially in accessing labor income and food; in fact, job losses and food insecurity in Honduras were among the worst in the region in 2020. Even though the economy is expected to recover in 2021, poverty and inequality are likely to remain higher than precrisis levels. A year and a half into the pandemic, the adverse effects on welfare in Honduras were still evident, according to the LAC High-Frequency Phone Survey (HFPS). By the end of 2021, these negative impacts were still being felt in the

1 Recently, the government, with the support of the World Bank, undertook an update of its official poverty measurement methodology to bring it more in line with international standards. Thus official poverty for 2011–19 is now measured more precisely.

2 The previous, outdated, poverty measurement methodology and poverty lines in Honduras suggest that in 2019 64.7 percent of the population lived in poverty and 41.7 percent in extreme poverty.

3 Sanchez at al, (2021).

form of job and income losses, increased inactivity and food insecurity, an increase in perceived insecurity and domestic violence, and a drop in school attendance rates among children. The potential setbacks to human capital and critical aspects needed for the country to develop (for example, new infrastructure) will likely limit economic growth in the years to come.

The economic rebound in 2021, as well as the ongoing conflict in Ukraine, led to an increase in food prices; at the same time, Honduras's population is vulnerable to rising food prices and food insecurity is high. In 2019, the extreme poor spent almost half of their income on food. Additionally, food insecurity was persistently high. A simulation exercise shows that the incidence of poverty in Honduras is expected to increase in 2022 due to the food prices increases, with more-substantial effects in urban areas and for those in extreme poverty. In 2022, growth is expected to slow down due to higher inflation and a slowdown in trade and remittances associated with the war in Ukraine.

A striking feature of Honduras is the deep and widening urban-rural divide in terms of quality of life. There is a wide urban-rural poverty gap for both the moderate and the extreme poor, which reflects significant disparities in access to basic services such as electricity,[4] water, and sanitation, and internet usage, as well as lower human capital accumulation and worsen labor market indicators in rural areas. These factors limit income growth and resilience to crises, such as the COVID-19 pandemic, in more-deprived areas. Even more concerning, some of these disparities are widening over time. While there has been some progress in poverty reduction in urban areas in 2014–19, poverty levels in rural areas increased significantly in those years. Urban extreme poverty declined by 3.4 percentage points from 2014 to 2016, but a steady increase has been observed since 2017, with urban extreme poverty reaching 15.9 percent in 2019. Rural extreme poverty increased by 5.2 percentage points, reaching 36.5 percent in 2019 (figure ES3).

While overall income inequality has been stagnant since 2014, inequality in rural areas has increased while in urban areas it has declined. The country is one of the most unequal countries in LAC. The Gini coefficient from 2014 to 2019 was relatively stable; however, with a value of 0.482 in 2019 (figure ES4), it was lower only than those of Brazil, Colombia, and Panama in the LAC region. Additionally, Honduras is marked by unequal access to services, with lower income quintiles reporting lower access rates in several dimensions. The sizable gaps in school enrollment rates across quintiles (particularly in secondary education) are especially problematic for the country's human capital accumulation. The educational sector is also marked as one of the most problematic areas in the country when compared internationally through a benchmarking exercise, especially when looking at enrollment rates or pupil-teacher ratios. Labor force participation in Honduras declined for all income quintiles between 2014 and 2019, but significantly more for the lowest quintile. Overall, informality has increased, and nearly the entire universe of those in the lowest-income quintile works in the informal sector.

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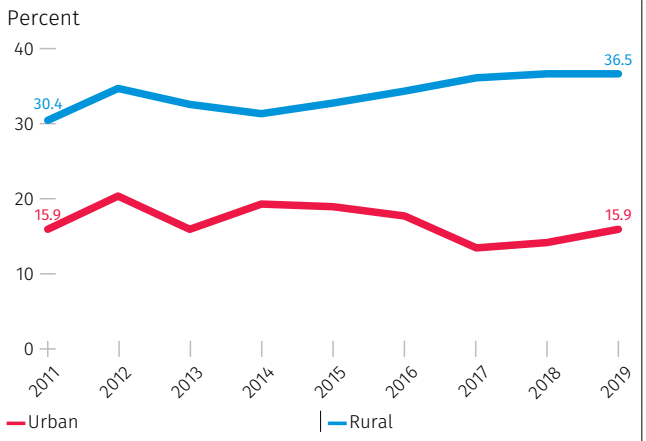
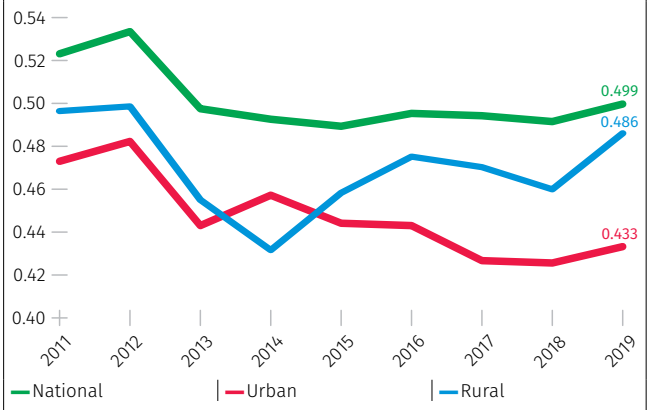
4 While the national electrification rate in Honduras was 91.9 percent in 2018, it masks the significant gaps in access between urban and rural areas. While most urban households (97.3 percent) have electricity access through the national grid, only 69.3 percent have access in rural areas, and 22.5 percent of households have no access to any kind of electricity source. In addition, electricity quality and reliability remain an issue preventing both grid-connected households (about 50 percent) and households with off-grid electrification solutions from reaching full access levels. These significant inequities in energy access impair the social resilience and well-being of the poorest, and undermines prospects for more inclusive economic recovery and shared prosperity. *Beyond Connections Energy Access Diagnostic Report Based on Multi-Tier Framework.*" World Bank, June 2019. See also ESMAP/World Bank Group. *Beyond Connections Energy Access Diagnostic Report Based on Multi-Tier Framework.* June 2019.

Figure ES3: Trends in national extreme poverty, by urban and rural



Source: World Bank estimates based on the EPHPM.

Figure ES4: Gini coefficient (official)



Source: World Bank estimates based on the EPHPM.

Hondurans continue to face deep and persistent disparities in access to and quality of education, with rural areas heavily penalized, even before the COVID-19 pandemic, despite high spending on education. The benchmarking analysis shows Honduras fares relatively well in terms of education spending (as a percentage of overall government expenditure) compared to other countries in the LAC region or countries with similar income levels. Although the country has made significant progress in expanding access to primary education, low enrollment for youth ages 5–20 remains strongly associated with geography and family income. Gross and net school enrollment levels at all educational levels (primary, secondary, and tertiary) remain low by LAC standards (benchmarking exercise).

Subnational disparities are particularly large; poverty continues to be most heavily concentrated in the country's southwestern areas, in departments with higher shares of ethnic minorities, and in municipalities located in the south and southwest. Poverty is most heavily concentrated in the country's southwestern areas[5] and in areas with large Indigenous Populations (IP) and Afro-descendants, such as the largely unsurveyed eastern department of Gracias a Dios. Extreme poverty rates are the highest in Lempira, a department with a high concentration of IP, followed by La Paz and Intibuca. However, a large share of the extreme poor (13.7 percent) is concentrated in Francisco Morazán, where the country's capital is located, with around 259,000 people living in extreme poverty. Population Census data from 2013 highlights that Gracias a Dios, a heavily minority department, has the worst levels of access to basic services, including electricity, water, sanitation, and education. Recent municipal-level poverty maps produced for this report show that the poorest municipalities are mainly located in the south and southwest.

What factors have contributed to these observed poverty and inequality trends and patterns?

Given the large and widening urban-rural gap, a differentiated perspective on the drivers of urban and rural poverty and inequality in Honduras is crucial, as are differentiated policy levers.

5 This includes the following five departments: Choluteca, La Paz, Francisco Morazán (only those municipalities located in the southern portion of the department), Valle, and El Paraíso.

Poverty increases in rural areas in the period 2014–19 were mostly driven by two factors: sizable declines in agricultural incomes, associated with climate-related events, and the declining coverage of public transfers among the poor. Labor income in rural areas experienced significant declines in real terms, mostly due to lower agricultural labor incomes closely related to climate-driven agricultural shocks. The country has recently suffered from repeated droughts that have increased food insecurity, particularly for subsistence farmers in the country's southwestern areas, where some areas have experienced annual crop loss greater than 70 percent. Agricultural production declined due to the extensive flooding of key plantations, which damaged existing crops and delayed cultivation cycles (World Bank 2022a). Climate shocks induced international and domestic (rural-urban) migration. Those in the bottom quintiles living in rural areas who could not migrate tend to remain in the agricultural sector, which is largely informal and characterized by declining productivity and wages. In fact, the share of the bottom 20 percent (B20) in rural areas working in the agricultural sector remained nearly stable between 2015 and 2019. These trends also explain the rising inequality in rural areas, as does the fact that the primary force behind rising rural poverty was the worsening income distribution, which hurt the poorest the most. Additionally, the share of the rural population in the bottom quintile benefiting from social protection programs decreased during the period 2016–19, pointing to the increasing effect of public transfers on poverty in rural areas. While the demographic dividend partially counteracted these income losses, remittances, pensions, and employment played a marginal role in mitigating the negative income shock, reflecting minor changes in rural labor market indicators and the reality that most remittances do not go to poor households.

Climate change is expected to continue driving migration from rural areas to urban centers and outside Honduras, which in turn is expected to have repercussions on the labor market. Climate-driven agricultural impacts on harvests and livestock (on which the rural poor overwhelmingly rely) increase migration from rural areas to cities and emigration from Honduras. After climate-driven disasters or shocks occur, the opportunity cost of rebuilding livelihoods at home or abroad is perceived to be similar. At the same time, the expected long-term returns on income, education, and health outcomes abroad might be higher. Recent literature shows that the interaction of climate events and migration is also interconnected with crime levels.

Agriculture is expected to suffer reductions in productivity due to climate change, affecting the welfare of the most vulnerable and poor households. The agricultural sector is dominated by small-scale farmers, most of whom are poor. Under a high emissions scenario (RCP 8.5), four of the most harvested crops (maize, coffee, beans, and sugarcane) are expected to be impacted, with near-term losses that will only increase over time. Crops produced mostly by the subsistence sector, like maize and beans, are expected to see reductions in their yields by 12 and less than 10 percent, respectively. These crop yield reductions will significantly impact poor households in the subsistence sector, representing more than 70 percent of agriculture families.

Deeper analysis of the labor markets also points to the critical role of informality in explaining the persistently high rural poverty rate. Most of those employed in rural areas are in the informal sector, a sector characterized by higher transitions to unemployment or inactivity, greater job instability, and significantly lower wages. Our deeper analysis in chapter 6 shows the high level of informality in rural areas is explained by two factors. First, there are low job destruction rates in the informal sector among the low-educated workers: once they find an informal-sector job, they stay in it for a longer period. Second, the job creation rates in the informal sector at all educational levels are high compared to the formal sector.

On the other hand, the decline in urban poverty was primarily driven by two factors: substantial increases in labor income—driven by movements to higher-paying service sectors—and the benefits of the demographic dividend. These labor earnings were likely based on sectoral shifts of the rural B20. The share of urban B20 working in the agricultural sector decreased from nearly one-third in 2015 to 18.8 percent in 2019 (2015–19 EPHPM). There was also a drop in the share of urban B20 working in domestic services (2015–19 EPHPM).[6] This means that the poorest urban employed population moved from the two lowest-paying sectors to higher-paying sectors. As with rural areas, employment and remittances contributed little to the decreasing poverty in urban areas.

Despite labor income improvements, unemployment continues to be a major issue in urban areas, particularly among the youth. Deeper analysis of the labor market identifies three factors that explain the high levels of unemployment in urban areas. The first is that among low-educated workers, the levels of job destruction in the formal sector are high, particularly among the young (ages 16–24). Low-educated young workers living in these areas cannot keep their formal-sector jobs for long. Second, among highly educated workers, the levels of job destruction in the informal sector are high, particularly among the young. These workers prefer to wait in unemployment to look for better formal-sector opportunities, and if they find an informal-sector job, they do not keep it for long. Finally, the levels of job creation in the formal sector are low at all educational levels.

Understanding the different determinants of rural versus urban poverty and the role of public policy for addressing those determinants is fundamental for a national poverty alleviation strategy; while both have common drivers, some differences emerge. Further analysis in this report suggests that both rural and urban poverty are associated with limited access to high-quality employment opportunities and to some services (internet access and sewerage). Other factors, such as environmental hazards and access to electricity, are associated with poverty in rural areas but not in urban areas. Urban poverty is often marked by low homeownership, but this is not the case in rural areas. Personal exposure to crime[7] does not seem to be associated with poverty in either rural or urban areas. Finally, migrant households tend to be better off, especially in rural areas, suggesting that emigration out of rural areas might be an effective coping mechanism for those affected by climate-related shocks.

Finally, high levels of income inequality are partly associated with high wage inequality, partly explained by large wage differences between the formal and the informal sectors, with differences in educational attainment playing a role. Large differences in wages between sectors may result from a combination of factors; our research shows that most wage differentials across sectors are explained by differences in worker characteristics, such as educational attainment and experience. In both urban and rural areas, workers in the formal sector are, on average, significantly more educated than those in the informal sector. Still, unobserved productivity differences play a role.

Topographic maps show that certain parts of the country are more exposed to natural hazards than others; the poor population partly coincides with the most exposed population; the poorest municipalities also tend to have a low capacity to deal with natural hazards. The municipalities with the highest exposure

6 We refer to the period 2015–19, because data are not available for 2014 for this specific variable.

7 The Poverty Assessment plans to treat crime in two ways. First, by understanding how crime and the perception of if affect the likelihood of being poor in rural and urban areas, and second, by determining whether areas with a high incidence of crime correspond with areas with high poverty and other risks.

to natural hazards are in the country's southwest, while the central regions of Honduras are less exposed. Subnational exposure to natural hazards is positively associated with subnational exposure to moderate poverty. For example, municipalities with high moderate poverty headcount ratios and exposure to natural hazards concentrate at the southwestern border, but there is not a full overlap of both populations. When differentiating by type of disaster, it becomes clear that municipalities with high moderate poverty rates are marked by higher exposure to droughts and landslides; this does not seem to be the case with earthquakes. By contrast, municipalities with high moderate poverty rates are less exposed to typhoons and floods. Importantly, there is a large overlap between the poorest municipalities and those municipalities with the lowest capacity to withstand natural and human hazards. As a result, some municipalities are affected by a triple vulnerability.

The municipalities with a high incidence of poverty tend to have lagging human capital, reflecting the inadequate pace of human development in light of the socioeconomic challenges that these municipalities face. Overlaying municipal poverty maps and educational indicators at the municipality level points toward a positive relationship between the moderate poverty headcount ratio and lagging education at the subnational level. Municipalities affected by high poverty rates and low or overly high gross enrollment rates need special attention, as they might further fall into poverty in the long run and see their already low levels of human capital decline.

What is the role of public policy in contributing to these past trends and how can it shape trends going forward?

Fiscal Policy: Fiscal policy in the country is inequality reducing but poverty increasing; additionally, it does not seem to have contributed to the widening urban-rural poverty or inequality gaps. Hondurans pay more in taxes than they receive in transfers,[8] but the proportion of net tax payments is higher for the rich than for the poor. When taking a rural-urban lens, the fiscal system tends to increase poverty disproportionately more in urban than rural areas, contributing to a narrowing of the existing urban-rural poverty gap. Most of the increases in poverty in both rural and urban areas are due to the heavy burden of indirect taxes not offset by transfers. The effect is more marked in urban areas, given that the burden of these taxes is higher on urban households, as the poor pay a larger proportion of their income in taxes than the rich. On the other hand, fiscal policy has a positive impact on inequality, particularly in rural areas. These findings mean that without the overall effect of the fiscal system, the urban-rural gaps would be wider. Education and health spending has played a critical redistributive role in both urban and rural areas, but the redistributive effect has been particularly high in the latter. The CCT program has the largest poverty and redistributive effect among all programs, given its relatively greater progressivity and size.

Zooming in on the elements of the fiscal system across the income distribution enables us to better understand the distributional effects. On the income side, the personal income tax (PIT) and contributions to social security (health and pensions) are progressive, but they contribute little to the reduction of poverty and inequality; the value-added tax (VAT) is equalizing, but it increases poverty. On the expenditure side, most direct transfers are progressive and well targeted, but the effect of these transfers on inequality is still quite modest. Health and education expenditures are generally progressive and inequality reducing,

8 Note that indirect subsidies are not included in this analysis, so the impacts of fiscal policy on poverty may be overstated.

but differences exist by level. Not surprisingly, educational spending in primary education does contribute significantly to the reduction of inequality, while spending on tertiary education plays a marginal role, as access among the bottom quintiles is limited.

Not surprisingly, contributory pensions contribute to rising inequality. When contributory pensions are treated as transfers, these increase inequality, as they report a large negative marginal contribution. This is not surprising, as those in the richer quantiles are significantly more likely to be formal[9] and contribute to the social security system, receiving pensions when they become older. Honduras has low pension coverage of the first quintile compared to other countries in LAC and globally (benchmarking exercise). Contributory pensions are the intervention with the highest marginal contribution to the increasing of inequality (0.0032 Gini points), followed by tertiary education (0.0025 Gini points) and scholarship programs (0.00006 Gini points).

Considering that the positive effects of fiscal policy on inequality in Honduras tend to be quite modest compared to other LAC countries, including Central American countries, and that its impacts on poverty are sizable, there is scope for improving the equity of fiscal policy.

Climate Policies: *A long-term simulation exercise shows the high cost of climate inaction for the country and that not all climate policies can protect the poor from climate change and the predicted higher incidence of natural disasters.* Climate change is expected to increase the country's vulnerability through an increase in mean temperatures, which will intensify the frequency and severity of weather events such as floods, heatwaves, and drought, as well as drive sea-level rise. These phenomena are expected to disproportionally affect the poorest, who often live in the most vulnerable areas and depend more on agriculture. While future economic growth should continue to reduce poverty, it will not sustain poverty reduction efforts by itself. Nor do all climate policies benefit poor households or have significant impacts on poverty; in fact, some mitigation policies can have adverse distributional effects. Thus, adaptation policies and investments need to have progressive features designed to support poor and vulnerable households in meeting the challenges posed by climate change. Additionally, it is critical to mitigate the expected increases in poverty through an adaptive social protection system, with well-targeted transfers playing a key role in poverty reduction. The fiscal cost of reducing poverty through a well-targeted transfer compared to a universal transfer is significantly lower in Honduras and can help vulnerable households protect themselves against the negative impacts of climate shocks. Yet the designs of the targeted transfer, implementation, and fiscal costs need to be carefully considered. For example, eligibility conditions should include groups more likely to be affected by climate-induced hazards, the size of the transfer should be linked with welfare losses, and so forth.

In addition to the vulnerabilities mentioned, the path toward green jobs[10] has challenges; employment of the most vulnerable groups is concentrated in nongreen jobs and sectors and Honduras lags in terms of human capital and social insurance coverage to prepare workers for a green transition. Workers in nongreen sectors and jobs are more likely to be female, poorer, informal, and rural. Moreover, the high

9 In this report, we follow the social protection definition of informality. A worker is considered informal if all the following three criteria are met: (i) Does not contribute to pensions; (ii) Does not contribute to social security (health); and (iii) Does not have paid leave and does not have "Aguinaldo."

10 Green jobs are occupations that reduce the use of fossil fuels, decrease GHG emissions, improve energy efficiency, increase recycling, and adopt renewable forms of energy. Green sectors are sectors where GHG emissions per worker are below the median. Green jobs are measured following the Occupational Information Network (O*NET).

concentration of nongreen employment in agriculture could be a challenge during the process of structural transformation toward more- modern and greener sectors. As mentioned, Honduras lags behind in terms of human capital accumulation compared to other LAC countries, so that the country is underprepared to upgrade the skills of workers. Furthermore, given the high levels of informality in the country, the lack of access to social insurance when facing job displacement may affect poorer people disproportionately. In addition, rigid labor market regulations may slow down the process of labor reallocation. Thus, the lower prevalence of green jobs and more rigid labor market regulations compared to other countries mean that Honduras's capacity to make the transition to a green economy needs to be boosted.

Human Capital, Formalization, and Labor Policies: *The labor evidence collected for this report shows that one of the pathways to poverty reduction, particularly in rural areas, is improving access to better-paying jobs, which strongly depends on policies that raise skills and labor productivity.* As shown in the asset-based framework, understanding the role of the major asset the poor have (labor), as well as their intensity of use and their returns, is critical to determining which policies could raise household welfare.

Human capital, formalization, and matching policies can potentially have significant effects on not only employment, unemployment, and the size of the informal sector, but also on the distribution of productivity and wages, significantly affecting poverty and inequality in the medium and long terms. The modeling and simulation exercise in this report, though based on counterfactuals, illustrates the trade-offs of economic policy decision-making and the potential effects of a selected set of policies affecting the labor market on poverty in the medium run.

Simulations of human capital policies expanding education coverage show that these policies have the potential to lift incomes above the low-wage thresholds, reduce wage inequality, and significantly support poverty reduction in the medium term; they can also contribute to narrowing the urban-rural differences in poverty. Education-enhancing policies that expand formal schooling among the labor force are expected to reduce the size of the informal sector significantly, but not overall unemployment, because not all workers will be able to transition to the formal sector. In fact, not all workers will benefit from such policies: some groups of low-educated workers may experience rising unemployment. Higher schooling levels could lead to significant increases in productivity and wages in both the formal and informal sectors; this "positive wage" effect is quite important for poverty reduction. Based on the Shapley decompositions,[11] such policies promote substantial GDP per capita growth primarily through the productivity channel. While these results on poverty and growth are encouraging, the required education effort to achieve this effect would be extraordinary.

Productivity-enhancing policies, such as job training programs focused on raising sectoral productivity or macroeconomic policies designed to raise worker productivity in rural areas (i.e., agricultural policies) while maintaining the same levels of education, are not expected to produce significant changes in unemployment or formal and informal sector employment rates, but can generate moderate wage growth in some economic sectors. The poverty impacts of productivity-enhancing policies are also smaller; the urban-rural differences in poverty are expected to narrow, but not significantly. Compared to education-enhancing human capital policies, these policies generate smaller overall productivity growth and a positive but small employment rate growth, leading to a small increase in GDP per capita. Although job training

11 The Shapley decomposition is an accounting tool to decompose long-term per capita output growth into four components: productivity growth, employment rate growth, labor force participation growth, and working-age growth.

may be an interesting policy option for some groups of workers, the evidence presented in this report suggests that substantial investments in the training of workers in either the formal or the informal sector would have a limited impact in terms of shifting labor earnings, generating growth, and reducing poverty in the medium term. Consequently, productivity-enhancing policies must be combined with human capital policies to achieve significant productivity gains and poverty reduction.

Formalization policies, defined as policies that increase the cost of being informally employed or reduce the costs of being formally employed, shift employment from the informal to the formal sector; however, similarly to human capital policies, not all workers can be absorbed by the formal sector, and some will join the pool of unemployed. Three types of formalization policies are analyzed in this report: those directly incentivizing formal sector job creation, those disincentivizing informal-sector vacancy creation, and those reducing job destruction in the formal sector. The "crowding out effect" of the informal sector is sufficiently large, and, given the structural features of the Honduran labor market, overall unemployment would not necessarily be reduced. Some disadvantaged groups (i.e., low-educated youth in urban areas) are more likely to experience a rise in unemployment. On the positive side, these formalization policies are expected to lead to rising real wages in both sectors, a narrow log-wage sectoral gap, and lower wage inequality.

Finally, policies designed to effectively match unemployed workers to job vacancies can lead to a slight decrease in unemployment among the highly educated, growth in the formal sector, and rising productivity and wages. Compared to other policies, reducing friction and mismatches has the potential to reduce unemployment, but this would happen mostly among the highly educated, who likely suffer more from frictions and skill mismatches. However, this policy is expected to lead to sizable poverty reduction and significant economic growth, with larger reductions in rural areas, mostly due to positive impacts on labor productivity and earnings rather than by the employment channel.

Understanding the role of public policy in shaping these trends may be extremely informative for Red Solidaria, the poverty reduction strategy the current government is designing. The strategy is focused on six pillars: health, education, basic infrastructure, social protection, income opportunities, and territorial and local strengthening. The conditional cash transfer program, which has a geographic targeting design, is the core intervention of Red Solidaria.

Policy Recommendations

The diagnostic of the major drivers of poverty reduction in rural and urban areas and the potential impacts of the policies mentioned above points to the need for a comprehensive and integrated strategy cutting across a range of policy areas, which can be the basis for a poverty reduction strategy. Table ES1 presents a summary of these policy areas.

First, *to better understand whether it is on track to reduce poverty, the country should be able to measure progress at the national and subnational levels; this requires strengthening the capacity of the National Statistical System (NSS) in Honduras to produce high-quality data using the most up-to-date methodologies and a well-established monitoring and evaluation system.* By measuring poverty using the best international standards, it is possible to learn which poverty reduction strategies work and which do not. Poverty measurement also helps developing countries gauge program effectiveness and guide

Table ES1: Priority Areas for Poverty Reduction

(1) Strengthening the capacity of the National Statistical System (NSS) in Honduras to produce high-quality data using the most up-to-date methodologies and a well-established monitoring and evaluation system.

(2) Promoting a more equitable fiscal policy by implementing policies focused on expanding the coverage and size of the CCT in rural areas and expanding education spending at the primary level, also with a focus on rural areas.

(3) Implementing climate adaptation policies, which would include accelerated reconstruction and investments, with progressive features by focusing on the adaptation needs of the poor. These can include targeted investments and interventions in lagging areas to improve the country's mitigation capability and adaptability with respect to human and natural hazards; municipalities with triple vulnerabilities and those characterized by low-coping capacity should be prioritized.

(4) Promoting an effective and adaptive social protection system—with well-targeted transfers—coupled with more-flexible labor regulations that can support the poor and vulnerable during the transition to a green economy.

(5) Investing in human capital accumulation and increasing the population's access to the labor markets and formal jobs. This can be done by combining both supply- and demand-side measures, including (i) education policies oriented toward raising the educational attainment among the country's working-age population, (ii) formalization policies aimed at reducing firms' relative cost of operating formally, and (iii) intermediation policies to better match vacancies with unemployed workers.

their development strategy in a rapidly changing economic environment. The 2020 Statistical Capacity Indicator (SCI) for Honduras was lower than the Latin America and the Caribbean (LAC) average and slightly below the IDA average, as many available Honduran data sources have become outdated. Strengthening the statistical system would have several advantages, including the availability of updated and reliable data for the formulation of empirically based policy, more coordination across institutions, and a less fragmented system with fewer data gaps, duplication of efforts, and more trust in official statistics by some population segments and civil society. In addition, a well-established monitoring and evaluation system is fundamental to the assessment of the effectiveness of programs and allocation of scarce budget resources.

Second, *the fiscal incidence analysis suggests that public expenditure policy could be more effective when it comes to reaching the poor; policies should focus on expanding the coverage and size of the CCT in rural areas and expanding education spending at the primary level, also focusing on rural areas.* The analysis identifies several fiscal instruments on the income or expenditure side that, if properly designed, could contribute to overall poverty and inequality reduction and narrow the urban-rural gaps. Improving the effectiveness of social protection could start by expanding the coverage and size of the CCT in rural areas, which could contribute to reducing extreme poverty in these areas. Expanding education spending at the primary level in rural areas could contribute to lowering inequality and narrowing urban-rural gaps. Simulations of alternative policy packages could be extremely useful for the fiscal reform the government is currently considering.

Third, *implementing a combination of climate adaptation and social protection policies to reduce poverty, reduce the urban-rural gap, and mitigate the negative welfare impacts of natural hazards is critical.* This would be the case even if the country does not experience accelerating climate change, a higher incidence and intensity of natural hazards, or higher expected cumulative losses associated with disasters. Our simulations show that the welfare cost of climate inaction is already high for Honduras, even if the worst conditions do not materialize. While future economic growth should continue to reduce poverty, substantial poverty reduction and closing of the gap between urban and rural areas is not expected unless properly calibrated social protection and climate adaptation policies are implemented.

Adaptation policies, which include accelerated reconstruction and investments, need to have progressive features by focusing on the specific adaptation needs of the poor in different areas. Not all climate policies are pro-poor or have significant impacts and similar effects on urban and rural poverty. As shown by our simulations, some climate adaptation policies would have adverse distributional effects or minimum impacts on poverty. Therefore, climate policies should have progressive elements. For example, a more proactive fiscal policy could combine adaptation investment with fiscal provisions that have distributive implications. They should be designed to benefit poor households and protect those identified as vulnerable.

In addition to pro-poor adaptation investments, an effective and adaptive social protection system (APS) is also critical—with well-targeted transfers playing a key role in poverty reduction. To mitigate the current and expected impacts from natural hazards, long-term policy solutions need to increase the resilience of households and roll out effective social protection in a fiscally responsible manner. An APS aims to ensure that social protection systems are well equipped and flexible enough to provide timely and appropriate responses to changing circumstances and to the needs of those affected when a shock occurs. The designs of the targeted transfer, implementation, and fiscal costs all need to be carefully considered.

Fourth, *more-effective and adaptive social protection systems should be coupled with more-flexible labor regulations that can support the poor and vulnerable during the transition to a green economy.* Instruments such as the CCT program could provide support to poor displaced workers during the adjustment to a new market. Furthermore, Honduras does not have unemployment insurance, which could help workers transition into green jobs. Thus, it is important to develop policies that provide support to firms as they adjust to the new market.

Fifth, *targeted interventions in lagging areas might help with the country's mitigation capability and adaptability with respect to human and natural hazards; municipalities affected by low-coping capacity should be prioritized.* The subnational welfare disparities suggest there is a need to use geographic targeting for poverty alleviation strategies as well as designing pro-poor adaptation policies. The new poverty maps could result in important changes in public policies targeting poverty reduction and in social protection programs. One example is the CCT, which currently uses a geographic targeting approach. The updated poverty maps could shed further light on which areas should be prioritized. They could also complement the current targeting strategies as an additional information tool. National or neighborhood intervention strategies targeting crime might be more appropriate in the case of Honduras, as there is no clear correlation at the municipality level. However, there is a clear positive relationship between moderate poverty rates and exposure to natural risk factors at the municipality level, suggesting disaster risk management strategies are critical to reduce poverty in lagging areas. In this context, municipality-

level adaptation policies and investments as well as social policies could help reduce these vulnerabilities. Municipalities characterized by a triple vulnerability, including lack of coping capacity, should be prioritized.

The large differences in poverty across the country imply that there may be scope for efficiency savings by using geographic targeting in investments and social protection programs. The new municipal-level poverty maps help identify poverty hotspots, information that is critical to improving service delivery in those areas and geographically targeted policies. Current social programs (such as the CCT) can improve their targeting with proper geographic identification of the areas with a high incidence of poverty. New programs and interventions can also be designed using geographic criteria to reduce poverty more efficiently.

Economic disparities between urban and rural areas can only be narrowed if the poverty hotspots and other forms of spatial vulnerabilities, including natural and human risks, are identified and tackled. While going beyond the rural-urban divide is necessary, the lack of data at lower geographical levels (municipalities) represents an obstacle to properly designing poverty reduction programs and improving public service delivery for the poor and vulnerable in lagging areas, as well as resource allocation from central to municipal governments. Understanding these spatial inequalities, as well as salient features of the lagging regions, is key to identifying extreme income poverty hotspots at a more granular level than urban and rural. Small-area estimates of poverty have been used worldwide to identify and understand the causes of poverty, improve program design and targeting of the poor while minimizing the leakage to the non-poor, inform local development policies, and guide the allocation of antipoverty investments and resources from central to municipal governments.

Finally, Honduras should invest in its human capital accumulation and increase the population's access to labor markets and formal jobs; this can be done by combining both supply- and demand-side measures, including education policies oriented at raising the education levels among its working-age population, formalization policies aimed at reducing firms' relative cost of operating formally, and intermediation policies. Our analysis report shows that the country's low human capital accumulation poses a major challenge to a sustainable development pattern. Additionally, it is crucial to secure the population's access to jobs and generate formal employment, especially in rural areas. First, based on this evidence and consistent with the evidence presented in this report, there is an urgent need for investments in human capital, particularly as part of education-enhancing human capital policies focused on expanding access and raising average schooling levels. Such policies expanding education coverage among the labor force have the potential to lift incomes above the low-wage thresholds and significantly impact on poverty in the medium term. When targeted to rural areas, they can contribute significantly to the narrowing of the urban-rural poverty gap. In contrast, the poverty and economic growth impacts of productivity-enhancing policies are smaller. Formalization policies, which decrease firms' cost to operate formally or increase the costs of operating in the informal sector, raise labor productivity and wages and shift employment from the informal to the formal sector; they can reduce poverty and economic growth, but to a lower extent than education-enhancing human capital policies. Finally, intermediation policies designed to improve the process of connecting vacancies with job seekers can lead to growth in the formal sector and rising productivity and wages, contributing to poverty reduction in the medium term.

Chapter 1. Country Context

Key Messages: This chapter assesses the country's context and describes the evolution of welfare in Honduras from 2014 to 2019 and after the COVID-19 outbreak, both at the national as well as at the urban-rural level. It also compares the country's performance on income, poverty, and equity measures to that of similar countries. The key messages are

- ***Honduras was marked by a low-growth environment from 2014 to 2019 and economic downturns after the COVID-19 outbreak.*** Honduras experienced low per capita GDP growth during the period 2014–19, with significant economic downturns after the COVID-19 outbreak. During the 2014–19 period, real GDP growth was driven by factor accumulation as productivity declined. The recent deceleration in investment inflows and trade, combined with limited cross-sector spillovers, negatively affected growth. As investment in manufacturing remains limited, low-productivity services are the key source of job creation; agriculture has acted as a buffer during the COVID-19 crisis.
- ***Honduras, already among the poorest and most unequal countries in LAC, experienced weak poverty reduction and stagnant inequality from 2014 to 2019; it is marked by a large and widening urban-rural poverty gap.*** This was driven by poverty increases in rural areas. In urban areas, poverty decreased. There is a significant spatial variation of poverty across departments. While inequality was stagnant from 2014 to 2019, there was a decline in urban inequality and a sharp increase in rural inequality. The vulnerable population and middle class slightly expanded during this period but remained low for LAC standards. In addition, multidimensional poverty is higher than the LAC average, and malnutrition and food insecurity remain key barriers.
- ***In 2020, the COVID-19 pandemic and hurricanes Eta and Iota resulted in sizable output and welfare losses; poverty levels remained above the precrisis level.*** The economic measures implemented to overcome these negative effects were insufficient. Official national poverty saw an increase in 2021 relative to 2019, though methodological changes in household surveys complicate the direct comparability. Evidence generated from high-frequency phone survey data further points toward persistent welfare losses on several dimensions.

This chapter assesses the country's context and describes the evolution of welfare (income, poverty, and equity) in Honduras over the pre-COVID-19 period (2014–19) at the national and urban-rural levels. The analysis focuses on the most recent period for which data are available using the updated poverty measurement methodology. It provides information on broad economic trends (including growth, inflation, employment, and trade) to complement the macroeconomic picture. In addition, the chapter presents detailed profiles of the poor and vulnerable in rural and urban areas, including their key socioeconomic characteristics (education and labor market characteristics, as well as access to basic services).

To understand the welfare situation in the post-COVID-19 period in rural and urban areas, the chapter draws upon a microsimulation "nowcast" to provide a profile of the poor and relevant breakdowns using estimates for 2020 and 2021. In addition, the chapter includes evidence from the recent High-Frequency Phone Survey (HFPS), collected in 2020 and 2021, to shed light on the impacts of the pandemic on various dimensions of welfare beyond income and the recovery in 2021–22.

This chapter builds on previous work of the Honduras Poverty Team, primarily the Systematic Country Diagnostic (SCD) Update *(World Bank 2022c), aiming to provide a snapshot of where the country stands regarding welfare.* In addition, the chapter provides an international benchmark of the evolution of poverty and inequality using peer countries, following the methodology developed by the *SCD Update*

(regional, structural, and aspiration peers).[12] It presents mainly poverty estimates based on Honduras's official poverty lines—relying on the updated methodology—and uses international poverty lines for cross-country comparisons. Furthermore, it incorporates the main findings of recent and ongoing analytical work, including the migration analysis in Northern Central America countries to shed light on the correlates of migration and poverty and the Risk and Resilience Assessment to analyze the interaction of crime, vulnerability, and poverty, among others.

This chapter answers the following questions:

- What are the key structural features affecting the country's poverty and inequality dynamics? How do the high crime and violence and natural hazards rates interact with poverty dynamics? What role does emigration from Honduras play?
- What are the patterns of growth, to what extent did GDP growth in Honduras translate into a reduction in monetary poverty, and how does this compare with other peers? What accounts for a low elasticity of growth to poverty reduction?
- What has been the evolution of welfare, poverty, and inequality in Honduras as a whole, as well as in rural and urban areas?
- Compared with its peers, how did Honduras perform with respect to poverty and inequality reduction?
- What share of the population is estimated to be vulnerable and how has this changed over time? Has the country been able to establish a solid middle class?
- How does the country fare in multidimensional poverty and other nonmonetary welfare dimensions, such as food insecurity?
- What are the potential impacts of Hurricanes Eta and Iota, the COVID-19 crisis, and the inflationary pressures resulting from the Ukraine war on poverty? Was there considerable churning around the poverty line—both extreme and moderate—as a result of COVID-19?

1.1 Key Structural Features: Exposure to Natural Hazards and Crime and Migration

Honduras is a lower-middle-income country, young and predominantly rural, facing significant development challenges, including vulnerability to natural hazards, high crime and violence, and outmigration. The country is one of the least urbanized countries in Central America. The working-age population accounted for 76 percent and the rural population 42 percent of the total population in 2019 (INE 2019).

The geographic location of Honduras makes it highly exposed to a variety of natural hazards. Honduras is part of the Central American Isthmus. It is part of a region marked by one of the most elevated levels of seismic activities worldwide. Here several tectonic plates meet, as the Caribbean plate is bordered by the North American, South American, Cocos, and Nazca plates. But earthquakes are not the only natural hazard faced by the country. Honduras's geotechnical and climatological characteristics make it a country subject to a multihazard scenario (IHCIT 2012). The hazards consist of earthquakes, volcanic eruptions, tsunamis, floods, hurricanes, tropical thunderstorms, droughts, mass movement of hillsides, and forest fires (IHCIT 2012).

12 The structural peers are El Salvador, Lao People's Democratic Republic, Nicaragua, and Senegal. The aspirational peers are Benin, Cambodia, the Dominican Republic, and the Philippines. Regional peers are represented by the Central American average (including the Dominican Republic).

The country's structural characteristics add to the ex-ante high vulnerability to natural hazards. Firstly, the real sector plays a crucial role in the overall economy. In fact, the agricultural sector accounted for 12.1 percent of the country's overall GDP in 2020 (World Bank 2022d). This is above the average of the LAC region (6.54 percent in 2020). Next, nearly one-third of the total land area was agricultural land in 2018 (World Bank 2022d). Evidence shows that climate change is negatively impacting maize and dry bean yields of smallholder farmers in Honduras, for example (Díaz-Ambrona et al. 2013). Agricultural expansion has been the main driver behind deforestation; Honduras lost 19 percent of its humid primary forest between 2002 and 2020 (Global Forest Watch 2022). Shifts in the crops grown and commodity-driven deforestation have been the main reasons for the observed tree cover loss. Finally, there are also reports about the involvement of drug traffickers and corrupt government officials in these activities.

Honduras performs poorly on the ND-Gain Country Index, which measures a country's exposure to climate change, taking the 136th place out of 182 in 2020 (ND-Gain 2022). This means that the country is in the lower third of countries in terms of performance on the index. The ND-Gain Country Index measures two components: a country's vulnerability to climate change as well as its readiness to mitigate it. When looking at the first component, Honduras was the 69th most vulnerable country in 2020 (ND-Gain 2022). When considering the country's resilience in relation to climate change, Honduras was the 18th least prepared country with regard to climate change in 2020 (ND-Gain 2022). The country's high vulnerability to climate change is mainly driven by the projected climate-change-induced change in cereal yields, its low agricultural technological capacity, a low dam storage capacity, the low number of medical staff per capita, a high dependency on natural capital, a low share of paved roads, and a high dependency on imported energy (ND-Gain 2022). The low readiness to deal with the effects climate change is mainly driven by the country's low human capital accumulation and low levels of innovation (ND-Gain 2022). Recently, extreme weather events and interaction with crime may have forced many Hondurans to flee their homes, further exacerbating the many vulnerabilities characterizing the country (Rubi and Gaynor 2021; Bermeo and Leblang 2021).

More than half of Honduras's population was exposed to natural hazards during 2015–19. To calculate the number of poor exposed to the natural hazards listed above, we take advantage of data on the exposed population published by the European Commission. According to these data, there were 43,352 people affected by droughts in 2019 (INFORM 2022). Data on physical exposure to floods are only available for 2015. In that year alone, 38,341 people were exposed to floods in Honduras. While data on the number of people exposed to the other natural hazards discussed in this report are not available, the overall exposure to natural hazards was high at 53.4 percent of the overall population over the last three years (INFORM 2022). Assuming a total population of 9.7 million people in 2019 (World Bank 2022d), this would mean that 5.3 million people were exposed to natural hazards in 2019. Relying on our small-area poverty estimates and population estimates, we find that 2.02 million poor live in municipalities that are in the upper third of risk exposure to natural hazards. Given that—relying on the international measure of the poverty headcount ratio—half of the population was moderately poor in 2019, this means that approximately 4 out of 10 poor people lived in areas with high-risk exposure.

Previous estimates show that climate change could result in severe income losses for the poorest quintiles in rural areas in Honduras. According to estimates published by CEPAL in 2010, the average temperature in Honduras could increase by 2 to 5 degrees Celsius and rainfall could decrease by 15 to 50 percent by 2100 (Ordaz et al. 2010). This climate change could result in income losses of up to 57 percent for rural households in the lowest 2 income quintiles. The upper quintile, however, would only experience negligible

income losses (around 1 percent of their overall household income). Overall, climate change could result in an economic loss of 4 to 19 percent of Honduras's GDP. To mitigate these effects, it is crucial to raise the productivity and adaptability of the agricultural sector in Honduras (Ordaz et al. 2010). These estimates also provide evidence that the poor are much more exposed to these potential income losses than the richer population.

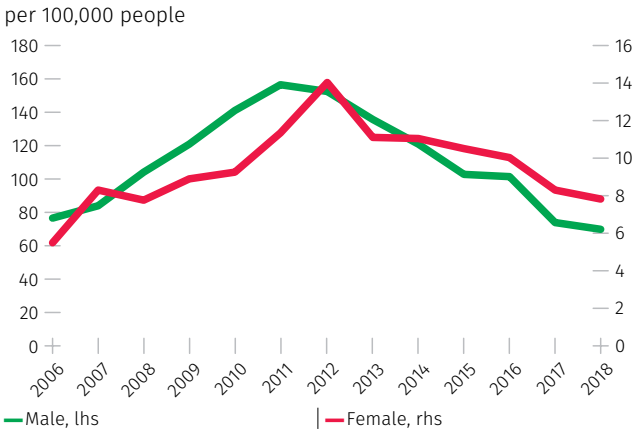
Honduras's high exposure and vulnerability to adverse natural events have translated into severe impacts on poverty and assets, with rural households particularly affected; climate change is expected to exacerbate current development challenges, with major implications for climate-sensitive sectors and livelihoods, particularly in the country's southwestern areas. In 2019, the Global Climate Risk Index classified Honduras as the country second most severely affected by extreme weather events in the period 1998–2017, with annual average losses equivalent to 1.8 percent of GDP (Eckstein, Hutfils, and Winges 2019). Flooding was the phenomenon causing the most significant economic losses between 1919 and 2012 (48.5 percent of the total losses due to natural phenomena), followed by droughts (34.1 percent of the total) (COPECO et al. 2013). Climate change is already affecting crop yields, causing food insecurity in affected areas along the country's southwestern areas, in which 60 and 70 percent of the population depend on agriculture or natural resources for their livelihoods, respectively. This area suffers from cycles of drought and flooding associated with the El Niño phenomenon: drought affects agriculture and creates food and water shortages, while flooding destroys homes and infrastructure (World Bank 2022g). Some areas in the country's southwest are particularly exposed to disaster risk (see chapter 2 for details).

The high levels of violence and crime represent important challenges for the country's development agenda. The *SCD Update* flagged the high levels of crime and violence as especially worrisome for the achievement of shared prosperity and poverty reduction in Honduras. Honduras has one of the highest crime rates worldwide. The overall economic costs of crime and violence in the country are estimated to be equivalent to 14 percent of the country's GDP (World Bank 2022c). The recent *2022 SCD Update* of the World Bank finds that gang violence remains a critical challenge in the country. Honduras ranked 10th in the Global Organized Crime Index in 2021 (GITOC 2021). This is mainly driven by the degree to which actors in Honduras engage in criminal activities and not by the extent of criminal activities in the country. Honduras ranks third on the Criminal Actor Score of the Organized Crime Index in 2021, following the Republic of Congo and the Central African Republic. Criminal actors in the country mainly engage in money laundering, drug trafficking and distribution, extortion, modern piracy, and human trafficking. Foreign criminal organizations and state-embedded criminal actors also play an important role. Back in 2014, Honduras was the most violent nation, not at war, from a global perspective (InSight Crime 2016).

While the international homicide rate has decreased since 2012, corruption has increased. Honduras is one of the most corrupt countries globally and corruption has increased over time. The country ranked 157th out of 179 countries on the Global Corruption Index 2021 (Transparency International 2022). This is a significant deterioration, given that the country ranked 126th in 2014. On a positive note, the international homicide rate has decreased for both men and women since 2014 (figure 1.1) and the benchmarking exercise shows the country is faring better from both global and regional perspectives (see box 1.1 for details). The rate of gender-based violence is high in Honduras, but it is not among the highest rates in LAC. Gender-based violence affects 21.6 percent of Honduran women at least once during their life, a value higher than in Chile, Paraguay, Uruguay, Mexico, and Guatemala, but lower than in the rest of the LAC countries (OECD 2022). OECD (2022) finds that 12.4 percent of women believe that a man is justified in beating his wife/

partner under certain circumstances. This value is close to reported rates in Nicaragua and Guatemala, but higher than the reported rate for El Salvador (7.7 percent).

Figure 1.1: International homicide rate by gender over time



Source: World Bank 2022d.

Due to its violent environment, Honduras is caught in a fragility trap, which could have implications for poverty and shared prosperity. Fragility in Honduras is mainly driven by three factors. First, elites and criminal networks are influential and integrated throughout government structures. This, in turn, leads to Honduras's youth facing an unsustainable and uncertain future. Facing limited opportunities, many engage in illegal activities or leave the country. Lastly, the type of land and resource management in Honduras leads to social conflict and the illegal extraction of natural resources. These factors foster a context of normalized high levels of violence (World Bank 2022b). Many countries affected by fragility fare worse in shared prosperity (World Bank 2020), so this fragility trap could be detrimental to shared prosperity and poverty reduction in the country. More evidence for Honduras is needed to disentangle the links between fragility, crime, and welfare.

High emigration rates are mostly driven by natural hazards and rising poverty, though the interplay with violence also contributed; insecure land tenure is also a driver of displacements. Honduras registered close to one million emigrants by mid-year 2020 (Migration Data Portal 2022). Compared to the country's total population of 9.9 million people, this means that approximately 10 percent of the population lives abroad. Another 10 percent of the adult population reported plans to move abroad during the next 12 months in a survey conducted in 2016 (Migration Data Portal 2022). Migration is driven by climate change and violence (Bermeo et al. 2021) and is linked to food insecurity and poverty. The *SCD Update* identified seven factors driving emigration: crime and gang violence, gender-based violence, family reunification, higher incomes in destination countries, climate change, limited access to basic services, and limited job opportunities (World Bank 2022c). Climate change could play an especially important role in rural-to-urban migration in Honduras. In addition, land tenure insecurities often result in displacements (UNHCR 2017). Indigenous Populations (IP) might be especially affected by the violation of property rights in Honduras (UNHCR 2017).

The development impact of outmigration on Honduras is not well understood. The World Bank's *SCD Update* from 2022 and the *SCD* from 2015 identified a knowledge gap concerning the impact of migration in Honduras. On the one hand, migration could positively impact the development trajectory through remittances, trade, transfer of skills and technologies, and investments. On the other hand, it could result in negative impacts. If migrants were primarily located in the upper part of the overall human capital accumulation, this would lead to significant human capital losses. Additionally, the emigration of entrepreneurs and firm owners could lead to a downward spiral in job creation (Anelli et al. 2020). Other development areas are also of concern (see box 1.1).

A weak institutional setup adds to the many challenges faced by Honduras's population. Honduras performs poorly on many of the available indicators measuring a country's institutional setup. To give some examples, Honduras ranked 31st on the "Voice and Accountability" Indicator of the World Governance

Indicators in 2020, compared to 30th in 2019 and 34th in 2014. That said, Honduras's government's effectiveness did improve between 2014 and 2020. While the country ranked 20th on the "Government Effectiveness" Indicator of the WGI in 2014, it ranked 30th in 2019 and 2020 (World Bank 2022e). In addition, the level of corruption in Honduras, already high, is rising. Honduras ranked 23rd out of 180 countries on the "Corruption Perception Index" in 2021 (Transparency International 2022). In comparison, it ranked 29th in 2014 and 26th in 2019. This means that the country has fallen by six places between 2014 and 2021. There is also evidence of patronage and state capture, further diminishing citizens' trust in their institutions (World Bank 2022c). Finally, there is room for improvement in the country's statistical capacity. Honduras is in the third quintile on the "Statistical Performance" Indicator (SPI) generated by the World Bank, which measures the performance of statistical systems and the efforts to improve them (World Bank 2022f). This shows that there is a need for better data for monitoring and evaluation and the strengthening of the statistical system.

Box 1.1: Benchmarking Exercise Honduras: How Does Honduras Perform when Compared Globally?

We conduct a benchmarking exercise to identify which areas of development are most salient in Honduras compared to other benchmarking countries and globally. This benchmarking exercise draws from many different data sources and compares the country's relative performance on 248 different indicators for the periods 2015 to 2022 and 2008 to 2014. The exercise then indicates in which decile the country ranks when compared internationally. For a detailed overview of the methodology, see annex 4.

Honduras ranked in the lowest decile in 39 out of 248 indicators worldwide during the period 2014–22. On most of these indicators, it also ranked in the lowest decile when considering data for the period 2008–14. The indicators are mainly within the areas of water, agriculture, climate, infrastructure, macroeconomics, manufacturing, and trade. These are consequently areas of concern for the country's development, and policy makers should pay special attention to them. Example indicators are the annual freshwater withdrawals per capita, the share of forest rents of GDP, the cereal yield, the Dec DSL Subscribers, the value added of manufacturing, international tourism, and the net inflow of foreign direct investment.

Honduras ranked in the highest decile in 15 out of 248 indicators worldwide during the period 2014–22. These indicators are mainly within the area of governance, labor, and the private sector. The country also ranked within the highest decile on most of these same indicators in the previous period (2008–14). Examples are the WBL Entrepreneurship Score, the number of total discouraged job seekers, and the share of firms expecting to give gifts in meetings with tax officials.

When analyzing the country's relative performance in education, health, labor markets, and social protection, the educational sector is the area with the most deficits when compared globally. Honduras is in the lower half of countries worldwide in many educational outcomes. It fares especially poorly when comparing the availability of teachers in primary and secondary education to other countries, ranking in the lowest decile. The country also ranks in the lowest third when

Continued

Box 1.1. continued

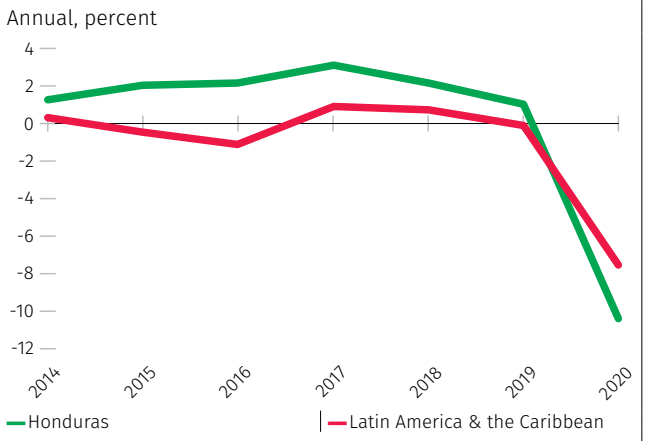
considering school enrollment rates, government expenditure on education (as a percentage of GDP), harmonized test scores, the human capital index, and the number of learning-adjusted years of schooling. Honduras performs better on health outcomes, where it ranks in the lowest third of countries on only on 3 of 11 indicators. The same applies to the labor market indicators included in the benchmarking analysis, where it ranks among the lowest third on 5 out of 24 indicators (informal employment rate, both overall and in the agricultural and nonagricultural sectors; firms competing against unregistered firms; and labor participation rate of women with basic education). Lastly, the country ranks among the lowest third on 4 out of 12 social protection indicators. This speaks to the need for prioritization of the educational sector for public policies in order to address inequalities and deficits in human capital accumulation in the short and long runs. For details on methodology and results, see table A.4.2.

Source: World Bank estimates based on 2022 benchmarking exercise.

1.2 Recent Macroeconomic Developments

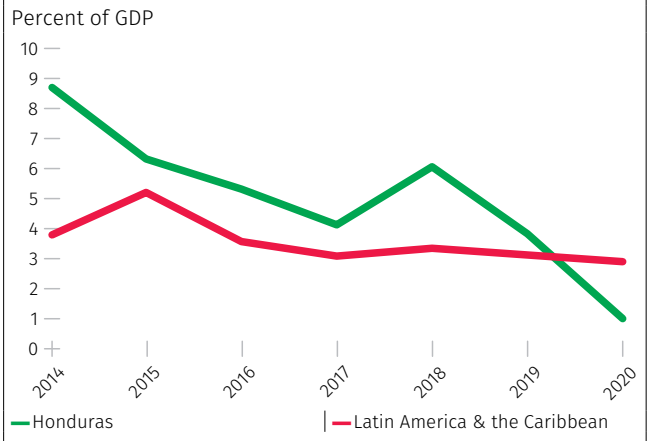
Honduras experienced low per capita GDP growth during the period 2014–19, with a significant economic downturn after the COVID-19 outbreak. Figure 1.2 shows that while the average GDP per capita growth was close to or above 1 percent for the period 2014–19, it dropped to -10.4 percent in 2020 due to the COVID-19 outbreak (World Bank 2022d). The average GDP per capita growth rate was above the LAC average of 0.03 percent for the period 2014–19, but the post-COVID growth rate was more affected than the LAC average (assuming a value of -7.15 percent). Inflation decelerated and was stable from 2015; however, it accelerated to 6.9 percent year over year in March 2022—above the target band (4 percent ±1 percent) of the Central Bank of Honduras (BCH)—amid higher food and energy prices and strong domestic demand (World Bank 2022a).

Figure 1.2: GDP per capita growth, 2014–20



Source: World Bank 2022d.

Figure 1.3: Foreign direct investment, net inflows, 2014–20



Source: World Bank 2022d.

During the 2014–19 period, real GDP growth was driven by factor accumulation as productivity declined. Growth during the period 2014–19 was mainly driven by private consumption supported by remittances and increasing labor force participation rather than increases in the productivity of labor (World Bank 2022a). Compared to previous periods, growth was lower because of lower capital accumulation and a significant decline in total factor productivity (World Bank 2022c). When the growth rate is analyzed by factors of production, factor productivity was close to 0 for the period 2014–19. The significant decline in real GDP growth after the COVID-19 outbreak was mainly driven by a large decline in gross fixed capital and private consumption (World Bank 2022a).

The recent deceleration in investment inflows and trade, combined with limited cross-sector spillovers, negatively affected growth. Net foreign direct investment (FDI) inflows averaged 5.7 percent of GDP during 2014–19, well above the LAC average of 3.7 percent (figure 1.3). Trade flows averaged 103.9 percent of GDP over the same period, more than double the LAC average of 45.3 percent (World Bank 2022a). However, both private investment and trade, including in the maquila (light manufacturing) sector, decelerated compared to 2010–15. Moreover, with FDI being concentrated in the maquila sector, which roughly accounted for 60 percent of total FDI in the country, trade and investment generated limited cross-sector spillovers. The key barriers to FDI remain, with little improvements over time: a difficult business environment,[13] expensive energy, poor infrastructure,[14] corruption and weak institutions, high crime rates,[15] and low human capital accumulation[16] (US Department of State 2020).

As investment in manufacturing remains limited, low-productivity services are the key source of job creation; agriculture has acted as a buffer during the COVID-19 crisis. The tertiary sector accounts for the largest share of Honduras's GDP, followed by the secondary sector. Labor remains concentrated in less technologically sophisticated activities, such as commerce (a sector with high rates of self-employment), hotels, and restaurants. These labor market inefficiencies caused a deceleration in labor productivity growth, exacerbated by the growing unskilled labor supply (World Bank 2022c). Moreover, while the share in value added as a percent of GDP of the agricultural sector decreased from 12.5 in 2014 to 10.8 percent in 2019, it rebounded after the COVID-19 outbreak.[17] This means that the least productive sector gained relative importance after the pandemic.[18]

The employment to population ratio (15+) increased between 2014 and 2018, but fell by nearly 10 percentage points between 2018 and 2020 (World Bank 2022d); a high share of vulnerable employment and low productivity jobs present additional challenges. While the employment to population ratio stood at 59.6 percent in 2014, it had increased to 62.7 percent by 2018, only to fall by nearly 10 percentage points

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13 Honduras ranked 133rd out of 190 countries on the "Ease of Doing Business" Score in 2019 (World Bank 2022d). The country fared especially poor on the "Starting a Business" (170th), "Dealing with Construction Permits" (158th), "Paying Taxes" (167th), as well as the "Enforcing Contracts" (154th) subindicators. In comparison, it ranked 127th back in 2014, so that it has fallen by 6 places.

14 Honduras ranked 90th out of 137 countries on the "Quality of Overall Infrastructure" in 2017 (World Bank 2022d). In comparison, it ranked 72nd in 2007 and 106th in 2014.

15 In 2018, the international homicide rate per 100,000 people was the third highest among all countries with available data for this year (World Bank 2022d).

16 In 2018, Honduras ranked 132nd out of 189 countries on the Human Development Index (UNDP 2022). While there has been a slight improvement on the index score, from 0.616 to 0.643 between 2014 and 2019, the country still ranked below the lowest third when compared globally.

17 https://data.worldbank.org/indicator/NV.AGR.TOTL.ZS?locations=HN

18 Productivity is measured as the value added per worker in constant 2015 US$ in the respective economic sector. For Honduras, the values stood at US$2,335.6 in the primary sector, US$6,731.7 in the service sector, and US$6,613.0 in the industry sector.

by 2020, when the ratio stood at 53.0 percent. Moreover, the share of those working under vulnerable employment conditions was higher than the LAC average in 2019 (40.0 percent versus 34.0 percent). The recent Jobs Diagnostic by the World Bank also found that Honduras is marked by an environment of low-productivity jobs (Michel and Walker 2020). Labor productivity only grew by 0.25 percent per year between 2002 and 2016. Still, productivity in the agricultural sector increased during that period. Additionally, there was a shift from agriculture to the tertiary sector, which also contributed to the overall growth in labor productivity (Michel and Walker 2020).

1.3 Recent Poverty and Equity Developments

Monetary Poverty

Honduras, already among the poorest and most unequal countries in LAC, experienced weak poverty reduction in 2014–19, despite higher GDP growth than the rest of the region. International poverty estimates suggest that poverty reduction was stagnant in 2014–19 and not commensurate with the consistently higher growth rates relative to the rest of the region. Nearly half of the Honduran population (49.5 percent) was living with less than US$6.85 per day in 2019.[19] This is higher than the LAC and Central American averages in 2019 (25.6 and 27.8 percent, respectively) (figure 1.4). In fact, poverty rates in Honduras showed modest improvement from two decades ago, while poverty in the LAC region was halved in the same period.[20] In addition, nearly 13 percent of the population lived on less than US$2.15 (2017 PPP per day) in 2019, and more than one-fourth of the population under the US$3.65 (2017 PPP per day) (figure A.1.1). Moreover, improvements in poverty stagnated in both depth and severity between 2014 and 2019 (figure A.1.2). Official poverty estimates[21] based on a revised methodology show that 48 percent of Hondurans were considered moderately poor in 2019 and over a quarter (25.2 percent) lived in extreme poverty (figure 1.5).[22]

The contribution of GDP per capita growth to poverty reduction has increased over time. but remains still way below its peers. Honduras's poverty to growth elasticity for 2014–19 was -0.66, a higher rate than observed for 2001–14 (-0.25).[23] Comparing Honduras to its structural and aspirational peers, poverty to growth elasticity in El Salvador—one of its structural peers—was -4.7 and in the Dominican Republic—one of its aspirational peers—it was -2.7.

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19 Despite the classification of Honduras as a lower-middle income country, the upper middle income international poverty line (US$6.85 per day) is used for monitoring, because it is closer to the value of the Honduras poverty basket.

20 The poverty headcount ratio halved for aspirational peers and fell by nearly 50 percentage points for structural peers between 2001 and 2019.

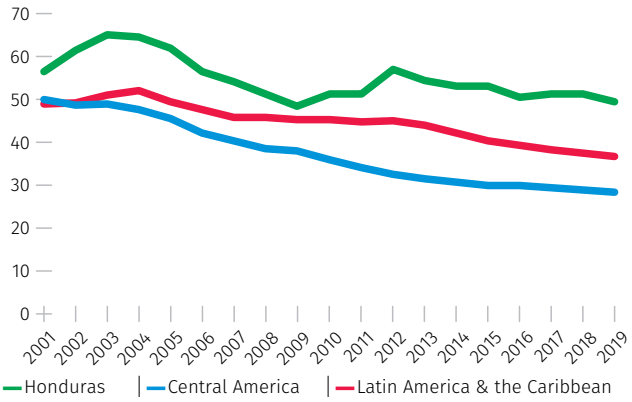
21 Recently, the government, with the support of the World Bank, undertook an update of its official poverty measurement methodology to be more in line with international standards; thus official poverty for 2011–2019 is now measured more precisely.

22 The previous, outdated, poverty measurement methodology and poverty lines in Honduras suggest that in 2019 64.7 percent of the population lived in moderate poverty and 41.7 percent in extreme poverty.

23 The poverty to growth elasticity is the rate of change brought about by the change in GDP per capita in constant prices (World Bank 2022d). We employ the annualized method to calculate the elasticity. This means that we consider the annualized growth of poverty and GDP in the extreme points of the respective reference period. While the annualized growth rate of GDP was 2.1 percent between 2014 and 2019, it was only 1.8 percent between 2001 and 2014. Similarly, the annualized growth rate in international poverty was -1.4 percent between 2014 and 2019 and close to 0 for the previous period.

Figure 1.4: Trends in international poverty headcount, 2001–19

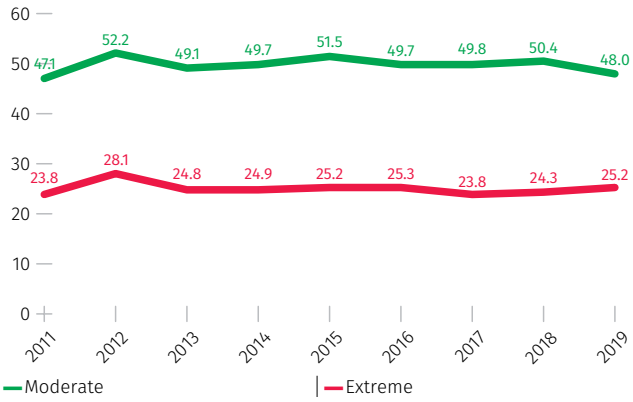
US$6.85 per day (2017 PPP), percent



Source: World Bank 2019.
Note: The countries of Central America include Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua and Panama The countries of Latin America and the Caribbean consist of the Central American countries plus Argentina, Belize, Bolivia, Brazil, Chile, Colombia, Ecuador, Guyana, Haiti, Jamaica, Mexico, Paraguay, Peru, St. Lucia, and Suriname. Data for Guatemala are only available for the years 1998, 2000, 2006, and 2014. There is also limited data availability for Nicaragua. The reported rate is the weighted average using the population in each country and year as a weighting mechanism. Poverty rates are based on income, except for Jamaica. Data are not available for all years and countries.

Figure 1.5: Trends in national moderate and extreme poverty headcount, 2011–19

Percent



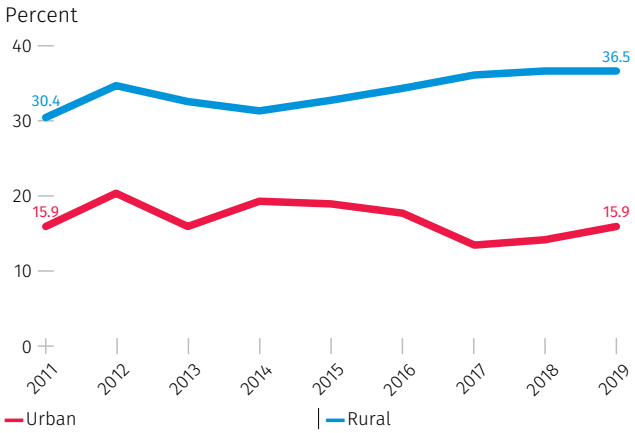
Source: World Bank estimates based on the EPHPM.

Despite some progress in reducing poverty in urban areas in 2014–19, poverty levels in rural areas have increased significantly; the widening urban-rural poverty gap reflects wide disparities in access to basic public services and the deceleration of the agricultural sector. Urban extreme poverty declined by 3.4 percentage points from 2014 to 2017, but a steady increase has been observed since 2017, reaching 15.9 percent in 2019 (for a total of 797,000 extreme poor). There were no improvements from 2011 to 2019. Rural extreme poverty increased by 5.2 percentage points, reaching 36.5 percent in 2019 (for a total of 1.5 million extreme poor) (figure 1.6). Similar trends are observed in moderate poverty, with progress in urban areas and rising poverty in rural areas.

Poverty continues to be most heavily concentrated in the country's southwestern areas area and in departments with higher shares of ethnic minorities. Poverty is most heavily concentrated in the country's southwestern areas and in areas with large IP and Afro-descendants. Extreme poverty rates are the highest in Lempira, a department with a high concentration of IP, followed by La Paz and Intibuca (figure 1.7 and table A.1.1). However, a large share of the extreme poor (13.7 percent) is concentrated in Francisco Morazán, where the country's capital is located, with around 259,000 people living in extreme poverty. Large concentrations of extreme poverty are found in Olancho and Lempira (with 198,000 and 184,000 extreme poor, respectively). Islas de la Bahía and Gracias a Dios are unaccounted for in official household surveys, because of relatively small population sizes and high access costs. However, Population Census data from 2013 highlight that Gracias a Dios, a department with a high concentration of Indigenous and Afro-descendant communities, has the worst levels of access to basic services, including electricity, water, sanitation, and education. There are no recent representative municipal-level data on economic activity or poverty in Honduras. GDP data are only available at an aggregate level and the latest poverty map available was from 2014. This poses challenges for policymaking, because poverty is a geographically

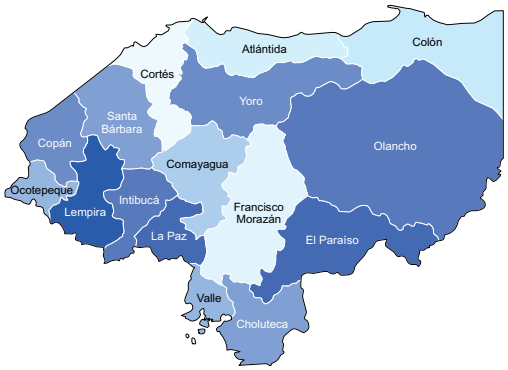
specific phenomenon, with drivers—and potential solutions—of poverty alleviation in rural and urban areas dependent on the context surrounding and connecting communities and markets. This Poverty Assessment presents small-area poverty estimates based on a Fay-Herriot methodology described in chapter 3.

Figure 1.6: Trends in official extreme poverty, by urban and rural



Source: World Bank estimates based on the EPHPM.

Figure 1.7: National extreme poverty, by department, 2019



Source: World Bank estimates based on the 2019 EPHPM.
Note: This map is based on the consolidated version of the household survey. Poverty is measured by the official poverty measurement and the new methodology (see annex 2). No data are available for Gracias a Dios and Islas de la Bahia. Darker colors represent higher poverty.

Income Inequality and Shared Prosperity

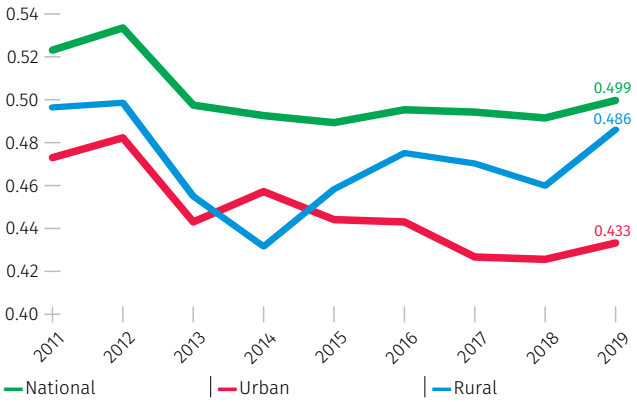
Honduras continues to be among the most unequal countries in LAC and be characterized by a high level of inequality in terms of access to basic services. Income inequality in Honduras, using the international harmonized income aggregate, showed a Gini coefficient of 0.482 in 2019, lower than only Brazil, Colombia, and Panama in the LAC region.[24] The benchmarking analysis shows that Honduras ranks among the lowest two deciles in a global comparison of Gini indices. Inequality levels are higher than in the country's structural and aspirational peers (World Bank 2022c). In addition, Hondurans face unequal access to basic services, notably education, health care, water, and sanitation. As highlighted in the 2015 *SCD*, the percentage of the population without access to sanitation (based on the 2013 census) was significantly lower in municipalities in the country's southwestern areas and in the department of Gracias a Dios. These conditions inhibit human capital formation and impact the acquisition of new skills by the labor force, thus perpetuating inequality in the future.

Inequality was stagnant from 2014 to 2019, with a generally stable Gini coefficient of around 0.49; these trends mask a decline in urban inequality and a sharp increase in rural inequality. Income inequality in urban areas declined slightly after 2014; however, income inequality in rural areas increased significantly,

24 Estimates based on an international harmonized income aggregate (World Bank 2019).

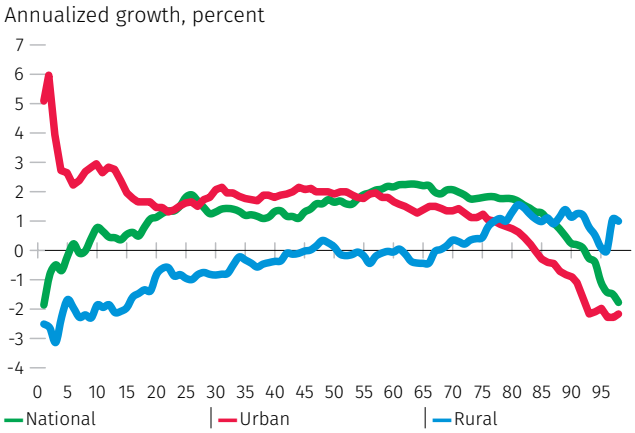
from 0.431 in 2014 to 0.486 in 2019 (figure 1.8).[25] The income growth patterns were radically different in urban and urban areas. In urban areas, the bottom 40 percent of the population benefited more from growth than the average Honduran and those at the top. In contrast, in rural areas, per-capita household income contracted significantly among the bottom 40 and grew substantially more among the richest percentiles (figure 1.9). Even though income growth for the overall population and the bottom 40 was similar to regional levels between 2014 and 2019 (figure A.1.3), income growth for the bottom 40 was lower than in the mid-2000s, suggesting the country's poorest have not recovered from the political and economic crisis of 2009.

Figure 1.8: Gini coefficient (official)



Source: World Bank estimates based on the EPHPM.

Figure 1.9: Growth incidence curve by area, 2014–19



Source: World Bank estimates based on the EPHPM.

Vulnerability to Poverty and the Middle Class

Vulnerability to poverty[26] *slightly increased between 2015 and 2019* (figure 1.10). Around one-third of the population in Honduras was vulnerable to poverty in 2019. When compared to 2015, the share of vulnerable in the country has only slightly increased: in that year, 27.5 percent of the population was characterized by vulnerability to poverty. Still, in a country like Honduras that is marked by high-risk exposure (see chapters 2 and 4), it is important to emphasize those living close to the poverty line. High crime levels or high vulnerability to natural hazards, for example, might increase the probability that people living close to the poverty line will fall into poverty.

The middle class, usually considered an engine of economic development, expanded slightly during the period 2014–19, but still represented only a fifth of the population in 2019, one of the smallest shares in the LAC region (figure 1.11).[27] The share of the population considered middle class[28] expanded slightly

25 The top of the income distribution is usually underestimated in household surveys, because wealthier people tend often not to participate in surveys or underestimate their fiscal income. An ongoing study (Del Carmen et al. forthcoming) that is examining administrative tax records and survey data suggests household survey data underestimate the extent of inequality at the top of the income distribution, though the results have not been published yet. Therefore, it is still unclear the extent to which the underestimation of the top affects the income inequality urban and rural trends during this period.

26 Vulnerability to poverty is defined as those living with US$6.85–$14 per day in 2017 purchasing power parity prices. This is an operational measure developed by the World Bank for LAC countries.

27 In comparison, the middle-class rate is 69.4 percent in Uruguay, 52.1 percent in Costa Rica, and 31.2 percent in Colombia (World Bank 2019).

28 Middle class defined as households living with US$14–$81 per day in 2017 purchasing power parity prices (World Bank 2019).

from 19.0 percent in 2015 to 21.4 percent in 2019, but continued to be among the lowest in the region (which averages 37.8 percent), which points up the structural challenges the country faces in building a solid middle class. As highlighted in the 2015 *SCD*, Honduras's small middle class and elevated level of income inequality result in households' being clustered at the far ends of the income distribution, leaving a "missing middle" between them.

Figure 1.10: Vulnerability to poverty in 2015–19

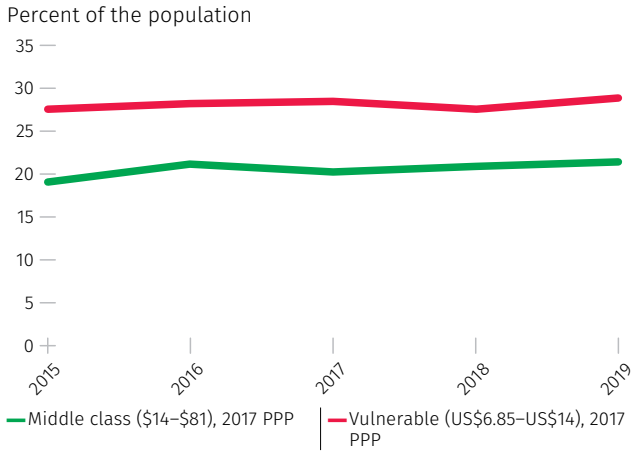
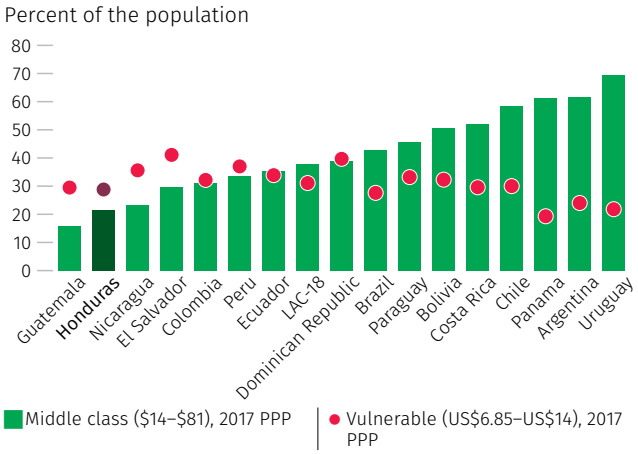


Figure 1.11: Vulnerability and the middle class in 2019



Source: Estimates based on World Bank 2019.
Note: There are no estimates of vulnerability to poverty (US$6.85–$14 per day) for the period before 2015.

The share of the middle class expanded faster than the share of the vulnerable. The share of vulnerable increased by 1.3 percentage points during the period, while the share of the middle class increased by 2.4 percentage points. This suggests that more people may have moved from vulnerability to the middle class, compared to the share of people moving from poverty to vulnerability.

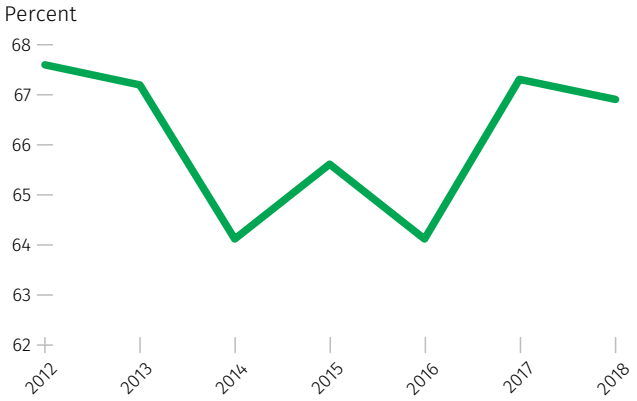
Nonmonetary Welfare Measures: Multidimensional Poverty and Food Insecurity

When looking at nonmonetary poverty measures, the national multidimensional poverty index (MPI) shows that a large share of households in Honduras is multidimensionally poor. Important aspects of well-being might not be fully captured through monetary measures alone. Measures of multidimensional poverty aim to capture deprivations beyond income and consumption expenditures by considering other aspects of life such as living conditions, education, and health. The national multidimensional poverty index indicates that 64.1 percent of households were affected by multidimensional poverty in 2016 (figure 1.12).[29] The rural population was significantly more affected, with a household headcount ratio of 83.5 percent (compared to 49.2 percent in urban areas). This is mainly driven by low adult education, inaccessibility of social security measures, labor instability, overcrowding, and lack of public spaces, as well as limitations due to insecurities. Between 2016 and 2017, the national MPI increased by 3.2 percentage points to 67.3 percent and then fell again to 66.9 percent in 2018.

29 In August 2016, the Government of Honduras introduced an official multidimensional poverty index (MPI) for policy design and monitoring. Official estimates after 2016 are under revision. The MPI includes 15 indicators across 4 dimensions: health, education, labor, and dwelling. For details, see table A.3.1 in Annex 2. No more recent estimates have been officially released in the country.

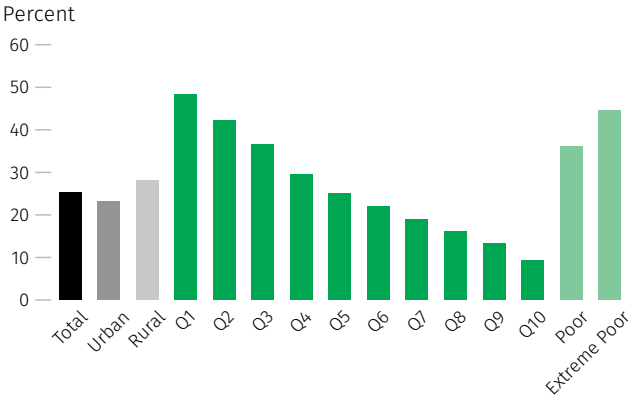
The global MPI for Honduras is significantly higher than the LAC average. In contrast, the global multidimensional poverty headcount ratio, which captures deprivations in education and access to basic infrastructure (electricity, sanitation, and drinking water) in addition to income or consumption at the US$2.15 per day international poverty line, was 14.8 percent in 2019, significantly higher than the regional average in LAC (4.6 percent).[30] This was driven by higher income deprivations as well as deprivations in educational attainment and enrollment.[31] This benchmarking exercise shows that, from a global perspective, Honduras was among the worst-performing countries on the MPI in 2008–14 (World Bank 2022c);[32] the country ranked in the lowest decile worldwide in terms of this indicator.

Figure 1.12: Multidimensional poverty index over time



Source: Official estimates based on the 2012–18 EPHPM.
Note: The values for 2017 and 2018 are preliminary and currently under revision.

Figure 1.13: Average share of household income spent on food in 2019



Source: World Bank estimates based on simulated consumption imputed from the 2004 Encuesta de Condiciones de Vida de los Hogares (ENCOVI) into the 2019 EPHPM.
Note: Consumption data are imputed from the 2004 ENCOVI into the 2019 EPHPM using the survey-to-survey imputation methodology from Amarante et al. 2011. Food consumption refers to the current monetary consumption of food and thus includes auto consumption.

Even before the COVID-19 crisis, food insecurity was persistently high and associated with food price volatility; Honduras only performed moderately on food security from a worldwide perspective. Honduras ranks 67th out of 113 on the Global Food Security Index.[33] It is among the moderate-performing countries when compared to the rest of the world. It is slightly worse than El Salvador, which ranks 66th; Nicaragua, which ranks 76th; and Guatemala, which ranks 71st. The prevalence of moderate or severe food insecurity in the total population is extremely high, reaching 45.6 percent over the period 2018–20 (three-year average).[34] There have not been significant improvements in food insecurity since 2014,[35] and this problem has worsened in the most recent period. Food affordability is a major issue, particularly among the poorest.

The extreme poor spend almost half of their monthly income on food and are thus vulnerable to rising food prices. For example, on average, households in Honduras spent 25.3 percent of their monthly income on

30 Source: https://www.worldbank.org/en/topic/poverty/brief/multidimensional-poverty-measure.
31 Nearly 1 out of 10 individuals are deprived in educational attainment.
32 Updated data for the period 2015–22 are not available.
33 Source: Global Food Security Index, https://foodsecurityindex.eiu.com/.
34 Source: FAOSTAT 2018, http://www.fao.org/faostat/en/#data/FS.
35 No data are available before 2012.

food in 2019.[36] In that year, the share of income devoted to food was five times larger in the bottom decile of the income distribution compared to the highest decile (figure 1.13) and extreme poor and moderate poor households spent 44.5 and 36.1 percent of their income on food, respectively. This means any change in food inflation driven by climate shocks can potentially lead to either larger welfare losses among the poor or greater vulnerability of the poor to rising food prices in the aftermath of disaster-related supply shocks. If an increase in food prices results in the spending of a higher share of total household income on food, then a household can become more resource constrained (that is, poorer). This can lead to households' changing their consumption patterns as a response, substituting food staples for cheaper and lower-quality options, and/or reducing consumption of other nonfood expenditures and human capital investments in education and health. On the other hand, many poor households in rural areas are net producers of food and, therefore, could benefit from rising food prices.

High malnutrition remains a key barrier to human capital formation in Honduras. In fact, stunting is estimated to contribute to GDP losses of up to 11 percent (Horton and Steckel 2013). In 2019, about 19 percent of Honduran children under 5 suffered from chronic malnutrition. The rates are higher in rural areas (23 percent), among the IP (30 percent for Lenca), and in departments along the country's southwestern areas such as La Paz (38 percent) and Intibuca (31 percent) (ENDESA/MICS 2021).

ETA and IOTA, the COVID-19 Pandemic, and the Ukraine War

In 2020, the COVID-19 pandemic and hurricanes Eta and Iota resulted in sizable output and welfare losses; as a consequence, moderate national poverty is expected[37] to have increased from 48 to 55 percent in the period 2019–20. The economic and social costs of hurricanes Eta and Iota are estimated at 7.5 percent of GDP (equivalent to US$1.8 billion), affecting nearly 4 million people[38] and largely impacting rural infrastructure. Agricultural production systems in seven departments in the south and west of Honduras (Choluteca, Francisco Morazán, El Paraíso, Santa Bárbara, Lempira, Copán, and Ocotepeque) were substantially affected. The COVID-19 lockdowns negatively impacted employment and income, especially for women. Estimates suggest the number of Hondurans living in moderate national poverty is expected to have increased by 7 percentage points, even with mitigation measures (from 48 percent in 2019 to 55 percent in 2020). The estimated rise in poverty resulted in 730,000 people falling below the poverty line (new poor) and 575,000 people falling even further into extreme poverty (new extreme poor), increasing the number of extreme poor households by 31 and 23 percent in urban and rural areas, respectively, compared to 2019.

Emergency measures implemented to help people were insufficient to mitigate the welfare impact on the poor. Microsimulations project that the emergency public transfers provided by the government to households throughout the country had a relatively small impact in 2020, reducing national poverty by only 0.6 percentage points. On the positive side, the transfers were more beneficial for extreme poor households. People's limited ability to work from home (Sanchez et al. 2021) and a sharp urban-rural digital divide represented significant challenges during the lockdown periods in 2020. Likewise, recent

36 World Bank estimates based on simulated consumption imputed from the the 2004 Encuesta de Condiciones de Vida de los Hogares (ENCOVI) into the 2019 EPHPM, following the methodology proposed by Amarante et al. (2011).

37 Results based on microsimulations. Due to changes in household survey design and implementation, the 2020 data are not suitable for constructing a fully comparable monetary poverty measure.

38 Source: EM-DAT, CRED/UCLouvain; Honduras Central Bank.

evidence highlights the vulnerabilities many Hondurans faced, especially in accessing labor income and food; job losses and food insecurity in Honduras were among the worst in the region in 2020. From 2021 on, poverty is estimated to have declined, but is still expected to remain above the precrisis level in 2024.

The COVID-19 crisis introduced some churning around the moderate poverty line. Comparing the poverty status from microsimulations with that from the 2019 survey shows some indications of movements of households in and out of poverty. Only a small share of those who were poor in 2019 were not poor in 2020 (0.7 percent). In the opposite direction, a larger share of the population who were not poor in 2019 became poor in 2020 (5.2 percent). This is in line with economic downturns and income losses experienced by many households due to the COVID-19 outbreak.

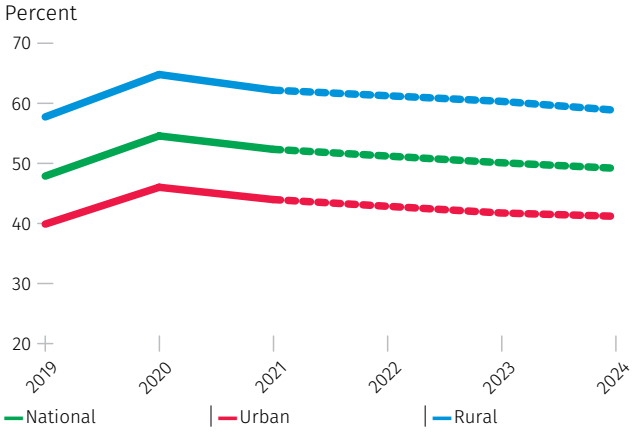
The pandemic also reduced crime in Honduras. Lockdowns, travel restrictions, and the global economic downturn due to the COVID-19 outbreak put a stop to some important gang activities. The closure of nonessential economic activities impacted money laundering activities and extortion, as well as the potential to distribute illegal freight within the busy international cargo network (ACLED 2022). Still, these positive outcomes came along with increased competition between gangs, resulting in an increase in gang-related battles. In addition, gangs found new ways to threaten civilians. As an example, there are reports of gangs sending out threats in relation to the violation of curfews (ACLED 2022).

In 2021, Honduras's real GDP rebounded to precrisis levels, but poverty is expected to have remained higher than precrisis levels. The economy recovered in 2021, with GDP growth of 11.9 percent (figure 1.14), led by remittance-fueled private consumption, posthurricane reconstruction, and robust export demand. Poverty and inequality are estimated to have declined in 2021, but to have remained above the precrisis levels. National poverty is expected to have declined in 2021 to 52.3 percent, but to have remained above the precrisis level (figure 1.15).[39]

Figure 1.14: GDP and GDP per capita growth, 2000–24

Sources: World Development Indicators 2022 and projections from Macroeconomics, Trade & Investment Global Practices.
Note: The data for 2000–2021 are actual, those for 2022 are estimated, and those for 2023–24 represent a forecast.

Figure 1.15: Moderate national poverty, 2019–24



Source: Calculations based on SEDLAC harmonization, using the 2019 EPHPM.
Note: The data from 2019 are actual, those for 2020–21 were generated using Nowcast, and the data for 2022–24 are projections using microsimulation methodology.

39 Results based on microsimulations. Due to changes in household survey design and implementation, the 2021 data are not suitable for constructing a fully comparable monetary poverty measure.

Official national poverty experienced an increase in 2021, relative to 2019, but methodological changes in household surveys complicate the direct comparability. The official poverty headcount ratio (at the population level) was 53.6 percent in 2021, while extreme poverty stood at 27.5 percent. This means that moderate poverty increased by 5.6 percentage points and extreme poverty increased by 2.3 percentage points compared to 2019. These estimates should be taken with caution, because they are not fully comparable due to several methodological changes (see box 1.2). While they could reflect an economic downturn in Honduras due to the COVID-19 outbreak and related lockdowns and economic contractions, they could also reflect methodological adjustments made to the survey questionnaire. At the same time, official unemployment increased by 2.9 percentage points between 2019 and 2021. Additionally, poverty remains higher in rural than urban areas.

Box 1.2: COVID-19 and household survey data collection in Honduras

The COVID-19 outbreak affected the possibility of collecting household survey data in Honduras. There is no official estimation of poverty in Honduras for 2020. Additionally, the official poverty estimates for 2021 might diverge from previous estimates due to methodological reasons. First of all, due to the COVID-19 outbreak in 2020, the 2021 household survey (Encuesta Permanente de Hogares de Propósitos Múltiples, EPHPM) in Honduras took place electronically. Additionally, the 2021 survey questionnaire was a reduced form of the previously used questionnaire. Several survey questions measuring income-related indicators and questions to identify labor market status were not included in the survey or were modified. These adjustments significantly impacted the comparability of survey estimates related to households' income to previous survey waves (2014–19) and, consequently, the estimation of poverty in Honduras.

The adjustments described above resulted in a significant increase in the number of households without labor and/or nonlabor income in the 2021 household survey. Several questions important for the measurement of income and poverty were missing from the questionnaire in 2021. Moreover, many questions regarding income were left unanswered (for example, missing values in the cells capturing monthly salaries). Consequently, income—instead of being observed directly—had to be estimated for a larger number of households when compared to previous survey estimates. In the previous six years (2014–19), the number of households with more than half their income being estimated was between 27 and 141. This value increased to 925 for the 2021 survey, more than a six-fold increase over any year before.

To ensure comparability of estimates with previous estimates from previous survey rounds, several types of households were not considered for the estimation of poverty. These households are those without labor and nonlabor income, those without labor income and more than one-third of income components being from estimates instead of direct observations, and those with more than half of income components being from estimates.

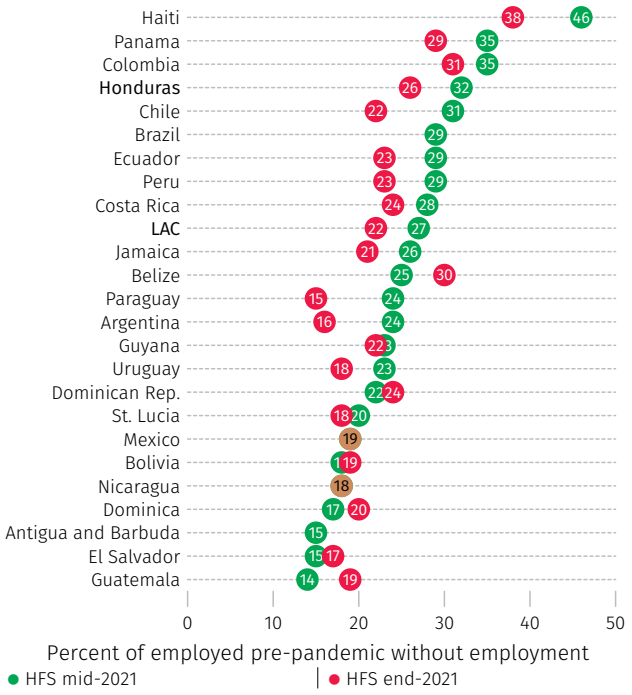
Estimates for 2022 are expected to be fully comparable with 2019 estimates, but were not available at the time this report was finalized.

Source: Own estimates based on 2014–21 data.

The UNDP-LAC HFPS provide another glimpse of the incomplete recovery in 2021; a year and a half into the pandemic, the adverse effects of the pandemic on welfare in Honduras were still evident. By mid-2021, about 1 in 3 workers had lost their prepandemic job and 61.4 percent of them had left the labor force altogether. Job loss rates were higher for women (50.5 percent), the elderly age 65+ (45.2 percent), and individuals between 18 and 25 years of age (37.0 percent). Among those who lost their job and transitioned to inactivity, 68.9 percent were low-skilled people with primary education and 66.8 percent were women. By the end of 2021, 26 percent of those employed before the pandemic were reported to have lost their jobs (figure 1.16). This is one of the highest values reported for the LAC region, although the number was lower than that from mid-2021. Recovery has been slower for women.

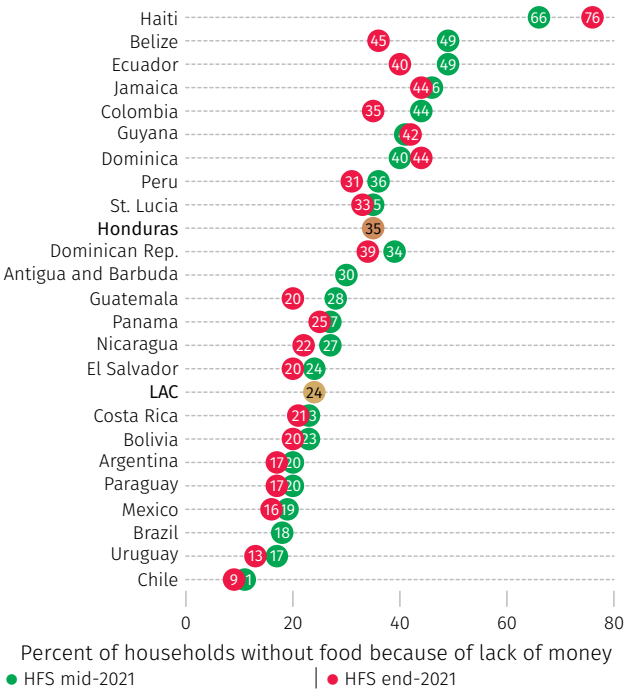
A large share of previously inactive people entered the labor force during the pandemic. About 57.9 percent of the entrants into activity were women across all age ranges, most of them with primary education (64.9 percent) and with children under age 18 (60.5 percent). The new entrants, who likely entered the labor market to avoid falling into poverty, represented 21.1 percent of the employed and 25.7 percent of the unemployed by mid-2021. Workers also transited between formality and informality, a sign of job quality deterioration. Of the previously formal workers, 12.9 percent became informal, particularly women (18.6 percent) and the youngest cohort (16.0 percent). These trends by the end of 2021 had helped bring about a rising informality rate. At the same time, the job loss rate declined between mid-2021 and the end of 2021.

Figure 1.16: Share of employed prepandemic without employment



Source: World Bank estimates based on LAC UNDP-WB HFPS 2022, Phase 2, Rounds 1 and 2.

Figure 1.17: Food insecurity in Honduras compared to LAC countries



Source: World Bank estimates based on LAC UNDP-WB HFPS 2022, Phase 2, Rounds 1 and 2.

Despite substantial support from the government in the form of regular and emergency transfers (such as Bono Vida Mejor), which covered 2 out of every 3 households in Honduras, about 40.9 percent of households still reported in mid-2020 that their income was below its prepandemic level. Together

with transits from inactivity into activity, these findings suggest emergency transfers were insufficient to compensate for income loss. At the end of 2021, one-fourth of households reported an income loss compared to the beginning of the year. While this value was below the LAC average (27.9 percent), this was still a worrisome development. Emergency government transfers declined between mid- and the end of 2021 (from 38.5 percent of households receiving government transfers to 21.1 percent).

However, Honduras was successful in preventing hunger from increasing in 2021, though food security continues to be a critical issue. Food insecurity lessened compared to its level at the beginning of the pandemic, although it remained above its prepandemic level. By mid-2021, more than one-third of households had run out of food during the 30 days preceding the survey. The incidence was higher for families with primary-educated heads (41.6 percent) and lower asset ownership (46.5 percent). The incidence rate remained around those levels by the end of 2021. When compared to other LAC countries, Honduras was in the middle of the pack (figure 1.17).

The perception of insecurity and domestic violence increased during the pandemic. One-fourth of the population 18+ reported an increase in insecurity in the neighborhood at the end of 2021 in comparison to before the pandemic. This was lower than the LAC average of 43.1 percent. Additionally, 14.6 percent reported an increase in domestic violence. In comparison, 24.6 percent of the population in the LAC region did so.

Around three-fourths of school-age children were attending some form of educational activity in mid-2021 (in person or virtually). This value remained nearly constant until mid-2021 and represented a decrease of 14.8 percentage points compared to before the pandemic. Moreover, only 55.7 percent had direct interaction with a teacher. Limited connectivity likely increased the difficulty of virtual learning; 61.6 percent of households with an internet connection (40.2 percent of the total) reported poor service quality. Unequal intrahousehold arrangements, coupled with school closures, resulted in 47.0 percent more women than men reporting an increase in the time spent supporting children's education during the pandemic. However, the burden did increase for both women (36.6 percent) and men (24.9 percent). A shocking 63.0 percent of households perceived that children were learning less than before the pandemic.

Access to digital financial services is still elusive for households in Honduras and a significant challenge looking forward: only 29.2 percent of households reported using mobile wallets in mid-2021. Finally, a full recovery will depend on an effective vaccination campaign. Vaccination hesitancy in Honduras (at 15.6 percent) is above the LAC average (at 8.0 percent) and is higher among youth and less-educated groups.

In 2022, the fragile economic recovery from the COVID-19 pandemic is expected to be upended by war in Ukraine; growth is projected to slow down as a result of higher inflation and a slowdown in trade and remittances. Although the GDP rebounded in 2021, more than compensating for the loss in 2020, growth in 2022 is projected to be only 3.2 percent (0.4 percentage points below earlier projections). Higher prices for fuels, energy, food, consumer goods, fertilizers, raw materials, and transportation services are expected to affect the cost of production across key sectors with implications for poverty and inequality. As the surge in commodity prices related to the war in Ukraine is increasing the headline inflation in the United States and Europe, growth in Honduras is expected to reduce even further, because the bulk of remittances (24.3 percent of GDP) originate from these countries, and Honduras's exports to those countries have declined by about 13 percent.

Recently, the supply disruptions and the conflict in Ukraine have led to an increase in food prices. Food prices are also higher than the long-term level, rising by 9 percent (y-o-y). There are many uncertainties regarding the magnitude of the rise in food prices and its repercussions. Increases in food prices may affect households differently through changes in prices and earnings. For instance, net food producers will benefit from the increase in the prices of agricultural products. The final distributive impact of high food prices will depend on the products involved, the patterns of household incomes and expenditures, and policy responses (Ivanic and Martin 2008; Aksoy and Isik-Dikmelik 2008).

Going forward, high food and gasoline prices as a result of the war in Ukraine pose a risk to poverty reduction, because they account for a higher share of income at the bottom of the distribution. High food inflation could heighten food insecurity, particularly for low-income households with informally employed members who lack insurance and savings and spend a large share of their income on food (48.5 percent in the bottom decile) and could have lingering effects on human capital and livelihoods. Microsimulation results estimate that food inflation of 9 percent (based on the Ukraine war) could increase poverty by 2.4 percent in the short term. In the long run, households could change their consumption patterns as a response, substituting food staples for cheaper and lower-quality options and/or reducing consumption of other nonfood expenditures and human capital investments in education and health. There could also be a positive supply response among food producers, who can capitalize on rising food prices. resulting in net positive impacts on poverty. Moreover, high energy costs could affect the maquila sector, which employs 12 percent of workers in poverty.

The persistent adverse effects of the prolonged pandemic and the inflationary pressures from the Ukraine war on livelihoods and human capital accumulation pose challenges to future poverty reduction. The potential setbacks to human capital and critical aspects needed for the country to develop (including new infrastructure) will likely limit economic growth in the years to come.

Box 1.3: The distributive impact of rising food prices in Honduras

We conducted a simulation exercise to predict the magnitude of the increase in poverty that Honduras will experience from rising food prices. The loss of purchasing power associated with the increase in food prices amounts to an increase in the poverty line. Given price increases in a set of food items and their weights in the country's basic consumption basket, the poverty line is adjusted by an equivalent percentage.[a] Moreover, the mitigating income effect of increasing food prices for net food producers is accounted for by the increase[b] in per capita incomes arising from food price changes.[c] These estimates could be overestimating the potential impacts on poverty, because the simulation does not allow for behavioral assumptions, particularly with respect to possible supply responses, with food producers capitalizing on higher food prices, leading to a net positive impact on poverty, or substitution of food for nonfood items. Therefore, they should be interpreted as short-term effects before any reaction or change in people's behavior.

Our exercise simulates the poverty impact of food price increases based on three different scenarios:[d]

1. Scenario 1: Food inflation of 3 percent—reported food inflation between December 2018 and 2019
2. Scenario 2: Food inflation of 9 percent—based on the Ukraine war (y-o-y, March 2022)

Continued

Box 1.3 continued

3. Scenario 3: Food inflation of 16 percent—reported food inflation during the food crisis in 2008 (between December 2006 and December 2008)

We find that the incidence of poverty in Honduras could increase due to the food prices increases, with stronger effects on those in urban areas and in extreme poverty. Moderate national poverty would increase up to 3.9 percentage points if food prices increase at the same rate as during the 2008 food crisis and about 2.4 percentage points under the current rate of inflation and the Ukraine war. Effects are expected to be stronger in urban areas, where fewer households are able to mitigate the impact of the higher cost of food through higher agricultural earnings. More worrisome, extreme poverty would increase up to 4.9 percentage points in a more extreme scenario, and unlike with moderate poverty, the effect would be almost as large proportionally in rural areas. For instance, in the more extreme scenario, extreme national poverty would increase by 5.6 percent (33.6 percent total) in rural areas and 4.4 percent (16.3 percent total) in urban areas. The elevated effects of extreme poverty in rural areas reflect the fact that a larger proportion of the rural population lives close to the extreme poverty line and that agricultural incomes are low for those close to extreme poverty (even though such income is important for better-off rural inhabitants). See table A.1.2.

These short-term estimates do not consider behavioral responses or other additional consequences that households might suffer while coping with rising food prices. Our analysis shows that the negative effects of the higher cost of the consumption basket will strongly dominate the positive effect of higher agricultural incomes, as only 11 percent of households are net food producers. Yet, estimates may be overestimating the impacts of poverty, as behavioral responses are not included. Some strategies can be especially negative if they lead to a reduction in the quantity and quality of food consumption, increased labor supply of children, or sale of productive goods. These long-term impacts could have detrimental intergenerational impacts.

Source: World Bank estimates based on the 2019 EPHPM.

Note:

a. After a given increase in food prices $\Delta Pfood$, the value of the extreme poverty line (*EPL*) becomes $EPL1 = EPL0 * (1+ \Delta Pfood)$, where $\Delta Pfood$ is the increase in food prices, and the new moderate poverty line (*MPL*) becomes $MPL1 = EPL1 + (MPL0 - EPL0)$. In this setup, the value of the basic food basket is changed, while the rest of the basket remains constant, such that the second-order effects are not considered.

b. Net food producers are those households whose agricultural incomes are higher than total expenditures on food.

c. The new per capita agricultural income for net food producers can be calculated as $PCY1 = (AY0*(1+ \Delta Pfood) + (Y0 - AY0))/N$, where $PCY1$ is the new per capita income, $AY0$ is the agricultural income prior to the price shock, $Y0$ is the total household income, and N is the household size.

d. We assume that the prices of all food items in the basic consumption basket increase in the same magnitude.

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Chapter 2: Constraints to and Opportunities for Poverty Reduction

Key Messages: The following chapter uses an asset-based approach to identify key constraints and opportunities for poverty reduction in Honduras. Speaking more specifically, it analyzes how the poor fare in terms of assets, access to services, and resources. It also characterizes the poor in comparison to the non-poor. In addition, the chapter dives into the urban-rural divide in Honduras, especially related to poverty and inequality. The main findings are as follows:

- *There are significant differences in terms of assets, access to services, and resources between different population groups in Honduras.* These differences are mainly due to lower human capital accumulation (health and education), less access to public services, and lower labor market participation of the poor. Criminality, especially youth criminality, as well as migration dynamics, further add to the challenges these differences pose for Honduras's development path. Similar dynamics become visible when analyzing these drivers for the vulnerable versus nonvulnerable population or by income quintiles.
- *There is a sizable and persistent rural-urban divide in Honduras.* The rural population performs worse on educational as well as labor market indicators and has lower access to public services. This makes it necessary to take a differential perspective when designing public policies. The underlying drivers behind rising rural poverty and declining urban poverty in the pre-COVID period differ.
- *What factors contributed to rising rural poverty?* The main force was the deteriorated income inequality, which pushed down income among the bottom quintiles. When looking by income sources, a fall in agricultural labor incomes associated with a fall in real wages linked to climate shocks and decreasing coverage of public transfers played a key role. Remittances remain among the world's highest, yet they primarily benefit non-poor households and play a marginal role, similarly to employment and pensions. Demographic factors associated with the demographic dividend partially compensate for the income losses.
- *What factors contributed to the declining urban poverty?* Both income growth and lower income inequality contributed to better poverty outcomes. Strong labor income growth and demographics played a key role, while public transfers, pensions, and remittances played a very small role.

The evidence shows the need for four "deep" dives to understand the patterns and trends of urban and rural poverty reduction in the country. These include (1) the identification of pockets of poverty at the municipal level, (2) the role of transfers and taxes in reducing poverty and inequality in rural and urban areas, (3) further analysis of the impacts of climate-related shocks on urban and rural households to reduce vulnerability and build resilience, and (4) a deeper understanding of the labor market dynamics in rural versus urban areas and of potential policy reforms, analyzed in more detail in subsequent chapters.

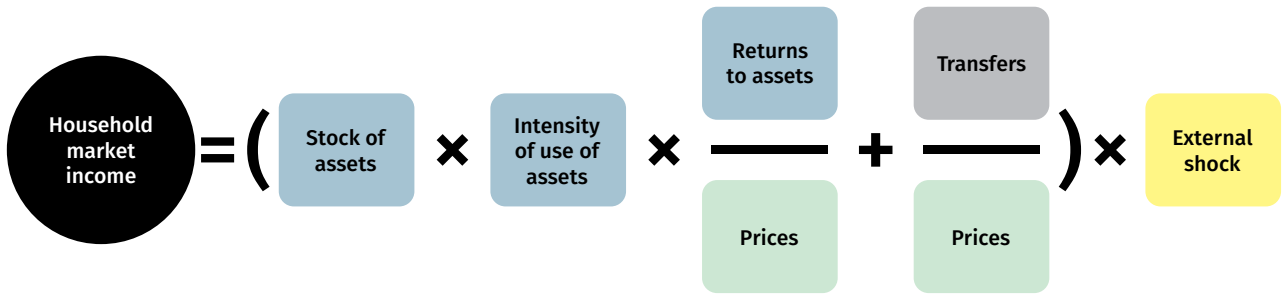
2.1 Introduction

This report uses an adaptation of the asset-based approach to identify key constraints and opportunities for poverty reduction in Honduras. The standard asset-based framework helps advance understanding of the factors affecting the ability of households to generate income by two main channels: assets and productivity. This framework helps us guide the analysis of vulnerability and poverty by focusing on the capacity of households to generate income and how risk could limit their capacity. The framework is taken from Lopez-Calva and Rodríguez-Castelán (2016)—itself an extension of a model presented by Attanasio and Székely (2001) and Bussolo and López-Calva (2014, 21–39). It presents clearly the elements that support households' market income:

- *Assets*
  - *The stock of income-earning assets* owned by each household member, which may include human capital, financial and physical assets, social capital, and natural capital
  - *Intensity rate* at which these assets are used, for example, labor force participation and agricultural production
  - *Return on these assets,* such as wages, rents, or interest rates
- *Prices* of goods and services consumed
- *Transfers* received by households, which may include domestic or international remittances and in-kind or monetary transfers
- *External shocks* can affect the stock, utilization, and returns to households' productive assets, as well as prices and transfers received by households. Households may suffer different types of shocks (i.e., natural disasters, crime, loss of employment, health).

The framework recognizes that households' income-generating capacity is based on distinct factors that support or weaken their economic position, which are all vulnerable to external risks (figure 2.1). The main elements are households' ability to generate income depending on what they have (assets owned) and how much they can earn from owned assets. Transfers can provide a cushion, but they are less protective and sustainable. High prices can erode the value of household income or, occasionally, increase the value of household assets. In addition, external shocks can affect any or all components of a household's capacity to generate income, as well as prices and transfers. This framework will guide our analysis in the rest of the chapters.

Figure 2.1: Asset-based framework for understanding household market income and the role of risks



Source: Adapted from Lopez-Calva and Rodríguez-Castelán 2016.

This chapter answers the following questions:

- How do the poor fare in terms of assets, access to services, and resources? What are the household, individual, and locational characteristics associated with vulnerability?
- What are the differences between high-income households and low-income households that would help us better understand income inequality?
- What are the key drivers of changes in poverty and inequality in rural and urban areas?
- What are the key determinants of urban and rural poverty?

2.2 How Poor and Vulnerable Populations Access and Use Assets

To understand poverty in Honduras, we use the above-mentioned asset-based framework to draw a profile of the poor and vulnerable in terms of their assets, such as human capital, and the use and returns of those in the form of participation in the labor force and wages.

Profile of the Poor

To shed further light on the challenges faced by the poor in Honduras and how the poor differ from the non-poor, it is useful to analyze the characteristics of the poor; this can also lead to a better understanding of the drivers behind monetary poverty. Table A.1.3 shows how the poor have developed over time in terms of household characteristics, human capital accumulation, access to services, and the labor market, comparing average characteristics from 2014 to 2019. The table shows these characteristics separately for the extreme poor, poor, and the non-poor. It also presents the average characteristics of the overall population. From this, it is possible to draw important insights into systematic differences between income groups.

Poorer households were significantly more likely to live in rural areas, tended to be larger, and had more economic dependents. A low and decreasing share of households affected by extreme poverty in 2019 lived in urban areas (34.5 percent), compared to 45.6 percent of poor households and 63.2 percent of non-poor households. The average household size in Honduras dropped from 5.3 to 5.1 members between 2014 and 2019, but extremely poor households remained larger than poor and non-poor households. In 2019, children comprised a larger share of extremely poor (49.1 percent) and poor (46.4 percent) households when compared to non-poor households (31.5). This was also the case in 2014. The share of members age 70 or older increased for all three subgroups between 2014 and 2019, in line with the demographic change. Overall, the systematic differences in household characteristics imply that poor and extremely poor households were more vulnerable, because they had to care for a larger share of children, had more household members, and lived in rural areas.

A lower level of education of the household head was associated with higher poverty; children from poorer households had a lower chance of being enrolled in school, and the gap increased over time. While the average years of education of household heads increased for all population subgroups, the gap remained large (see table A.1.3). Moreover, a lower share of children from poor and extremely poor households were enrolled in school. In extremely poor households, 9 out of 10 children ages 6–12 were enrolled in 2019, a 1.9 percentage point drop when compared to 2014. The share of enrolled children in the same age group also dropped in the case of poor households: 92.2 percent were enrolled in 2019, compared to 94.1 percent in 2014. In contrast, a larger share of children from non-poor households was enrolled in 2019 compared to 2014. The enrollment gap between children from extremely poor, poor, and non-poor households was even larger when looking at children ages 13–18. Only around half of children in this age group from poor and extremely poor households were enrolled in 2019, compared to nearly 7 out of 10 children from non-poor households. Like the developments observed for younger children, the gap increased over time. The enrollment rate increased by 7.4 percentage points for non-poor children ages 13–18, but only 3.0 percentage points for extremely poor children. Education is one of the poverty-relevant areas flagged in the benchmarking analysis conducted for Honduras (see box 1.1 in chapter 1).

Poorer households had less access to all kinds of services, but overall, a larger share of households had access to them in 2019 than in 2014. Households' access to electricity, water, sanitation, and internet varied largely by poverty status. To give some examples, in 2019 not even 1 out of 10 households affected by extreme poverty had internet at home, compared to every third non-poor household. Similarly, 1 out of 10 extremely poor households lacked access to sanitation, while this was the case for just 3.7 percent of non-poor households. And while 14.4 percent of extremely poor households lacked access to water, only 2.7 percent of non-poor households did. Similar observations can be made about households' access to electricity. Still, for all cases of services under consideration in table A.1.3, access did increase during the period 2014–19. For example, the extreme poor's access to electricity increased by 11.7 percentage points, from 72.8 percent in 2014 to 84.7 percent in 2019. Households' access to services particularly increased in the case of internet access and sanitation, especially for the poorest households. Nevertheless, while there have been important improvements in access to services over time, important gaps between the extremely poor, poor, and non-poor remained.

The working-age poor were less active in the labor market, especially when considering women. Six out of 10 moderately poor people ages 15–65 participated in the labor market in 2019. This was below the labor force participation rate of the non-poor for this same year, 71.1 percent. When the sample is restricted to those ages 15–65 who were extremely poor, labor force participation was even lower (57.7 percent). Overall, the labor force participation rate remained nearly constant for the period 2014–19. While the gaps in poverty status were negligible for men, they were large for women. In 2019, not even one-third of extremely poor women ages 15–65 were active in the labor market, compared to 36.7 percent of poor women and 57.3 percent of non-poor women in the same age group. Compared to 2014, the labor force participation rate in 2019 dropped for extremely poor and moderately poor women, a worrisome trend. The benchmarking analysis also flagged the labor force participation of women with basic education as a problematic area (see box 1.1). Similarly, the unemployment rate increased for this group of women, but remained at a low level. There was an increase of 0.5 percentage points (from 3.6 to 4.1 percent) in the case of extremely poor women and an increase of 1 percentage point (from 3.3 to 4.3 percent) in the case of poor women.

Informality is a persistent phenomenon in Honduras and it affects most of the poor; additionally, the share of people working in the informal sector increased during the period 2014–19. Nearly the full universe of people affected by extreme poverty (99.2 percent) worked in the informal sector in 2019. This rate was also high in the case of the moderately poor, namely 96.0 percent. In comparison, nearly 3 out of 4 non-poor people worked in the informal sector in 2019. This means that, overall, informality was still high in Honduras as of 2019. Compared to 2014, informality increased by 1.9 percentage points (from 79.8 to 81.7 percent). This trend is visible for all groups, independent of their poverty status. This is in line with previous findings, which showed that Honduras could be characterized by a high proportion of jobs that remain informal and that exhibit low productivity and poor job quality (Michel and Walker 2020). Informality might also be one of the reasons behind the massive emigration from Honduras, mainly to the United States (Almeida et al. 2019). It is crucial for Honduras's development path that more formal jobs are generated. Informality is also one of the indicators on which Honduras performs badly when compared internationally (see box 1.1).

Additionally, youth criminality poses further challenges for the creation of a more sustainable development path in Honduras. Youth's becoming gang members could diminish the potential to reduce intergenerational poverty in the long run (Mateo 2021). Such youths—instead of investing in their education and human capital accumulation—engage in illegal and violent activities. Evidence shows that selling drugs in *barrios*

and communities is especially attractive for those who need to work or want to complement their income (World Bank 2022b). In the long run, though, this could create productivity losses for the country. For example, young people refraining from working in the illicit economy might earn more than those engaging in illegal activities, but the evidence is lacking.

Gender-based violence is another factor diminishing the development potential in Honduras. Increasing exclusion and inequality have led to increased security risks for women (Menjívar and Walsh 2017). Violence against women and girls represents a significant barrier for them in developing to their full potential (Ronderos 2011). The high levels of gender-based violence in Honduras could, therefore, hamper growth and shared prosperity.

Poor people might have less access to the justice system. In general, only one-fourth of those in legal trouble can access legal aid or a legal assistant; only 2 out of 10 had the financial means to process a legal claim due to high legal fees (WJP 2017). This could be evidence of poor people having less access to the legal system.

Unequal land distribution could also be responsible for high poverty and inequality. The land sector in Honduras is characterized by the so-called latifundio (large estate)/minifundio (smallholding) complex (USAID 2022). According to data collected by USAID (2022), 1 percent of farmers hold one-fourth of available land in private latifundios, while 70 percent of farmers hold 10 percent of the land in minifundios. In addition, there is a high concentration of urban land in the hands of a few, leading to shortages and informal settlements. Indigenous people (IP) and other ethnic groups are especially affected by insecure land tenure. Several reforms have tried to address the high concentration of land ownership, but their impact has been limited.

An upcoming World Bank migration report for Northern Central American countries shows that Honduran migrants come from the poorest municipalities. The results show that individuals migrate from the poorest municipalities, but they are not among the poorest in those municipalities (World Bank 2022c). The study relates several indicators measuring overall economic conditions to migration at the municipality level: a strong correlation is shown of migration with municipal monetary poverty and the average years of education of household heads, as well as households' possession of durable goods. Migration is also related to landslides and drought events. Consequently, poverty and migration are significantly intertwined. A better understanding of how emigration affects poverty and vice versa is crucial for the country's poverty agenda.

Profile of the Vulnerable

Analyzing the profile of the vulnerable can help to understand the drivers behind vulnerability. As with our analysis of monetary poverty, we study the average characteristics of the vulnerable population. We then compare these characteristics to the nonvulnerable population. Table A.1.4 presents the results for this comparison in both 2014 and 2019. The table reveals systematic differences between the vulnerable and nonvulnerable, which can be factored in when designing public policies.

The vulnerable were younger than the nonvulnerable and a larger share lived in rural areas; they performed lower on educational indicators. The vulnerable and nonvulnerable (those living with more than US$13 [2011 PPP] per day) households were similar in terms of household size, as well as the average age and

gender of household heads. However, vulnerable households had a larger share of children (see table A.1.4). Additionally, household heads were less educated (6.3 years versus 10.0 years) and secondary school enrollment was lower (68.8 versus 78.2 percent). Still, as of 2019 enrollment rates had increased for both groups when compared to 2014. Additionally, a higher share of vulnerable households lived in rural areas.

The gaps in access to public services were negligible, but only one-third of vulnerable households had internet at home. While the gaps in access to public services were nearly closed since 2014, a lower share of vulnerable households had internet at home in 2019. Only 30.5 percent of vulnerable households had an internet connection at home, compared to 56.7 percent of nonvulnerable households. Compared to 2014, the share of households using the internet among both the vulnerable and nonvulnerable increased.

A lower share of the vulnerable was active in the labor market, and this was driven by female labor force participation. The labor force participation rate among the vulnerable population was 68.1 in 2019. This was only a slight increase compared to 2014 (1.7 percentage points) and the rate remained below that of the nonvulnerable population (76.7 percent). The gap was driven by differences in female labor force participation. While approximately half of the working-age vulnerable women were active in the labor market in 2019, this applied to 68.3 percent of nonvulnerable women. In 2019, the labor force participation rates of vulnerable and nonvulnerable men were equal (approximately 85 percent). In addition, 8 out of 10 vulnerable people were employed in the informal sector. This is an increase when compared to 2014 (5.0 percentage points) and was substantially higher than the same value for the nonvulnerable (57.1 percent in 2019).

Low female labor force participation among the poor and vulnerable could be driven by demand- and supply-side factors. It is likely that low labor force participation of women was driven by a mismatch between the quality of the emerging female workforce and the quality of jobs. While men are pressured to take whatever job they can, due to their social role as breadwinners, women are lining up, waiting for a job that fits their expectations and skillset to emerge. Women, who are more educated on average than men, are reluctant to take low-quality jobs. The traditional social roles of men and women further exacerbate these dynamics, as these roles are related to childcare responsibilities, unpaid domestic work, and security risks when traveling to work, as well as discriminatory workplace practices (Michel and Walker 2020).

Explaining Income Inequality: Key Characteristics of Honduran Households by Income Quintiles

The following section outlines the population's access to public services and human capital, as well as economic opportunities across income quintiles. While analyzing the profile of the poor helps to reveal structural drivers of poverty, mapping differences across income quintiles can generate important inequality insights. In what follows, we analyze how access to important public services and human capital accumulation, as well as to the labor market, differs by income quintiles. This analysis can highlight important shortfalls in Honduras's inclusion across income quintiles.

Honduras is marked by unequal access to most public services, with lower income quintiles reporting a lower access rate. The 2015 *SCD* highlighted that Honduras is characterized by an unequal access to basic services, a phenomenon hampering human capital formation and inclusive growth. Additionally, areas with a high share of IP and Afro-descendants are characterized by lower access to these basic services (World Bank 2022a).

While access to water and sanitation has increased over time, access by income quintiles remains highly unequal. Coverage of water supply and sanitation services gradually increased in Honduras from 88.9 percent in 2014 to 93.5 percent in 2019 and 88.8 percent to 93.8 percent, respectively (data from the 2014 and 2019 EPHPM). Still, table 2.1 shows that access to water and sanitation as well as to the internet remains unequal across income quintiles.

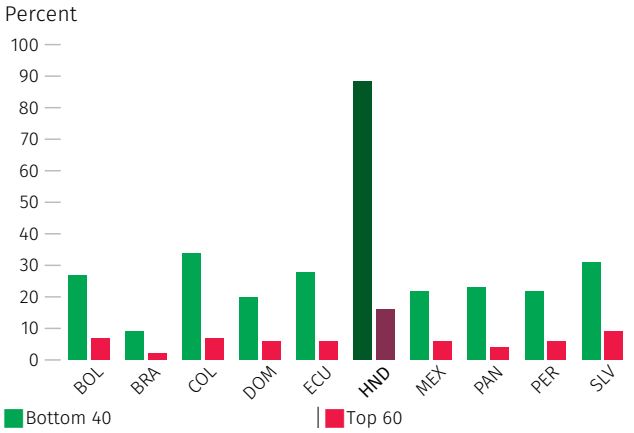
Table 2.1: Access to public services by quintiles, 2014–19

Year	Q1		Q2		Q3		Q4		Q5	
	2014	2019	2014	2019	2014	2019	2014	2019	2014	2019
HH with access to electricity (percent)	65.6	81.1	84.1	88.0	88.1	94.7	95.8	97.5	98.9	99.1
HH without access to sanitation (percent)	23.5	14.3	12.6	8.5	8.9	6.5	5.6	3.5	1.6	0.9
HH without access to water (percent)	20.0	17.5	12.3	10.3	8.8	4.6	4.0	2.3	1.9	0.7
Internet at home (percent)	2.7	6.1	3.3	9.2	8.9	14.6	15.4	29.7	43.5	53.3
Internet use (percent)	14.7	29.7	21.5	45.4	35.2	59.3	48.4	72.5	70.9	86.6

Source: World Bank estimates based on the 2014 and 2019 EPHPMs.
Note: Q1 represents the bottom income quintile (poorest) and Q5 represents the top income.

Additionally, the unequal access to the internet by income groups was especially problematic in light of the COVID-19 pandemic and related lockdowns. Internet costs in Honduras vary largely by income group. Figure 2.2 shows that these costs represent 89 percent of the average income per capita in the bottom 40, compared to 16 percent in the top 60. This was especially problematic when considering the potential impact of lockdowns related to the COVID-19 outbreak. Those with lower access to the internet might not have benefited from homeschooling or remote jobs, which could negatively impact inequality trends in the long run. Korkmaz et al. (2022), for example, find that internet access played a crucial role in educational inequality during the COVID-19 pandemic.

Figure 2.2: Internet costs for the bottom 40 and top 60 for selected LAC countries



Source: Sanchez et al. 2021.
Note: Workers are classified into income deciles based on their per capita household income using country distributions. Relative internet cost is calculated as the ratio of the monthly price for a fixed broadband 5GB plan over the average monthly income per capita (both variables expressed in PPP 2011 [in US$]). Internet price data is at the country level. The data refers to the most recent year of data available in SEDLAC. The bottom 40 corresponds to the first two quintiles of the income distribution and the Top 60 corresponds to the top 60 percent of households in the income distribution.

Honduras's health sector is marked by low preparedness as well as unequal access. The combination of high malnutrition and a problematic health sector presents an important barrier to the country's human capital formation (World Bank 2022a). Lower-income quintiles have less access to quality health services than upper-income quintiles. Out-of-pocket expenditures are high compared to other LAC countries (see benchmarking analysis). As mentioned in chapter 1, malnutrition is a critical barrier to human capital formation and one of the drivers of multidimensional poverty. The health sector is also underfunded, as Honduras ranks among the lowest-

performing countries in terms of its domestic general government health expenditure (as a percent of GDP) (World Bank 2022a). There are many examples showing the country's vulnerability in the health sector.[40] It is, therefore, no surprise that the country has been called out as one of the least-prepared countries in relation to the COVID-19 pandemic in LAC (World Bank 2022a). The country's pandemic preparedness is also low (see annex 6).

There is evidence of worrisome trends in maternal and child health services. To cite some examples, the maternal mortality ratio stagnated between 2015 and 2016 and the prevalence of stunting was above the LAC average. Two out of 10 children were affected by stunting in 2019, compared to approximately 1 out of 10 children in LAC (World Bank 2022f). In addition, only three-fourths of births were attended by skilled health staff in 2017, about 10 percentage points lower than in 2012 (World Bank 2022f). Recent data on this indicator for the year 2019, on the other hand, shows improvements, with the share increasing to 94.1 percent (World Bank 2022f). Vaccination rates also fell from 2015 to 2019 (World Bank 2022a). These developments could worsen human capital accumulation in the country in the middle and long run.

Large and widening enrollment rates, particularly for secondary schooling, are worrisome for the country's human capital accumulation. Figures 2.3 and 2.4 show that the net primary and secondary enrollment rates vary by income quintiles, with wider gaps in secondary school. More than 3 out of 4 children ages 12–18 are enrolled in the upper-income quintile, whereas only 4 out of 10 children ages 12–18 in the lower-income quintile are enrolled. When compared to 2014, the enrollment gap grew. The gap between the upper- and lower-income quintile was 39.2 percentage points in 2019 and 34.9 percentage points in 2014. This is a worrisome development, as school enrollment is crucial for the country's human capital accumulation and long-term growth. Enrollment rates are also flagged as a problematic area in the benchmarking exercise.

Figure 2.3: Primary net enrollment by quintile, 2014–19

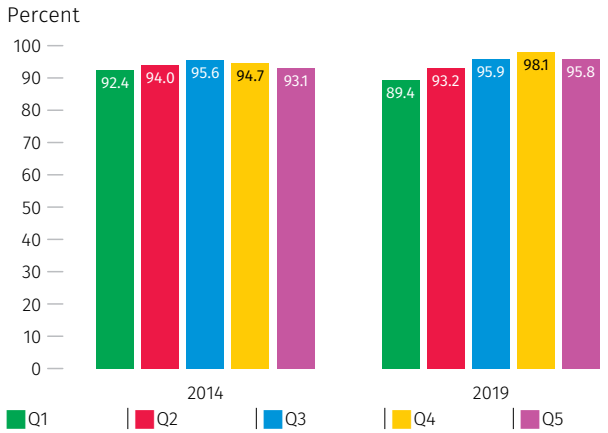
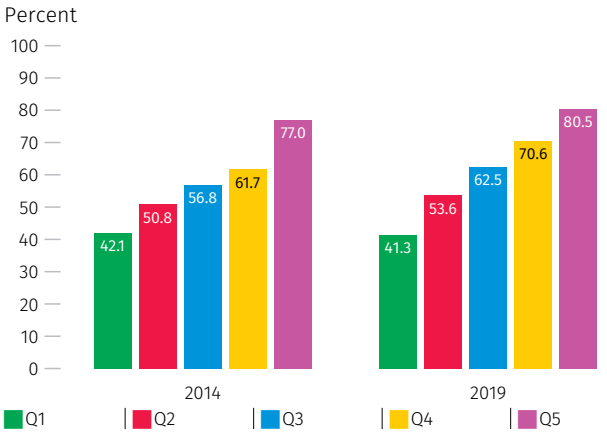


Figure 2.4: Secondary net enrollment by quintile, 2014–19



Source: World Bank estimates based on the 2019 EPHPM.
Note: Figure 2.3 shows the net enrollment rate for primary school-aged children (6–12 years old) and figure 2.4 shows the net enrollment rate for children of secondary school age (12–18 years old). The net enrollment rate is the ratio of children of official school age enrolled to the population of the corresponding official school age. Q1 represents the bottom income quintile (poorest) and Q5 the top income quintile (richest).

40 To name some, the number of hospital beds per 1,000 people remained at 0.6 between 2014 and 2019, a value below the LAC average of 1.9. The number of physicians per 1,000 people is also below the LAC average: in 2017, there were 3 physicians per 1,000 people in LAC and only 0.3 per 1,000 people in Honduras (*WDI* data from 2017) (World Bank 2022f).

Figure 2.5: Labor force participation by quintile, 2014–19

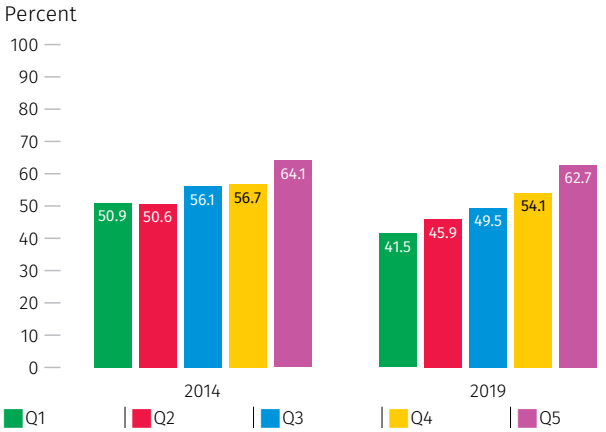
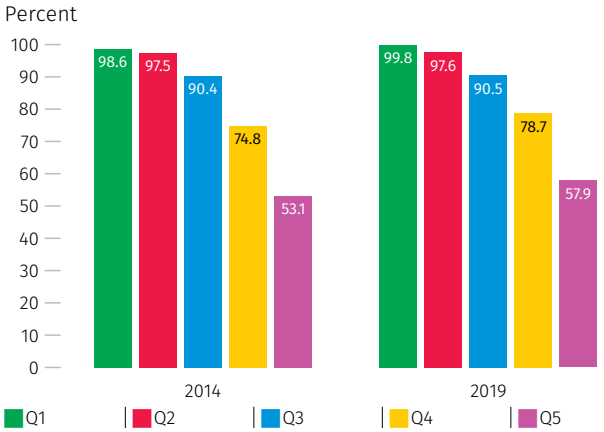


Figure 2.6: Informality by quintile, 2014–19



Source: World Bank estimates based on the 2019 EPHPM.
Note: Q1 represents the bottom income quintile (poorest) and Q5 the top income quintile (richest). The social protection definition of informality is used.

The gaps in labor force participation between the lowest and upper-income quintiles expanded between 2014 and 2019 and the gaps in terms of informality remained large. For the period of 2014–19, labor force participation in Honduras decreased by income quintiles (figure 2.5). Furthermore, the labor force participation rate fell by 9.4 percentage points for the lowest income quintile over the period, but fell by only 1.4 percentage points for the upper-income quintile. Informality[41] differs significantly by income quintile (figure 2.6). While nearly the full universe of those in the lowest income quintile was employed in the informal sector in 2019, this was true for 57.9 percent of the upper-income quintile (2019 EPHPM). Additionally, informality increased over time by 1.2 percentage points for the lowest income quintile and 4.8 percentage points for the upper-income quintile. Unemployment, on the other hand, remained relatively stable during the period 2014–19.

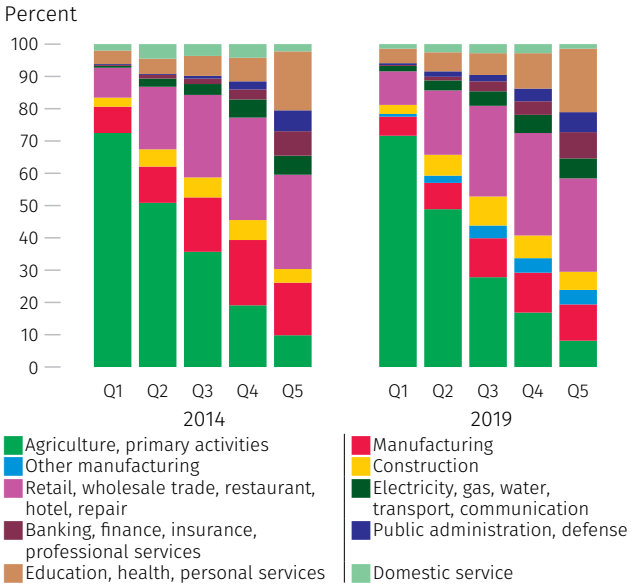
The sector distribution of the poorest quintile barely changed over the period 2014–19; at the same time, there was a wage decrease in the primary sector. As of 2019, more than 7 out of 10 employed people of the lowest income quintile were employed in the primary sector (2019 EPHPM). This share remained constant between 2014 and 2019 (figure 2.7). When this analysis considers rural vs. urban areas, the share of bottom 20 (B20) employed in the former remained nearly constant, while there was a drop in the share of B20 employed in the primary sector in the latter. Still, given that the number of urban B20 working in the primary sector was negligible, this decline is not reflected in the overall numbers (2015–19 EPHPM). At the same time, there was a real wage decrease in the primary sector, which could explain the poverty increases in rural areas. We shed further light on this by decomposing the increase in poverty in rural areas by its drivers (see below).

In contrast, there has been a shift out of the primary sector for the rest of the income quintiles, likely indicating urban-rural migration. There has been a shift out of the primary sector into other sectors for the rest of the income quintiles. This could be related to the fact that, relative to 2014, a higher share of these

41 We follow the social protection definition of informality. A worker is considered informal if all the following three criteria are met: (i) Does not contribute to pensions; (ii) Does not contribute to social security (health); (iii) Does not have paid leave and does not have "Aguinaldo."

income quintiles lived in urban areas in 2019, while a lower share of the poorest quintile lived in urban areas. We investigate this further in the urban-rural analysis of this chapter. The urban-rural migration that took place in Honduras during 2014–19 likely did not involve the lowest income quintile. In fact, the share of those living in urban areas in the poorest quintile decreased by 4.2 percentage points to 20.3 percent in 2019 when compared to 2014 (2019 EPHPM), which could point to poor people's being trapped in rural areas There could be several reasons for this: high costs of migration, an inability to integrate into urban labor markets, or a vicious circle faced by the rural population, leading to a higher concentration of poverty in rural areas. There is need for more evidence to shed light on the interaction between rural-urban migration and income quintiles and poverty as well as potential drivers behind these developments. Overall, the largest increase in the share of employed (1.1 percent) occurred in the retail, wholesale trade, restaurants, hotels, and repairs sectors. The largest overall decrease (4.2 percent) took place in the primary sector (2014–19 EPHPM).

Figure 2.7: Sector distribution by income quintiles, 2014–19



Source: World Bank estimates based on the 2014–19 EPHPM.
Note: Q1 represents the bottom income quintile (poorest) and Q5 the top income quintile (richest).

2.3 The Urban-Rural Divide and its Key Drivers

The Urban-Rural Divide

Overall, the rural-urban gap is large in Honduras, which makes it necessary to take a differentiated perspective on poverty and equity in the country. The rural and urban realities in Honduras differ. Table 2.2 shows the average characteristics and systematic differences of the rural and urban populations in 2014 versus 2019. Rural households were slightly younger, larger, and characterized by lower human capital accumulation. Additionally, they had less access to public services, especially with respect to internet access. Lastly, a lower share of the rural population was active in the labor market, yet the unemployment rate was lower in rural areas than in urban ones. These results show that there is a marked and persistent urban-rural divide in Honduras. This divide makes it necessary to take a differentiated perspective on poverty and inequality dynamics.

Table 2.2: The urban-rural divide in Honduras, 2014–19

	2014		*2019*	
	Rural	*Urban*	*Rural*	*Urban*
Household				
Average household size	5.56	5.07	5.39	4.91
Average age of household head	47.14	46.40	49.74	50.16
Households with a female head (percent)	27.84	38.58	26.32	39.00
Average years of education of household head	3.76	7.30	4.04	7.70
School enrollment ages 12–18 (percent)	42.55	69.50	44.22	74.15
School enrollment ages 6–12 (percent)	92.95	95.00	91.64	96.01
Proportion of members ages 0–12 (percent)	30.72	26.33	28.09	23.58
Proportion of members ages 13–18 (percent)	16.13	14.27	14.16	12.01
Proportion of members ages 19–70 (percent)	49.94	55.80	53.41	59.55
Proportion of members ages 70+ (percent)	3.21	3.60	4.34	4.87
Access to services				
Internet at home (percent)	3.25	24.85	8.10	40.72
Internet use (percent)	17.43	55.83	43.51	78.15
HH with access to electricity (percent)	72.03	98.66	85.91	99.18
HH without access to sanitation (percent)	18.22	5.08	11.76	1.69
HH without access to water (percent)	18.51	2.65	13.53	0.64
Labor force (ages 15–65)				
Labor force participation (percent)	65.72	65.15	64.84	67.24
Female labor force participation (percent)	39.74	52.38	38.99	54.83
Male labor force participation (percent)	92.58	80.82	91.70	82.52
Unemployment rate (percent)	2.24	7.80	3.34	8.31
Female unemployment rate (percent)	1.07	3.86	2.12	4.31
Male unemployment rate (percent)	1.17	3.94	1.21	4.00
Informality (percent)	93.72	67.90	94.37	71.86

Source: World Bank estimates based on the 2014–19 EPHPM.
Note: A person is defined as informally employed as soon as they do not receive employment-based pension benefits. *Internet at home* indicates the share of households with internet access at home. *Internet use* is the share of households who use the internet.

Profile of the Urban and Rural Poor

To analyze these dynamics, we start by characterizing the poor and extremely poor population in rural and urban areas. Table A.1.5 shows the findings. We describe the average characteristics of the poor and extremely poor population in both rural and urban areas in both 2014 and 2019. This enables us to grasp the different poverty drivers for each group.

Rural and urban poor and extreme poor households were similar in household size and age structure, but a lower share of household heads in rural areas was female. When looking at the right panel of table A.1.5, which shows the average characteristics for 2019, it becomes clear that poor households in urban and rural areas were similar in their household size and age structure, but that a much lower share of household

heads was female in rural areas (22.9 versus 43.7 percent). This gap is observable both for the poor and extremely poor, with minor changes when compared to 2014.

Although there was an increase in school enrollment and the average years of education of household heads over time, significant gaps between the rural and urban poor remained. In 2019, household heads in rural areas were less educated on average: 3.3 years for the moderately poor (compared to 5.6 years for household heads in urban areas) and 3.5 years for the extremely poor (compared to 5.1 years for household heads in urban areas). Still, when compared to 2014, all socioeconomic groups presented in table A.1.5 had become more educated on this dimension. The gap in human capital accumulation also becomes visible when looking at school enrollment rates. Only 9 out of 10 poor children ages 6–12 in rural areas were enrolled in school in 2019, whereas 94.5 percent of poor children ages 6–12 in urban areas were enrolled. Similar gaps can be observed in the case of the extreme poor. While poor and extremely poor children in rural areas had caught up in enrollment rates when compared to 2014, the gaps remained. The gaps were even larger in the secondary enrollment rates. Table A.1.5 shows that, while close to 7 out of 10 poor children ages 12–17 in urban areas were enrolled in secondary schooling, this was true of just 4 out of 10 poor children ages 12–17 in rural areas. The urban-rural gap in secondary enrollment rates was similar for extreme poor children. Like primary enrollment rates, secondary enrollment rates increased over time for all four socioeconomic groups, but important gaps remained.

While nearly 100 percent of the urban poor had access to electricity, water, and sanitation, close to 2 out of 10 households in rural areas still lacked these services; internet access remained low for all socioeconomic groups under consideration. In 2019, nearly the full universe of poor and extremely poor households in urban areas had access to electricity, water, and sanitation, with significant improvements in coverage since 2014 (see the right panel in table A.1.5). While access to these services also improved for the rural poor and extreme poor since 2014, around 2 out of 10 households still lacked these services in 2019. As of 2019, a small share of poor and extreme poor households in Honduras had internet at home, but the share was lower in the case of the rural population. Only around 3 percent of rural poor and extremely poor households had internet at home, compared to approximately 18 percent of urban poor and extreme poor households. This means that, while a significantly larger share of poor and extremely poor households in urban areas had internet at home in 2019 than in 2014, the increase was negligible for these groups in rural areas.

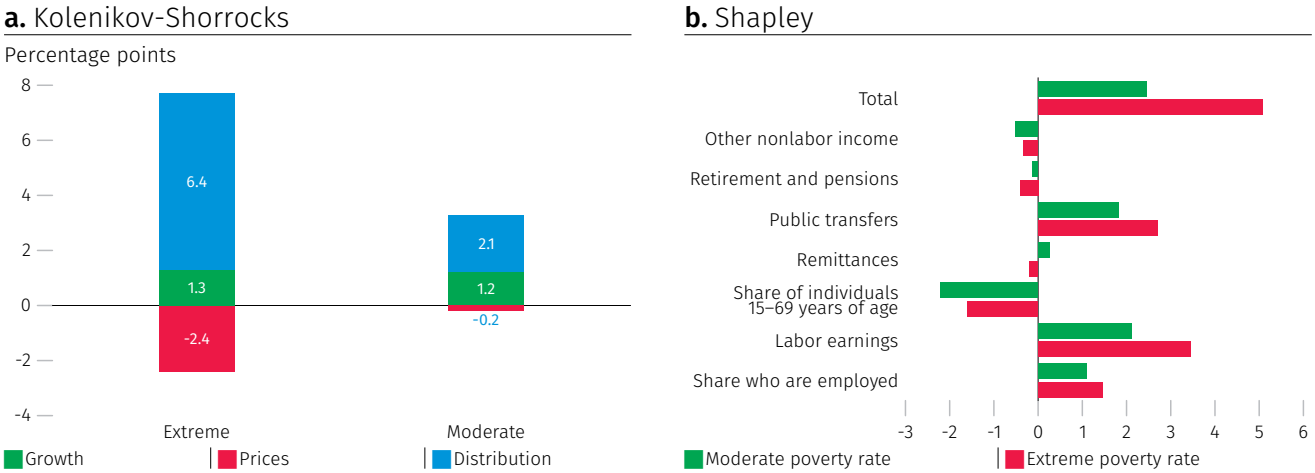
The gender gap in labor force participation between the poor and extremely poor was especially large in rural areas; informality was also higher for these groups. While around 4 out of 10 poor women in urban areas were active in the labor market in 2019, this was true of only 27.6 percent of poor women in rural areas. Additionally, the labor force participation of poor women dropped since 2014 in both urban and rural areas, by 2.4 percentage points in the former and by 1.3 percentage points in the latter. This is worrisome, given the already large gender gaps in labor force participation among the poor (37.7 percentage points in urban areas and 65.7 percentage points in rural areas). The gender gaps in labor force participation were similar in the case of the extreme poor (45.1 percentage points in urban areas and 67.1 percentage points in rural areas). The unemployment rate of the poor and extremely poor populations taken together was higher in urban areas (around 1 out of 10 were unemployed) than in rural areas (close to 3 percent were unemployed). The unemployment rate increased since 2014, but not for the extremely poor in urban areas. Informality was higher in rural areas, where close to the full universe was employed in the informal sector (see table A.1.5).

Forces behind Rising Urban-Rural Gaps

» Forces behind rising rural poverty

In the pre-COVID-19 period, the primary force behind rising rural poverty was the worsening distribution that hurt the poorest.[42] In this period, higher rural poverty (moderate and extreme) was mostly due to a worsening distribution of rural income, but lower economic growth also played a role. Lower inflation only partially offset these negative impacts (figure 2.8, panel a).

Figure 2.8: Decompositions of poverty changes, rural areas, 2014–19



Source: World Bank estimates based on the 2014 and 2019 EPHPM.
Note: The Shapley decomposition was developed by Azevedo, Sanfelice, and Nguyen (2012) based on Barros et al. (2006). Other nonlabor income includes the value of housing services (implicit rent) and capital income. This method takes advantage of the additivity property of the welfare aggregate to construct a counterfactual unconditional distribution by changing one component at a time to calculate their contribution to the observed changes in poverty.

In addition, a breakdown by income sources shows that poverty increases in rural areas in the period 2014–19 were mostly driven by sizable declines in both labor income and public transfers; while demographic factors partially counteracted these losses, remittances and employment played a marginal role in mitigating the negative income shock (figure 2.8, panel b).

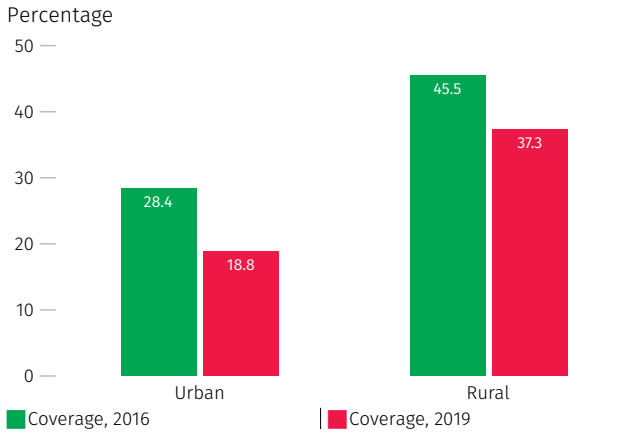
- *Labor income (excluding remittances) in rural areas experienced declines in real terms, mostly due to falling real wages and productivity associated with climate-related shocks, contributing to sizable increases in moderate and extreme rural poverty.* Regarding labor income, as of 2019 real hourly wages had fallen by one-third since 2014 in rural areas. Lower agricultural labor incomes were closely related to climate-driven agricultural shocks, as agricultural production declined due to the extensive flooding of key plantations, which damaged existing crops and delayed cultivation cycles (World Bank 2022a). At the same time, the share of the B20 in rural areas working in the agricultural

42 This is using a Kolenikov-Shorrocks decomposition that enables the role of growth (mean income), prices (changes in the poverty line), and redistribution (changes in the overall distribution of incomes) in poverty reduction to be isolated. The decomposition is essentially a comparison of the poverty rates that would occur in two time periods in the following three scenarios: (1) only growth has occurred (without any changes in prices or the distribution of these incomes); (2) the mean of income and the distribution stay the same, but the poverty line moves; and (iii) the mean and the poverty line stay constant, but the distribution is as in the second period. See Kolenikov and Shorrocks (2003) for details.

sector remained nearly stable between 2015 and 2019 (2015–19 EPHPM)[43]. Bringing these two facts together explains the overall poverty-increasing effect of labor earnings shown in panel b of figure 2.8. This development was accompanied by an increase in the share of B20 in rural areas working in the higher-paying manufacturing sector and banking, finance, and insurance sector (2015–19 EPHPM). The wage increases achieved through these sectoral shifts by parts of the population were evidently insufficient to compensate for the wage losses of the remaining B20 in the agricultural sector.

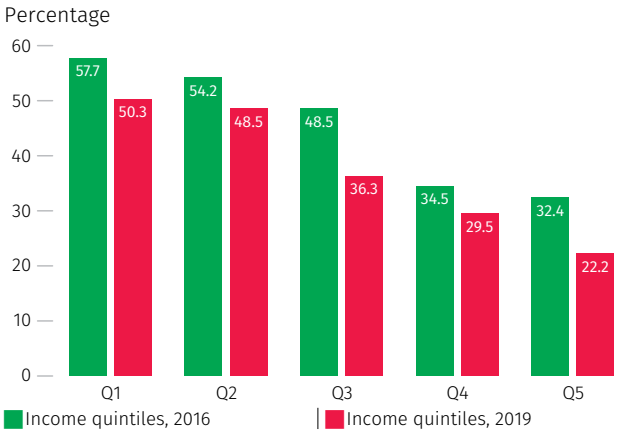
- *The share of the rural population in the bottom quintile benefiting from social protection programs decreased during the period 2016–19, which could explain the increasing effect of public transfers on poverty in rural areas.* Coverage of the B20 in rural areas dropped significantly. In 2016, about 57.7 percent of rural B20 households in Honduras received benefits from social protection programs.[44] By 2019, this coverage had dropped by 7.4 percentage points (figure 2.9). However, because public transfers are not properly captured in the official household survey,[45] a fiscal incidence analysis provides a detailed picture of the specific role of social transfers in poverty reduction by combining household data with administrative data sources (see chapter 3).

Figure 2.9: Coverage rate of all social protection programs for urban and rural populations, 2016 vs. 2019



Source: ASPIRE database, World Bank, Washington, DC, https://www.worldbank.org/en/data/datatopics/aspire.
Note: ASPIRE indicators are not available for 2014 or 2015.

Figure 2.10: Coverage rate of all social protection programs by income quintile in rural areas, 2016 vs. 2019



Source: ASPIRE database, World Bank, Washington, DC, https://www.worldbank.org/en/data/datatopics/aspire.
Note: ASPIRE indicators are not available for 2014 or 2015.

- *If it had not been for the demographic dividend, rural poverty would have increased even more.* A lower dependency ratio was associated with a sizable decline in moderate and extreme urban poverty (3.5 and 2.7 percentage points, respectively); however, demographic changes only partially offset the sizable reductions in labor and nonlabor income.

- *Employment and remittances had minimal impacts on poverty reduction in this period, reflecting minor changes in rural labor market indicators and that most remittances did not go to poor*

43 We refer to the period 2015 to 2019, because the data is not available for 2014 for this specific variable.

44 Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE), https://www.worldbank.org/en/data/datatopics/aspire.

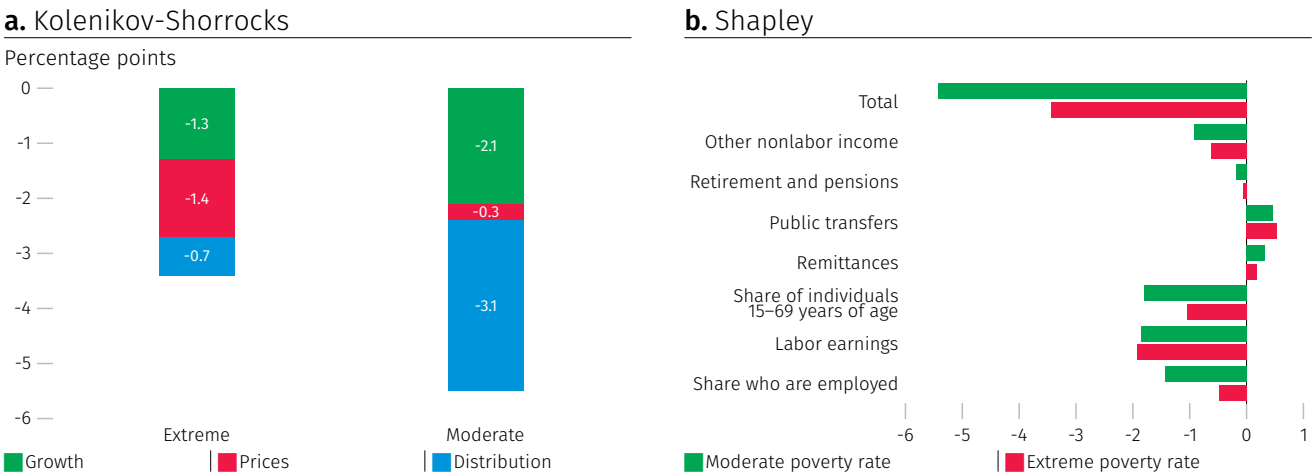
45 "Nonlabor income" in this analysis includes pensions, the value of housing services, and capital income. Public transfers are treated as a separate component. However, the household surveys (EPHPM) do not capture public transfers well, in particular the country's key conditional cash transfer (CCT) program, the Bono Vida Mejor (BVM). Therefore, in most years the BVM is undercounted in household income (with the exception of years when the Base Consolidada is available).

households. The rural unemployment rate remained at around 3.4 percent. When this analysis is broken down by income quintiles, a similar picture emerges (2014–19 EPHPM). The labor force participation rate in these areas, on the other hand, slightly decreased in the period 2014–19, leading to a slight drop in the employment rate. The relative decrease in the rural labor force participation rate was strongest for the poorest income quintile, which explains the poverty-increasing effect of employment shown in panel b of figure 2.8. Rural informality remained at around 94 percent in 2014–19 (Michel and Walker 2020). Remittances remained among the world's highest, yet primarily benefited non-poor households. In addition, remittances were mainly used for consumption instead of productive purposes (World Bank 2022a). The role of pensions was also minimal.

» Forces behind declining urban poverty

In urban areas, the picture was significantly different, with economic growth and lower inequality contributing to poverty reduction. Urban poverty (moderate and extreme) declined because of income growth among urban workers, a more equitable income growth, and lower inflation of goods and services (figure 2.11, panel a). Consequently, there were significant differences in the underlying drivers compared to rural areas.

Figure 2.11: Decompositions of poverty changes in urban areas, 2014–19



Source: World Bank estimates based on the 2014 and 2019 EPHPM.
Note: The Shapley decomposition was developed by Azevedo, Sanfelice, and Nguyen (2012) based on Barros et al. (2006). Other nonlabor income includes the value of housing services (implicit rent) and capital income. This method takes advantage of the additivity property of the welfare aggregate to construct a counterfactual unconditional distribution by changing one component at a time to calculate their contribution to the observed changes in poverty.

Moreover, a distinction by income sources shows that the decline in urban poverty in the pre-COVID period was primarily due to substantial increases in labor income, an effect reinforced by the benefits of the demographic dividend (figure 2.11, panel b).

› ***Labor income increases and the lower dependency rate had substantial downward impacts on poverty.*** Labor earnings increased substantially, particularly among the bottom quintile, contributing to the reduction of urban extreme and moderate poverty by 4.4 and 4.8 percentage points, respectively. These labor earnings were likely based on sectoral shifts of the urban B20. The share of urban B20 working in the agricultural sector decreased from nearly one-third in 2015 to 18.8 percent in 2019

(2015–19 EPHPM). There was also a drop in the share of the urban B20 working in domestic services (2015–19 EPHPM[46]). This means that the poorest urban employed population moved from the two lowest-paying sectors to higher-paying sectors.

- *Employment also contributed to the decreasing poverty in urban areas.* While the labor force participation rate was stable in urban areas, unemployment decreased by 2 percentage points in 2014–19, leading to small improvements in the employment rate. The decrease in the unemployment rate was especially large at both ends of the income distribution, which could explain the poverty-decreasing effect of the employment component (2015–19 EPHPM).

- *As in rural areas, a reduction in public transfers also contributed to increasing poverty in urban areas, but further analysis to unpack this is needed; remittances and pensions played a marginal role too.* Overall social protection coverage of the urban poor dropped by 9.6 percentage points from 2016 to 2019.[47] The role of transfers will be analyzed in more depth in chapter 4. Remittances had a positive but small impact on urban poverty, as most remittances went to non-poor households in urban areas as well. Pensions played a limited role, likely associated with the limited coverage of social and contributory pensions in the country, among the lowest globally and in LAC (benchmarking exercise).

» Forces behind inequality dynamics

Labor earnings, followed by public transfers and employment, were the main contributors to the large increase in inequality in rural areas (figure 2.12). This points towards a widening inequality of labor earnings in rural areas, as shown by a rising Gini of labor income. Sectoral movements in the B20 versus the top 20 percent (T20) in rural areas could explain these results. There was a large drop in the share of those in the T20 employed in the lowest-paying agricultural sector (from 32.0 in 2015 to 25.4 percent in 2019). This was accompanied by an increase in the share of those in the rural T20 working in the higher-paying educational and health sector as well as the retail, wholesale, restaurant, hotel, and repair sectors (2014–19 EPHPM)[48]. Additionally, public transfers might be distributed more unequally in these areas.

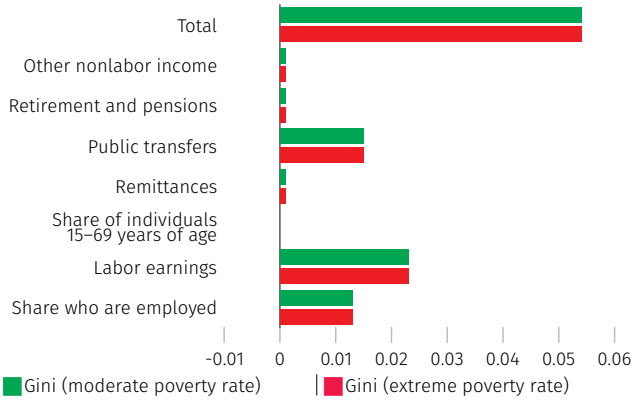
In urban areas, labor earnings played a critical role in the decrease in inequality observed in the pre-COVID period (figure 2.13). In contrast to the situation in rural areas, inequality in urban areas fell slightly. This was mainly driven by labor earnings and is in line with evidence showing that there might be more high-quality jobs in urban Honduras (Michel and Walker 2020).

46 We refer to the period 2015 to 2019, because the data are not available for 2014 for this specific variable.

47 ASPIRE database, World Bank, Washington, DC, https://www.worldbank.org/en/data/datatopics/aspire.

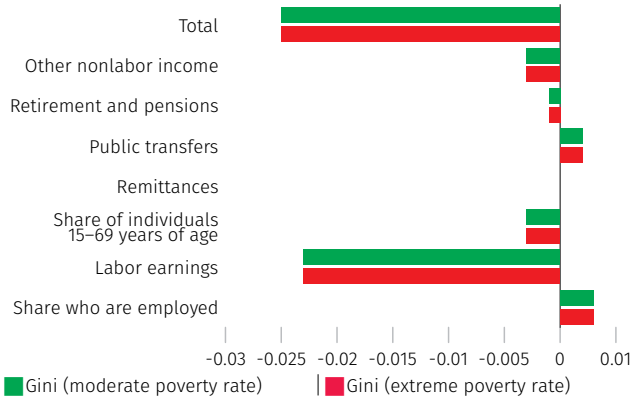
48 We refer to the period 2015 to 2019, because the data are not available for 2014 for this specific variable.

Figure 2.12: Shapley decomposition of income inequality changes in rural areas, 2014–19



Source: World Bank estimates based on Shapley decompositions 2022.
Note: Other nonlabor income includes pensions, the value of housing services (implicit rent), and capital income. This method takes advantage of the additivity property of the welfare aggregate to construct a counterfactual unconditional distribution by changing one component at a time to calculate their contribution to the observed changes in poverty.

Figure 2.13: Shapley decomposition of income inequality changes in urban areas, 2014–19



Source: World Bank estimates based on Shapley decompositions 2022.
Note: Other nonlabor income includes pensions, the value of housing services (implicit rent), and capital income. This method takes advantage of the additivity property of the welfare aggregate to construct a counterfactual unconditional distribution by changing one component at a time to calculate their contribution to the observed changes in poverty.

Determinants of Urban and Rural Poverty

Understanding the different factors associated with rural and urban poverty is fundamental for informing a national poverty alleviation strategy, because while both could have common factors, some differences might emerge.

We run a probit[49] *model to understand the key factors associated with poverty in urban and rural areas.* The following key messages emerge from this analysis (figure 2.14):

- *Access to a high-quality labor market is strongly associated with lower poverty levels in both urban and rural areas.* Probit model estimates suggest that the major determinant of poverty in rural and urban areas is access to employment, with a much stronger impact in rural areas. A marginal change in employment at the mean is associated with a sizable decrease of 47.2 and 20.3 percentage points in rural and urban areas, respectively. The quality of employment also matters, because informality significantly influences poverty, with a stronger effect in rural areas. Not surprisingly, working in the primary sector increases the likelihood of being poor in rural areas.[50]

- *Lack of access to services (internet and sewerage) is strongly associated with poverty, particularly in rural areas.* Not having access to the internet, a sewerage and water system, and electricity are significant drivers of poverty in rural areas. Therefore, increasing coverage in services could further reduce the number of poor, particularly for the rural population.

49 A probit model is a regression model in which the outcome variable is a binary variable. A binary variable is an indicator variable which assumes the value 0 or 1. In this case, it estimates the probability of being poor based on a one-unit change of one of the explanatory variables, holding all other characteristics constant.

50 The interpretation of these results should be taken with caution, because they could suffer from reverse causality or omitted variable bias and therefore cannot be used to draw any causal inferences.

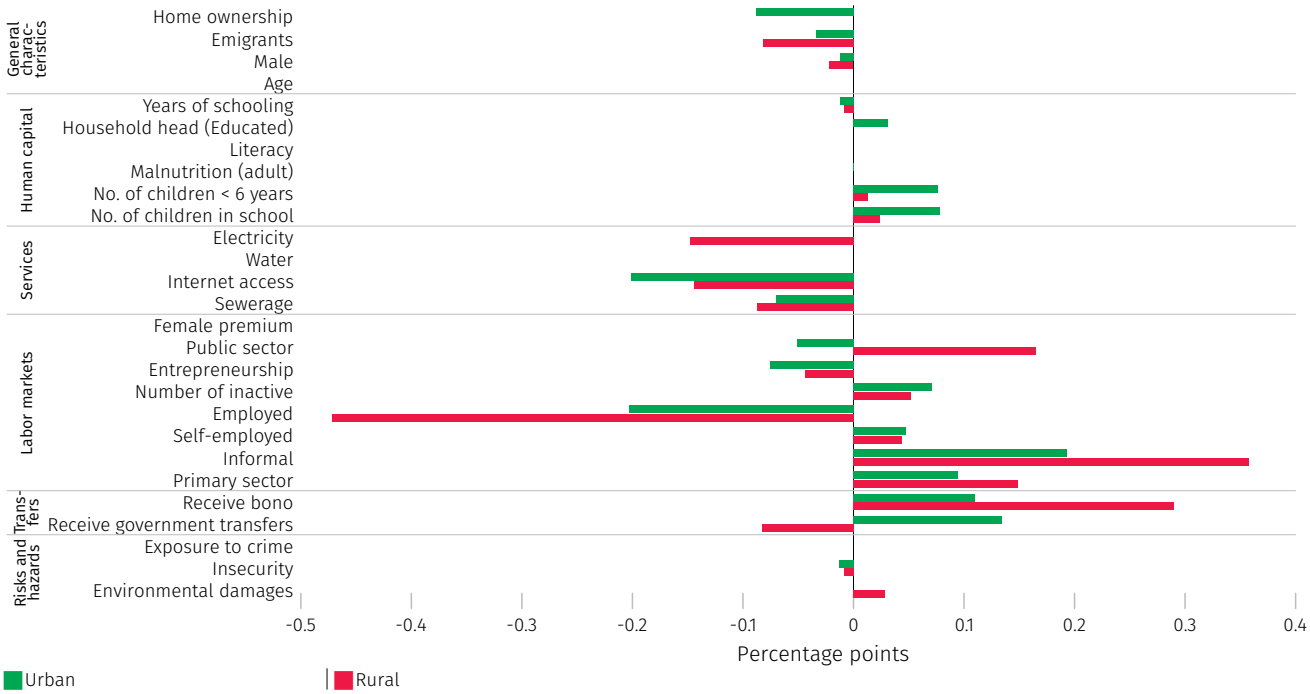
- *Higher exposure to environmental damages is associated with higher poverty in rural areas but not in urban areas.* Environmental damages emerge as positively associated with poverty in these areas. Damages due to natural hazards increase the likelihood of being poor by 2.8 percentage points in rural areas. Therefore, risk-mitigation strategies to address natural hazards could also reduce the poverty rate in rural areas in Honduras.

- *Emigrant households tend to be better off, especially in rural areas, suggesting that emigration out of rural areas might be an effective coping mechanism for those affected by climate-related shocks.* Coming from an emigrant household increases the likelihood of being poor by 8.2 percentage points in rural areas and by 3.4 percentage points in urban population.

- *There is no clear association between crime and poverty.* Exposure to crime is not associated with poverty in either urban or rural areas. Personal exposure to crime[51] does not seem to be associated with poverty in either rural or urban areas.

- *Targeted transfers are positively associated with the probability of being poor, particularly in rural areas, which reflects the effective targeting mechanism of the CCT program.*

Figure 2.14: Determinants of poverty (marginal effects) in urban and rural areas, 2019



Source: World Bank estimates based on Shapley decompositions 2022.
Note: Poverty is measured with the official moderate poverty line. Separate probit models were estimated for urban and rural areas, given that the determinants of poverty might be quite different in these two areas. We control for department fixed effects and cluster standard errors at the department level. Interpretation of the coefficients should be taken with caution, as they could suffer from reverse causality or omitted variable bias. Positive bars are only shown for statistically significant coefficients. Labor market controls, general characteristics, and years of schooling are at the individual level (household head); all other controls are at the household level.

51 The Poverty Assessment treats crime in two ways: (1) it seeks to understand how crime and perception of it may affect the likelihood of being poor in rural and urban areas, and (2) it seeks to assess whether areas with a high incidence of crime correspond with areas with high poverty and other risks.

2.4 Selection of "Deep Dives"

The diagnostic in this chapter points out the critical areas ("deep dives") for unpacking the different subnational stories of rising rural and declining urban poverty; these areas will be further explored in the subsequent chapters.

Further evidence is needed to:

1. *Unpack the urban rural-divide, which requires a deeper understanding of the pockets of poverty and the associated natural and human risks.*

   In addition to understanding where poverty is concentrated at the highest disaggregated level, it is important to understand whether poor municipalities are also characterized by a higher incidence of human hazards (crime and violence), lack critical endowments (human capital), or face additional development challenges (for example, absorbing returning migrants).

   Assessing how investments in human capital, including health and education, could be critical for increasing equity and poverty reduction in the medium term. Honduras's health sector performs worse than the LAC average on many indicators. Additionally, a large part of the country's population suffers from malnutrition. The combination of both creates important barriers to the country's human capital formation (World Bank 2022a). Additionally, the elevated level of malnutrition is concerning. Urban-rural school enrollment gaps are wide. School enrollment of poor and extremely poor children is lower in rural than urban areas. This represents a barrier to sustainable human capital accumulation in rural areas and could affect the potential to decrease the urban-rural poverty gap in the long run. Further analyses are needed to shed light on whether the low secondary enrollment rates among the rural poor is a supply-side problem (meaning a lack of infrastructure or teachers) or a demand-side problem (meaning indirect barriers, such as the need for children ages 12–17 years to engage in the labor market). The benchmarking exercise flagged the educational sector as one of Honduras's worst-performing areas from a global perspective.

2. *Assess the role of fiscal policy in reducing poverty and inequality and the effectiveness of social transfers.*

   Social transfers have played a marginal role in reducing poverty in recent years. More evidence is needed to understand their effectiveness. Also, given that close to the full universe of poor in Honduras works in the informal sector, poverty alleviation strategies should be adapted to these settings. Cash transfers might deter those working in the informal sector from switching to the formal sector and additionally reduce the efficiency of targeting schemes (Galiani, Bloeck, and Weinschelbaum 2018). More evidence should be generated on the interaction between cash-transfer programs and informality, given that cash transfers to the informal population could potentially disincentivize formalization. However, linking the design of cash transfers to formal-sector jobs may also restrict access among the poorest.

3. *Evaluate the ex-ante poverty and distributional impacts of natural hazards and potential adaptation strategies.*

   Climate shocks have played a critical role in explaining declining wages in the agricultural sector, driving poverty in rural areas. Personal exposure to hazards is also correlated with poverty in rural areas.

4. *Tackle key labor market challenges, including the creation of formal and high-productivity jobs, but also low levels of female labor force participation rates, particularly in rural areas.*

   Informality is high in Honduras, especially among the poorest. Evidence from other countries shows that there is no one-size-fits-all solution to tackle informality, but that there are ways to decrease its persistence. Dougherty and Escobar (2019), for example, find that a package of promoting labor skills, encouraging foreign investment, enhancing tax enforcement, and deterring corruption decreased informality in Mexico. Tackling informality requires comprehensive and tailored reform packages (Ohnsorge and Yu 2021). Moreover, the creation of high-productivity jobs is urgently needed to create long-term and sustainable growth in the country (Michel and Walker 2020).

   Quality job creation in rural areas is especially important. The share of the population living in rural areas has increased for the lowest income quintile. Migration dynamics could have affected the sectoral distribution in Honduras. Those unable to move from rural areas could have ended up staying in the primary sector, in which wages declined, leading to higher rural poverty. The increasing share of the poorest quintile living in rural areas could be a sign that they face important barriers to urban labor markets or that they cannot bear the costs of migration. There might be a need for upskilling or retraining, but further analyses are needed to shed light on the underlying drivers. At the same time, the rural population might be trapped in a vicious circle, also induced by climate change and natural disasters. There is a need for more evidence concerning the drivers behind diverging urbanization by income quintiles. In addition, further evidence is needed to shed light on how to increase the productivity of the agricultural sector, given that a large share of the poor is employed in this sector. In addition, the modernization of this sector depends on urgently needed land tenure reforms (World Bank 2022a).

   Given the extremely low levels of female labor force participation rates, introducing mechanisms that target higher participation of women in the labor market is important. Potential interventions are strategies to subsidize childcare, ensure safe environments for getting to work and retraining. Interventions that target harmful gender norms could also be beneficial.

Based on the above reasons, this report focuses on four "deep" dives to understand the patterns and trends of urban and rural poverty reduction in the country. These deep dives include (1) identification of pockets of poverty at the municipal level (chapter 3); (2) examination of the role of transfers and taxes in reducing poverty and inequality in rural and urban areas (chapter 4); (3) further analysis of the impacts of climate-related shocks on urban and rural households in order to reduce vulnerability and build resilience (chapter 5), and (4) a deeper exploration of the labor market dynamics in rural versus urban areas and potential policy reforms (including geographically targeted human capital and formalization reforms) to raise employment, productivity, and wages (chapter 6). Each of the chapters will identify both commonalities and differential policy instruments for reducing poverty in urban and rural areas.

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Chapter 3. Spatial Patterns of Poverty and Risks in Honduras

Key Messages: This chapter presents updated and reliable poverty maps and analyzes the spatial correlation of the moderate poverty headcount ratio as well as natural and human hazards, plus migration and education. This analysis can generate important insights for public policies, which are often rolled out at the subnational level. The main insights are as follows:

- *There is considerable variation in the moderate and extreme poverty headcount ratios at the municipality level.*
- *From a subnational perspective, the association between poverty and crime is weak, indicating that—on average—poverty rates do not tend to be higher in municipalities with higher crime.* Using a conflict debt index as an alternative measure of crime and violence confirms this. On the contrary, there is a negative spatial correlation between intrafamily violence and poverty.
- *Municipalities with a high incidence of poverty tend to lag in human capital, reflecting that the pace of human capital development is inadequate to address the local socioeconomic challenges.* These municipalities might be especially exposed to intergenerational poverty in the long run.
- *When migrants return, they are not usually concentrated in the less-poor municipalities.*
- *The poor population coincides in part with the population most exposed to disasters.* Also, the poorest municipalities tend to have low capacity and infrastructure to deal with natural hazards. Municipalities with high moderate poverty headcount ratios and exposure to natural disasters concentrate at the southwestern border; there is not a full overlap of both populations. In addition, municipalities with high poverty rates are marked by higher exposure to droughts and landslides, but not to earthquakes, typhoons, and flooding. Moreover, municipalities with high poverty rates are less exposed to typhoons and floods, and vice versa.
- *Importantly, there is a large overlap between the poorest municipalities and those municipalities with the lowest capacity to deal with natural and human hazards.* Some municipalities are affected by triple vulnerability (high poverty, high exposure to natural hazards, and low coping capacity).

This spatial analysis can support the design of geographically targeted poverty alleviation programs and sectoral investments. Pro-poor adaptation investments focused on lagging areas and subnational interventions could be beneficial and effective in reducing poverty in Honduras. Policy makers should prioritize those municipalities characterized by multiple vulnerabilities, such as poverty and high exposure to natural or human hazards. Specific recommendations with regard to adaptation policies, subnational investments, and social policies are provided in the last section of the chapter.

Finally, measuring poverty accurately and frequently, both at a national and a subnational level, is critical to understand whether the country is on track to reduce poverty. The National Statistical System (NSS) in Honduras should improve its capacity to produce policy-relevant data of high quality with up-to-date methodologies.

3.1 Introduction

Measuring poverty accurately and frequently at a national and a subnational level is critical to understand whether Honduras is on track to reduce poverty. The Government of Honduras, in close collaboration with the World Bank (WB), updated its official poverty measurement methodology to create a more accurate poverty profile for the country. The new poverty measurement methodology has been applied to the 2011–19 data. Moreover, a more recent National Survey of Household Income and Expenditure (ENIGH) is expected to be in the field throughout 2023 and will be the most up-to-date source of consumption patterns of the Honduran population. With this new survey, official poverty lines are expected to be updated again (see annex 2).

Going beyond the urban-rural divide, the lack of data at lower geographical levels (municipalities) represents an obstacle to properly designing poverty reduction programs and improving public service delivery for the poor and vulnerable in lagging areas, as well as allocating resources from central to municipal governments more equitably. Data from the Permanent Multipurpose Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples, EPHPM) in Honduras is only statistically representative for four areas (Distrito Central, San Pedro Sula, Other Urban, and Rural). For some years, the data are representative at the department level; 2019 is one of those years.[52] In a joint effort between the WB, the Inter-American Development Bank (IADB), and the National Institute of Statistics (Instituto Nacional de Estadística, INE), a poverty map was created, using the 2013 Population Census data and 2014 EPHPM data. More recently, the WB and INE have been working jointly to update the poverty map using the latest poverty measurement methodology and an area-level model as the core small area estimation method.[53] Although the 2014 map does serve as the basis for an understanding of the geographic concentration of poverty, the ranking of municipalities based on poverty incidence may have changed since then, given the current migration trends and the fact that new social programs have emerged and existing programs have evolved in recent years.[54]

Updated and reliable poverty maps are a powerful tool for designing and implementing antipoverty policies and programs, because reliable poverty measures at low geographical levels may assist in targeting expenditures and social benefits. In an environment of limited fiscal resources and competing claims, targeting the locations that are most in need may help reduce errors of inclusion and exclusion. The larger the differences, the greater the impact a program or expenditure considering location as one of its decision components may have on poverty and inequality reduction. This suggests that programs and expenditures that are spatially progressive can have a higher impact on poverty reduction and reducing spatial inequality. Poverty maps have been widely used worldwide to identify and understand the causes of poverty, improve program design and targeting of the poor while minimizing leakage to the non-poor, inform local development policies, guide the allocation of antipoverty investments, and guide resource allocation from central to municipal governments (see box 3.1).

In 2022, the WB team is collaborating with the Honduras INE to update the country's poverty maps using the 2019 data and the latest small-area estimation (SAE) methodologies to adjust for differences between census and household survey years. Given the need for an updated poverty map and the lack of an updated census (as new census data have not been produced since 2013), the team is using area-level models for SAE based on the Fay-Herriot model following Avila-Valdez et al. (2020) to update the poverty map. The methodology combines the latest 2019 EPHPM with the 2013 population census and produces the best linear unbiased predictor under certain assumptions. It is critical to know where the current poorest residents are and what policies can be implemented to get them back on track.

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52 Department-level poverty rates are available for 2019 by accessing the "EPHPM *Base Consolidada*," which consolidates the data from the four EPHPM conducted quarterly throughout 2019 into one database . The previously available *Base Consolidada* is for 2014.

53 The previous maps rely on unit-level models instead, which are more appropriate for estimates using census data and a contemporaneous household survey.

54 The Centro Nacional de Información del Sector Social (CENISS), now Observatorio de Pobreza, also produces municipal poverty maps using information from the Ficha Socioeconómica Única (FSU), which is collected for the Registro Unico de Participantes (RUP). However, the methodology used to produce these maps and to target the current social programs has not been aligned with the most recent poverty methodology.

Box 3.1: Application examples of poverty maps

Poverty maps can be useful tools for decreasing poverty. Poverty maps at the subnational level make it easy to identify the poorest areas in countries. This in turn can help in designing efficient poverty reduction interventions, such as geographic targeting. Elbers et al. (2007) show that geographic targeting strategies result in poverty reduction using data from Cambodia, Ecuador, and Madagascar. Poverty maps can also be combined with other targeting strategies, such as the targeting of female household heads or children. Employing poverty maps can increase the cost efficiency and cost-effectiveness of social protection and poverty reduction programs.

Poverty maps are used in several countries in the LAC region, including Colombia, Guatemala, Honduras, Jamaica, Nicaragua, Peru, El Salvador, and St. Lucia, with the objective of informing those countries' policies. Colombia has used poverty maps to increase the targeting efficiency of social protection programs as well as of private investments in social projects. The maps have also encouraged synergies between private and public agencies to reduce multidimensional poverty. In Nicaragua, poverty maps have informed fund allocations across municipalities along several sectors. Nicaragua's Emergency Social Investment Fund (Fondo de Inversion Social de Emergencia, FISE) uses a poverty map to target the poor. In El Salvador, poverty maps are used as a targeting criterion in the main poverty-targeted program (Comunidades Solidarias) and in the allocation formula for FODEs (Fondo para el Desarrollo Económico y Social de los Municipios de El Salvador), transfers from central government to municipalities. Outside the LAC region, a variety of countries have published poverty maps, including the United States, Croatia, Bulgaria, Egypt, and Nepal. In the United States, the Small Area Income and Poverty Estimates (SAIPE) program of the US Census Bureau produces annual estimates of income and poverty for all US states and an estimate of the poverty rate among school-age children in over 13,000 school districts; these estimates inform the subnational allocation of federal funds. Poverty maps form part of the Third National Development Plan in Uganda. In Zimbabwe, they are used to allocate resources geographically. In Burundi, they have informed the targeting of beneficiaries of a social safety net program.

Source: World Bank 2022.

This chapter presents the spatial distribution of poverty using the recently updated 2019 monetary poverty maps and analyzes spatial correlations of poverty with subnational risks (human and natural hazards). As noted in chapter 2, risks can affect any or all components of a household's capacity to generate income, potentially affecting poverty. Risks—for example, natural hazards, crime, and macroeconomic crises—can have detrimental consequences on the income-generating capacity of households. In this chapter, we look at the role of risks in the asset-based framework from a spatial dimension. The poverty maps use spatial data on nighttime luminosity from satellite images to generate more-granular, detailed correlations of subnational growth and poverty. This innovative approach has been used in other countries where there are little data about economic activity at the municipal level.[55] Additionally, the team analyzes the spatial correlation of poverty with exposure to two different but significant risks: crime and violence and climatic

55 See Henderson et al. (2011) and Mahdi and Haile (2021).

risks (especially natural hazards). The exercise also assesses whether poor municipalities are affected by lower human capital and overlays data on migration flows to correlate locations with high movements of people and poverty risks.

This chapter answers the following questions:

- How was poverty in Honduras distributed spatially (across municipalities) in 2019?
- What was the spatial correlation between poverty and different types of risks (such as natural hazards, crime, and violence)? Were the poor concentrated in high-risk areas?
- Were poor municipalities more exposed to natural hazards and climate risks? Were they more affected by lower coping capacity?
- Were poor municipalities affected by lower human capital accumulation?
- Did migrants return to less-poor municipalities?

The answers to these questions are crucial for identifying and addressing the challenges of lagging regions, improving subnational allocation of public spending, and supporting disaster preparedness and response in order to address the impacts of climate change. Understanding the extent and location of people living in poverty is one step in this process. To leave no one behind, it is necessary to explore the factors that prevent these regions from developing, including different endowments (i.e., human capital) and agroclimatic conditions, high exposure to risks, and suboptimal levels of public spending. This evidence can then generate insights on several dimensions. First, geographical targeting can be used to allocate resources more efficiently for poverty alleviation, by improving the targeting of social programs, by improving the efficiency and equity of public spending at a subnational level, and by informing the prioritization of projects and investments. Second, this information can inform the design of mitigation and adaptation strategies that equitably address the needs of all people living in municipalities with a high incidence of poverty and high exposure to disasters. Poverty is a critical factor in the vulnerability of populations to natural hazards and other risks; it should be considered both in disaster planning and response and when formulating mitigation and adaptation policies to address the future impacts of climate change.

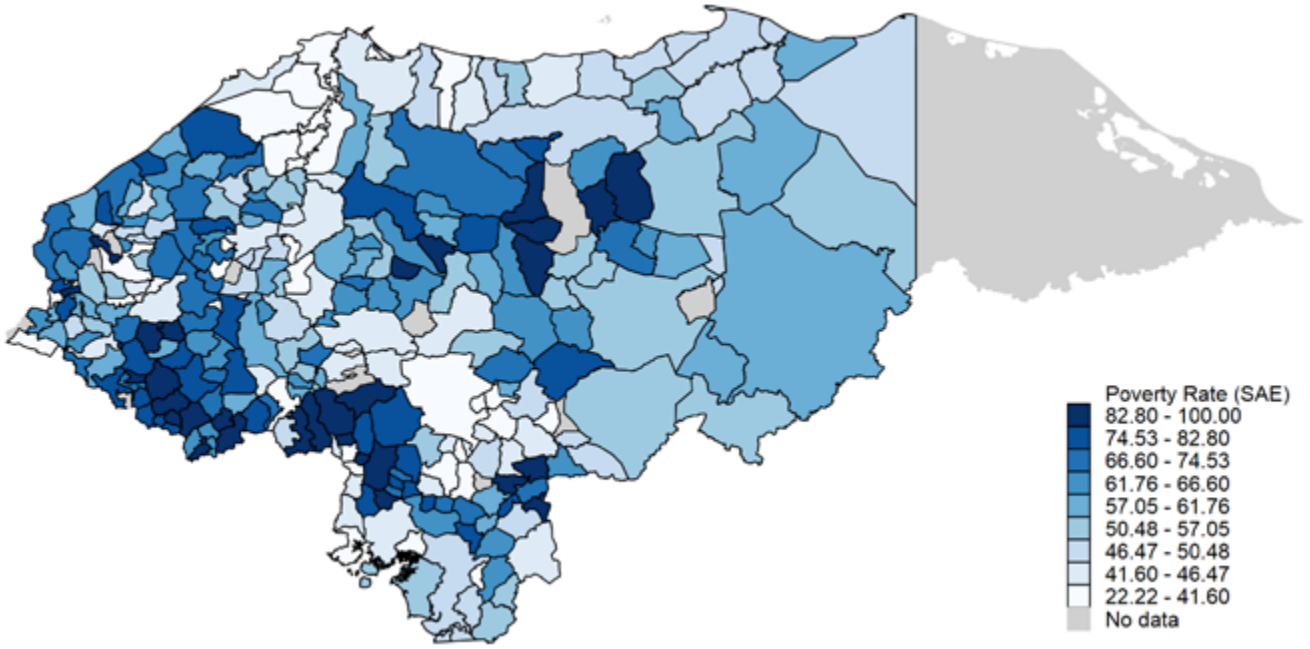
An updated poverty map is critical to the primary antipoverty strategy—Red Solidaria—that the current Honduran government is reinstating, which aims to have an integrated territorial approach in order to ensure the provision of basic services to underserved populations. Red Solidaria encompasses six pillars: education, health, basic infrastructure, social protection, income opportunities, and territorial and local strengthening. The conditional cash transfer (CCT) program, which has a geographic targeting criterion, is the flagship intervention of Red Solidaria. New updated and reliable poverty maps can contribute to the expansion and transition of the CCT program to the urban areas and inform the adaptive strategy of the CCT program so that it can respond to emergencies, including natural hazards.

3.2 Distribution of Poverty at the Subnational Level

The following section presents the 2019 municipality-level poverty estimates using the new methodology to estimate poverty. Our measure of the poverty headcount ratio relies on the poverty lines based on the updated poverty methodology.[56] Additionally, we measure poverty at the population level and not at the household level. Estimating poverty at the municipality level is practical in the case of Honduras, because interventions can be easily applied at this geographic level.

The poorest municipalities were mainly located close to the southwestern border. Figure 3.1 shows small-area poverty estimates at the municipality level. Poverty is defined by the official national measure of poverty at the population level using the updated poverty methodology. The estimator ranges from 22.2 to 100 percent. The municipalities with the highest share of poor people were concentrated in the southern and southwestern regions of the country; a few were located in the center of the country. The municipalities in Lempira and La Paz departments were especially affected by high levels of poverty. The large differences in moderate poverty across the country imply that there may be scope for efficiency savings by using the latest poverty maps to reduce poverty in the country. First, current social programs (such as Bono de Vida Mejor) can benefit from more precise identification of the areas with a high incidence of poverty to improve those programs' targeting, and second, new programs and interventions can be designed using geographic criteria.

Figure 3.1: Small-area poverty estimates of the moderate poverty headcount ratio (national definition, 2019)



Sources: World Bank estimates based on the consolidated 2019 EPHPM and the 2013 Population Census. In addition, nightlight data provided by the National Geophysical Data Center of the US National Oceanic and Atmospheric Administration (NOAA) and data on population estimates provided by INE are leveraged.
Note: The data for the departments of Islas de la Bahía and Gracias a Dios are not reported because the EPHPM does not capture information in those geographic areas.

56 The methodology used in Honduras to measure poverty is currently under revision and the underlying poverty maps might be subject to updates and revisions.

The municipalities with the highest share of extreme poor coincided to a great extent with the municipalities with a high incidence of moderate poverty. Figure A.1.4 confirms that the municipalities with the highest share of extreme poor were in the south and southwest of the country; there was also an agglomeration of such municipalities in the center of Honduras. The average municipal extreme poverty rate was 35.6 percent. The extreme poverty rate at the municipality level ranged from 4.2 to 83.0 percent. Figure A.1.5 shows the total number of extreme poor in each municipality.

3.3 Spatial Correlations of Poverty with Subnational Human and Natural Hazards, Human Capital, and Return Migration

In the following subsection, we use updated poverty maps with other data sources to identify municipalities lagging in multiple dimensions—that is, areas with not only a high incidence of poverty, but also a high incidence of natural and human hazards, low human capital, and lack of coping capacity, among other characteristics. This analysis is critical for informing policies to reduce poverty in Honduras, as it presents targeted interventions needed to address the multiple vulnerabilities in the country. First, we explore whether the poor municipalities were also characterized by a higher incidence of human hazards (crime and violence). Second, we analyze whether poorer municipalities also lacked a critical endowment (human capital) and faced an additional challenge (absorbing returning migrants). Return migration might add to the multiple vulnerabilities already faced, as poorer municipalities with poor labor market outcomes might have found it more difficult to reintegrate return migrants. Third, we focus on correlations between the municipal poverty headcount ratio and municipalities' exposure to natural hazards. We classify natural hazards as the overall risk exposure to natural hazards relying on the Natural Inform Risk Index, and then look at five different types of natural hazards independently from each other (typhoons, earthquakes, floods, landslides, and droughts). Moreover, we also analyze the interaction between the overall Inform Risk Index, which measures municipalities' exposure to both natural and human hazards, and poverty. Lastly, we investigate the interaction between the subnational coping capacity and poverty. We first analyze simple correlations between the variables under consideration and then go deeper in the analysis by estimating spatial regressions. These regressions are useful for accounting for potential spillover effects between different municipalities.

We abstain from analyzing the municipal correlation between local economic development and poverty, as data on GDP per capita are not available at the subnational level in Honduras. While some papers use nightlight density data as a proxy for economic development by revealing the presence of electricity in certain areas (see, for example, Beyer et al. 2018), we use these data as a covariate in the final small-area estimation model used in the poverty maps. Because it is not possible for us to estimate this relation, we abstain from investigating it in depth. Still, it would be recommended to gather data on GDP per capita in Honduras in order to gain a better understanding of local economic development and nighttime light provides an excellent proxy for economic activity. Examining these data would make it possible to answer crucial questions about poverty reduction, such as the role of poverty hotspots (Desai et al. 2020). In this report, poverty hotspots were administrative units that were classified as low income or high poverty in both 2014 and 2019. One could then analyze whether economic growth in poverty hotspots was more significant than in areas that were not hotspots. If economic growth in poverty hotspots was below economic growth in other areas, this may suggest a widening of spatial inequality over time.

» Poverty and violence: Are the poor more exposed to crime and violence?

Analyzing the interaction of crime and violence at the subnational level is especially important. Many of the channels driving crime and violence (see box 3.2 for a detailed overview) were present at the subnational level. While the economic framework developed by Becker (1968) is an individual choice model, the subnational agglomeration of many of the potential drivers affecting individuals' decisions to commit crimes is unmissable. As an example, unemployment and low income are often driven by economic shocks at the subregional level or induced by the subnational economic structure of certain regions. Furthermore, some municipalities might have either a larger stock of police officers or a better working judicial system or both. Others might be characterized by lower corruption levels or more stringent law enforcement. Emigration rates and other forms of conflicts might also vary at the municipality level. Additionally, several scholars have studied the phenomenon of so-called neighborhood poverty (see, for example, Brooks-Gunn et al. 1997). The related stream of the literature shows that neighborhood characteristics are significantly associated with poverty levels and with the intergenerational transmission of poverty. Crime is one of the many neighborhood characteristics identified as a significant factor within this literature; as an example, Manduca and Sampson (2019) provide evidence on black and white children.

Box 3.2: Understanding crime and violence from an economic viewpoint

From an economic viewpoint, people commit a crime when the benefit of committing the crime outweighs the costs (Becker 1968). These gains and losses can be of monetary as well as nonmonetary nature. Examples of nonmonetary benefits are the thrill of danger, the satisfaction of "wants," peer approval, or a sense of accomplishment. Examples of monetary costs are psychic costs, opportunity costs, or expected punishment costs. Criminals might experience fear, anxiety, or guilt. Moreover, they might experience opportunity costs, such as missing out on school or earned income when planning and committing crimes. Lastly, punishment costs refer to costs generated from formal sanctions (such as fees or lost income due to imprisonment) and informal sanctions (such as social stigma), as well as pecuniary costs (such as lawyer fees). Not surprisingly, evidence shows that strong democracies and good governance are strongly associated with lower crime levels (GITOC 2021). Additionally, there is a strong correlation between the degree of criminality in state institutions and the level of overall crime. These factors might contribute to a country's resilience to the effects of crime, law enforcement capacity and ability to counter crime. Other factors related to crime and violence are the level of conflicts and fragility countries experience and displacement (GITOC 2021).

The amounts of benefits and costs of a committed crime depends on individual characteristics (Becker 1968). Individual characteristics and circumstances determine the perceived benefits and costs of committing crimes. For example, gang members might experience larger peer approval for committing crimes than nongang members. To mention another example, opportunity costs related to crimes might be lower for poorer people, as they would be missing out on less income. Additionally, the gains related to crimes might be higher in more unequal societies, as the income stream from committing crimes might be higher. For these reasons, crime and poverty are undoubtedly intertwined.

Continued

Box 3.2 continued

With this framework in mind, it is not surprising that Honduras experiences high levels of crime and violence. According to the recent *SCD Update*, the high level of crime and violence in Honduras is driven by a culture of impunity, corruption, and weak capacity of the police and judicial system (World Bank 2022a). Several high-level cases have revealed the infiltration of organized crime and narcotrafficking in Honduras's public sector. Moreover, the economic situation and age structure of its population add to these factors. For example, nearly every third person ages 15–24 neither was attending school nor was employed in 2019 (World Bank 2022a). This population group might be especially vulnerable to falling victim to crime or converting themselves into perpetrators.

Crime also generates challenges for Honduras's equitable growth path. Not only does crime and violence result in immediate welfare losses for those falling victim to it, but it also generates long-term obstacles to the reduction of poverty and inequality (Anser et al. 2020). First, evidence shows that criminal behavior might be transmitted from parents to children, resulting in an intergenerational cycle of criminal behavior (Hjalmarsson and Lindquist 2013). Second, some studies show that victims of crime and violence are more likely to engage in criminal behavior (World Bank 2008). Third, high levels of crime and violence lead to distortions in access to public services (Soares 2004). One example is education. Omoeva et al. (2018), for example, show that conflicts worsen education attainment and exacerbate inequality. Bertoni et al. (2019) find that conflicts decrease school enrollment. Fourth, crime and violence lead to severe distortions in physical and mental health. Not only do conflicts directly result in deaths and injuries, they also lead to significant health deprivations in displaced populations and survivors (Murray et al. 2002). Moreover, the destruction of health and social services, as well as heightened risks of disease transmission, further distort the health status of affected populations (Murray et al. 2002). Finally, violence and crime have many additional negative effects on factors directly related to poverty, such as the economic activity of enterprises (Couttenier et al. 2002), foreign direct investment (Rafat and Farahani 2019), gender equality (Bhattacharya and Burns 2019), and infrastructure (Nyanga et al. 2019), among others.

Source: World Bank elaboration based on the economic literature.

Additionally, several interventions identified as effective in decreasing crime and violence can best be implemented at the subnational level. According to the *SCD Update* (World Bank 2022a), several strategies to reduce crime and violence have been implemented in Honduras, many of them at the municipality level; however, thorough impact evaluations of the effectiveness of these interventions are missing. One example is the CONVIVIR project by the German Development Bank (KfW). This project, which has been implemented by selected municipalities, involves urban upgrading and soft skill training for vulnerable youth (KfW 2019). The Spotlight Initiative is also present in the country, developing interventions that respond to gender-based violence and attempt to prevent it (UNDP 2022). Many of the Spotlight Initiative's actions take place at the subnational level, such as the strengthening of Municipal Women's Offices or the supporting of women's shelters. Moreover, a study from 2015 found that collective community responses were successful in preventing crime in Honduras (Berg and Carranza 2015). Honduras can additionally draw from similar experiences of other countries in decreasing crime levels. The evidence shows that community-level approaches are especially important in this kind of intervention (World Bank 2008).

We analyze the spatial intersection between poverty rates and crime and violence. Due to the above-mentioned reasons, it is crucial to analyze the interaction of crime and poverty in Honduras at the subnational level. In the following, therefore, we analyze the spatial distribution of homicide rates across municipalities. We then investigate whether higher crime rates also characterized areas with higher poverty rates. We start by looking at the homicide rate. Figure A.1.6 shows a high spatial variation in homicide rates across the country. Municipalities with the highest homicide rates did not concentrate in a certain area, but were dispersed across the entire country. The homicide rate ranged from 4.45 to 374.11 per 100,000 inhabitants. The three municipalities with the highest homicide rates are Saba, Macuelizo, and El Rosario. The spatial variation in the murder rate is in line with reports showing that these crimes are mainly driven by violent gang conflicts (InSight Crime 2016). Conflicts between the two largest gangs, particularly the Mara Salvatrucha (MS-13) and the 18th Street Gang (Barrio 18), might account for a large share of murders in the country, and urban areas are especially affected (Human Rights Watch 2022). The municipalities in the upper third of homicide rates were home to 3.27 million people in Honduras, of which 1.52 million are poor. This means that nearly half of the population most affected by violence were poor.

From a subnational perspective, the association between poverty and crime is weak, indicating that—on average—poverty rates did not tend to be higher in municipalities with higher crime; results from simple linear regressions show that the relationship between poverty rates and homicide rates might be negligible in Honduras. A simple correlation of 2019 homicide rates with the 2019 poverty headcount ratio at the municipality level results in a correlation coefficient of 0.06. This means that both variables are slightly positively related to each other. Municipalities with a higher poverty headcount ratio were, therefore, more marked by higher homicide rates, but the relationship is small and close to 0. Additionally, the R-squared is close to 0. This shows that homicide rates can only explain a negligible share of poverty headcount ratios, which points to the negligible role of homicide rates in explaining poverty (see figure A.1.7).[57]

When looking at the joint distribution of poverty and crime, there is no clear pattern in the relationship between homicide rates and moderate poverty. Figure 3.2 plots the two underlying variables by tercile cutoffs in Honduras's municipalities. This means that we divide the homicide rate and poverty headcount ratio into three groups by their magnitude. The map shows that, while there were a few municipalities marked by either high poverty and high homicide rates or low poverty and low homicide rates, the pattern is dispersed and not straightforward. In other word, consideration of the joint distribution of subnational poverty rates and the share of the poor in subnational areas that were exposed to crime shows that the two populations do not fully overlap. While many municipalities had high exposure to crime, the share of the poor was low in many of these municipalities (municipalities in blue). Only a small number of municipalities were affected by both a high moderate poverty headcount ratio and a high homicide rate (municipalities in dark gray). Some of these municipalities are in the center of Honduras, while others concentrate in the western part of the country. Hence, joint strategies targeting both poverty and crime reduction at the municipality level might not be the right choice in the case of Honduras. Differential interventions at the geographic level might be more appropriate.

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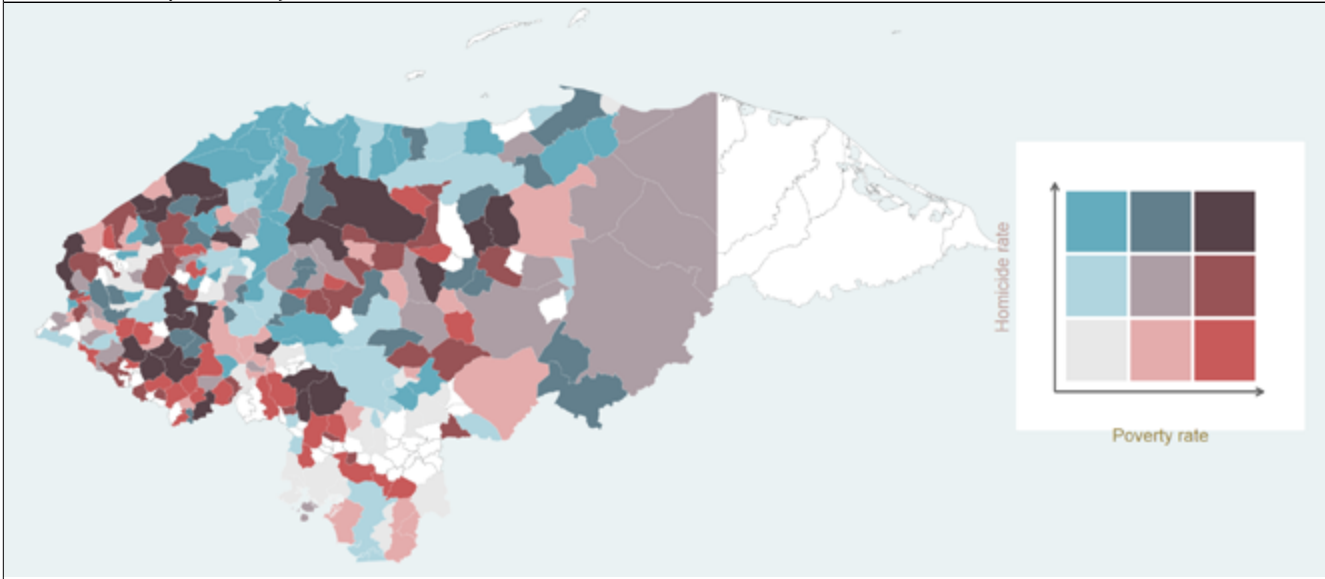
57 Crime might not immediately impact poverty rates at the municipality level. Therefore, we repeat the analysis using the 2018 and 2017 homicide rates. Using the 2018 homicide rate, the correlation coefficient of the 2019 poverty headcount ratio and crime is positive and remains close to 0 (0.04). The relationship reverses when using the 2017 homicide rate (the correlation coefficient is -0.06). The R-squared remains close to 0 (0.00 in the former and 0.0042 in the latter case). In conclusion, the main messages from the 2019 homicide rates hold. The relationship between poverty headcount ratios and homicide rates seems to be negligible at the municipality level. These findings also hold when running spatial regressions (see annex 5.2).

Figure 3.2: Joint distribution of moderate poverty headcount ratio and homicide rates at the municipality level, 2019

Bivariate Map: Poverty and Homicide rates



Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and Police Statistics System of Honduras (SEPOL) 2019. In addition, we leverage nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE.
Note: The map shows a bivariate map of the homicide rate and the national poverty headcount ratio, using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. Forty-nine municipalities report missing data in the data provided by SEPOL.

There could be other explanations besides the joint distribution for the negligible relationship between homicides and poverty at the municipality level. Another reason for the negligible relationship between both variables could be that other factors might be more important in explaining poverty rates at the municipality levels. Some examples are lack of infrastructure, human capital accumulation, labor market dynamics, inequality, or migration patterns. Additionally, crime could be driven by dynamics on the national level. One example is the role of social norms. It is unlikely that social norms, for example, harmful gender norms, have an effect only at the subnational level. Conversely, crime and poverty might be driven by dynamics at a lower subnational level (for example, neighborhoods). This would be in line with previous studies showing that crime is driven by factors at the neighborhood level (see box 3.2). Interventions at this level might then be more appropriate in the case of Honduras, but empirical evaluations are needed to shed further light on this. Lastly, the low R-squared could also imply that the underlying functional form of both variables cannot be approximated by a linear relationship, because the relationship between the two is complex.

Analyzing the relationship between a conflict debt index[58] and poverty headcount rates confirms that the relationship between both variables is close to 0 and negligible. We next deepen our analysis of the historical exposure to homicides and poverty at the subnational level by constructing a conflict debt index. We do so because crime and violence might have a lagged impact on poverty and vice versa. In the

58 World Bank (2020) defines the conflict debt index as the number of violent years in which the homicide rate exceeds 8 homicides per 100,000 inhabitants.

case of Honduras, the homicide rate was larger than this value in all but seven municipalities during the period 2015–19. We therefore define a new cutoff to identify municipalities that were especially exposed to conflict, using the median value from 2015, namely 45 homicides per 100,000 inhabitants. We then assign all municipality-year combinations with a homicide rate higher than 45 per 100,000 inhabitants a value of 1 and the rest of the municipalities a value of 0. We then aggregate the conflict debt index per year over the period 2015–19 and plot the resulting conflict exposure against the poverty rate. The findings confirm the results from the individual years. The correlation coefficient is −0.05 and the R-squared is 0.00. Consequently, the relationship between both variables is close to 0 and negligible.

Intrafamily violence was highest in those municipalities with lower poverty headcount ratios and vice versa. We next look at an alternative way to measure violence that uses intrafamily violence data. The correlation coefficient is negative in this case (−0.20). This means that intrafamily violence is highest in those municipalities with lower poverty headcount ratios and vice versa. Additionally, the R-squared is close to 0 with a reported value of 0.04. Consequently, the results should be taken with caution, as this indicates that little of the variation observed in municipal poverty rates can be explained by intrafamily violence. Therefore, the relationship between this form of violence and moderate poverty headcount ratios might also be negligible. Still, it is surprising that the relationship between intrafamily violence and poverty headcount ratios is negative. This might be due to other factors', such as social norms or female empowerment, playing a more important role in explaining this form of violence than poverty. The spatial regressions confirm our results (see annex 5.2).

To conclude, more evidence is needed regarding crime risk factors as drivers of poverty and effective interventions to tackle national and subnational poverty. The relationship between poverty and crime is far from predictable or consistent and the evidence on the role of crime in overall poverty is unclear. Personal exposure to crime did not seem to be associated with poverty in rural or urban areas (chapter 2). As shown in this chapter, municipalities with a higher poverty headcount ratio were more marked by higher homicide rates, but the relationship is small and close to 0. However, the economic cost of crime and violence is high, estimated to be close to 14 percent of GDP. These sizable macro effects can have indirect impacts on poverty. Additionally, there is a knowledge gap concerning effective interventions to tackle crime, especially with respect to gender-based violence.

» Poverty and education: Are the poor affected by lower human capital accumulation?

Education is a crucial mechanism to reduce poverty, but Honduras has barely improved in educational outcomes during the last decades. The World Bank (2022a) *SCD Update* finds that education can be one of the gateways to reduce poverty and inequality in Honduras. Not only have educational outcomes barely improved during the last few years, the pandemic has added to the challenging educational environment in the country (World Bank 2022a). Disparities in education also negatively impact labor market outcomes in Honduras, as many face great difficulty in acquiring necessary skills and knowledge (this topic is addressed in greater depth in chapter 6).

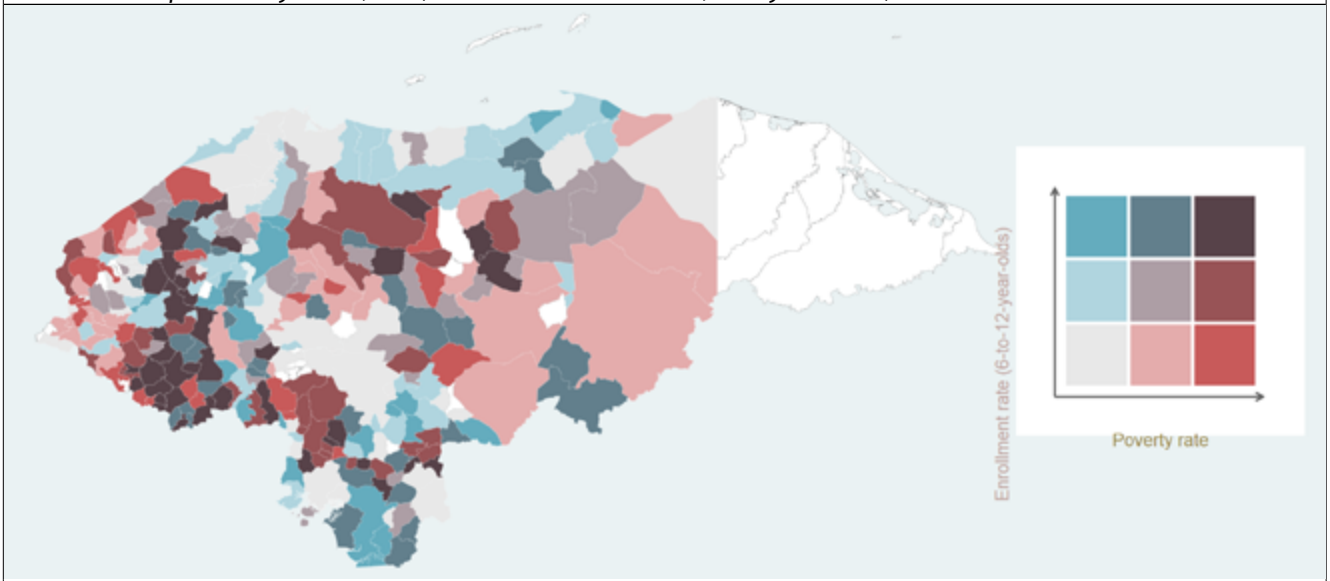
Identifying subnational regions in Honduras that lag in terms of both poverty and educational outcomes is crucial, because investing in education in these areas can help eliminate persistent intergenerational poverty traps. There is a large body of literature that demonstrates the link between increased educational attainment and poverty reduction (see, for example, Rose and Dyer 2008). Duarte et al. (2018), for example,

show that investments in education can begin to break the cycle of intergenerational poverty. In Honduras, Molina-Millán et al. (2019) find that the municipality-level rollout of a CCT program resulted in significant increases in secondary school completion rates and the probability of undertaking university studies.

There was a large variation in the gross enrollment rate (of 6 to 12 year olds) in Honduras. The share of students ages 6 to 12 years enrolled ranged from 67.5 to 162.5 percent at the municipality level (see figure A.1.8).[59] While many of the municipalities performed well on this indicator, several performed poorly (see figure 3.3).

Figure 3.3: Joint distribution of moderate poverty headcount ratio and enrollment rates of students ages 6 to 12 years, 2019

Bivariate Map: Poverty rate (2019) and Enrollment rate (6–12 year olds)



Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and Ministry of Education 2019. In addition, nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE are leveraged.
Note: The map shows the gross enrollment rate for students ages 6 to 12 years and the national poverty headcount ratio, using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. Several other municipalities (in white) are missing in the municipality-level data. Education data is from the subnational Inform Risk Index.

Municipalities with a high incidence of poverty tended to lag behind in human capital, reflecting that the pace of human capital development was inadequate to address the local socioeconomic challenges. The moderate poverty headcount ratio was positively associated with the gross enrollment rate, which might indicate that in poorer municipalities there were more repeaters or more overage and underage pupils. The correlation coefficient of both variables is 0.2. Still, the R-squared is close to 0, assuming a value of 0.040. Therefore, only a small portion of the variation observed in moderate poverty headcount ratios at the municipality level can be explained by the variation in graduation rates. When plotting both variables against each other, the data are dispersed (see figure A.1.9).

59 These are gross rates.

Several municipalities in Honduras suffered from high moderate poverty headcount ratios and relatively low gross enrollment rates. When plotting the joint geographic distribution of both variables in figure 3.3, several of the municipalities reported low moderate poverty headcount ratios at the municipality level and overly high gross enrollment rates (municipalities in blue). Moreover, several municipalities suffered from both high moderate poverty headcount ratios and low gross enrollment rates (municipalities in red). These municipalities might be subject to persistent intergenerational poverty patterns and especially low human capital accumulation, in both the short and long run.

» Poverty and return migration: Do migrants tend to return to less-poor regions?

As mentioned before, Honduras is a country with high emigration rates, mostly driven by a lack of economic opportunities, natural hazards, and violence; many of those who try to leave Honduras are forced or decide voluntarily to return. Between 2013 and 2020, approximately 1.32 million migrants were returned to the Northern Triangle (Honduras, Guatemala, and El Salvador). About half of them were returned from the United States. In 2019, 109,185 migrants returned to Honduras (Migration Data Portal 2022). These migrants might have returned to what they tried to leave behind: food insecurity, other forms of vulnerability, and violence.

Studying the geographic distribution of these return migrants can help to understand whether they mainly returned to poverty and whether they added to the multiple vulnerabilities of the poorest regions. Return migrants can generate costs and benefits for receiving societies (Arowolo 2000). If they return after successfully completing temporary employment abroad, acquiring additional human capital, or when retiring after having worked abroad, they can provide income and benefits to host communities. If they return after a failed intention to integrate into a foreign labor market or society, they can generate costs for the receiving communities. Additionally, if they fled from violence or food insecurity, they might fall back into these vulnerabilities after returning.

Return migrants often face problems reintegrating into local labor markets and societies. Studies show that returnees face high levels of dependency, weak governance, and a lack of reintegration policies (Mensah 2016). Additionally, they might face problems in finding a job or need to retrain as they return to a sluggish economy (Battistella 2018). This is particularly the case if they have been subject to down-skilling when being abroad or might have been prevented from acquiring innovative skills due to discriminatory structures in host countries. Children of emigrants face additional reintegration problems, as they might experience the return as a migration experience (Battistella 2018).

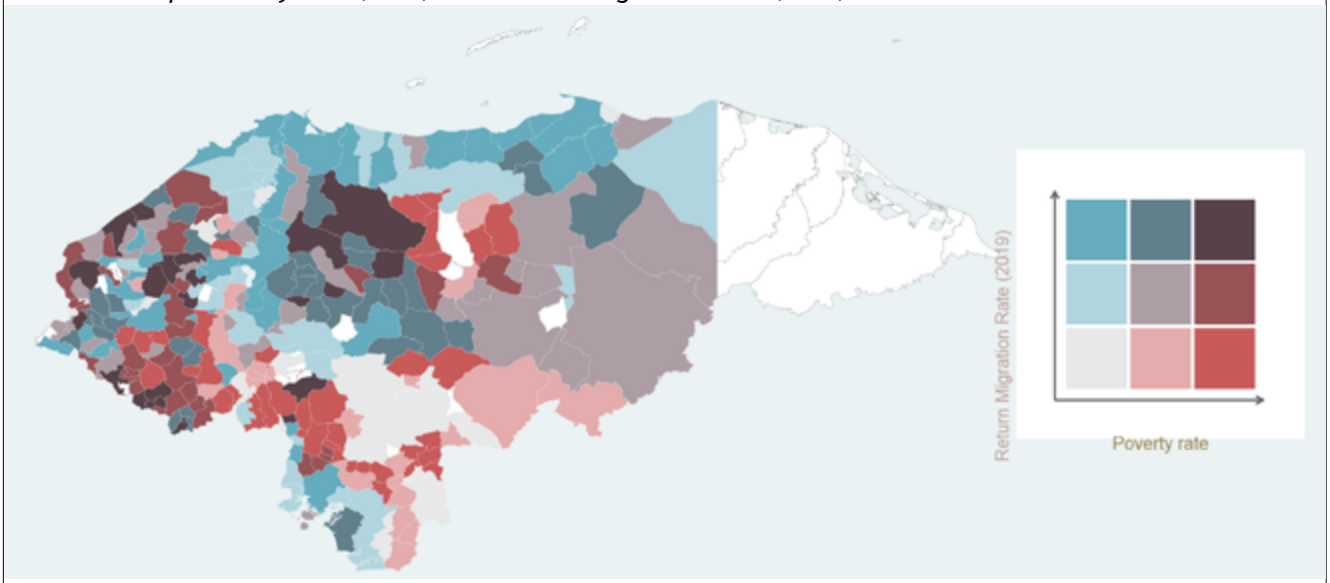
When migrants return, they did not tend to concentrate in the less poor municipalities. There is no clear relationship between the moderate poverty headcount ratio and the return migration rate at the municipality level. As mentioned in chapter 2, migrants are not overwhelmingly drawn from the poorest households, but they tend to come from the poorest municipalities (World Bank 2022b). However, this analysis shows that returnees did not tend to concentrate in the poorest municipalities. Figure A.1.10 shows a significant variation in the return migration rate by municipalities. Central Honduras and some municipalities in the north of the country reported the highest return migration rates. While figure A.1.11 shows a negative correlation, this is mainly driven by one outlier with an especially high return migration rate. Additionally, the R-squared is close to 0 (0.00). This implies that poverty and return migration are not

systematically related and that other factors might play a larger role in the geographical distribution of returned migrants.

Looking at the joint distribution in figure 3.4, there is not a strong spatial overlap between the poorest municipalities and those municipalities with the highest return migration rate. While there are several municipalities with high return migration rates as well as poverty, their number is limited (municipalities in dark color). Most municipalities are marked by low return migration rates and high poverty (municipalities in red) or by high return migration rates and low poverty rates (municipalities in blue). This means that return migrants did not concentrate in the poorest municipalities. To further study the underlying drivers of return migrants, a detailed examination of their characteristics is needed.

Figure 3.4: Joint distribution of return migration rate and moderate poverty headcount ratio at the municipality level, 2019

Bivariate Map: Poverty rate (2019) and Return Migration rate (2019)



Sources: World Bank estimates based on the 2019 EPHPM, the 2013 Population Census, and Sistema Integral de Atención del Migrante Retornado (SIAMIR) 2022. In addition, nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE are leveraged.
Note: The map shows return migration rates and the national poverty headcount ratio from 2019, using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. Several other municipalities (in white) are missing in the municipality-level data.

A knowledge gap concerning the impact of migration on poverty reduction remains, with some particular areas worth exploring in further studies. Given Honduras's significant emigration rate and remittances flowing to the country, it is worth investigating how to incentivize the productive usage of remittances, especially among poorer households. Instead of being used for mere consumption purposes, remittances could generate long-run benefits when invested into capital, such as financial services, fintech, rural saving funds, or climate risk management (World Bank 2022a). These investments could foster productivity growth (World Bank 2022a). A better understanding of migration intentions as well as close profiling of those emigrating could generate important insights into the potential benefits and costs behind the significant emigration flows from Honduras.

» Poverty and climate: Are the poor more exposed to natural hazards and climate risks?

In most countries, the poor tend to be more affected by hazards induced by climate change than the non-poor (OECD 2022). This is mainly due to the geographic variation of climate change, but also due to a higher economic dependency on climate-sensitive sectors, such as agriculture and fishery. Turning to countries that on the whole are poorer, these might have a lower human, institutional, and financial capacity to respond to the negative effects of climate change. Their climate change resilience is therefore lower. Moreover, climate change might exacerbate the multiple risks and challenges faced by the poorest throughout the world. This is due to the negative effects of climate change on ecosystem goods and services, water, agriculture and food security, health, displacement and conflict, and the economy (OECD 2022). These negative impacts, in turn, will keep people in poverty (Hallegatte et al. 2018). Global estimates show that between 68 and 132 million people (depending on different scenarios) could be pushed into poverty by 2030 through various channels of climate change impact (World Bank 2020).

It is critical to know which municipalities in Honduras are highly vulnerable to climatic risks to better target interventions geographically; in particular, it is crucial to analyze the interaction between poverty and climate change at the subnational level and identify areas with high risks of both poverty and natural hazards. To name some examples, recent evidence for Honduras points toward a higher exposure to climate change on the part of rural populations, due to their high dependency on the agricultural sector and few alternative income sources (GIZ 2021). To understand this mechanism better, one can analyze whether rural municipalities are in fact marked by both higher poverty rates and higher exposure to climate change. Additionally, low levels of technology and innovation might prevent the adoption of advanced methods of mitigating the negative effects of climate change (ND-Gain 2022). The degree of innovation of a particular area might affect both poverty and exposure to natural hazards. For example, it could be possible that certain municipalities with higher human capital accumulation develop and implement more-innovative approaches and agriculture technologies that are better able to withstand extreme weather events. To give another example, municipalities with high corruption levels might invest less in resilience and adaptive strategies for dealing with climate change and might also be more affected by poverty.

There is evidence that some parts of the country are more exposed to natural hazards than others. The latest topographic maps are from the 1990s or early 2000s, and to the best of our knowledge, updated topographic maps on vulnerability to climate change and natural hazards are not available. The latest available map on the country's risk of soil losses and floods, based on soil characteristics, makes clear that the western portion of the country is especially vulnerable to soil losses. In contrast, the eastern portion is barely exposed to this environmental risk factor (Cidbimena 2022). Western Honduras is also more exposed to potential movements of hillsides (IHCIT 2012), though exposure varies widely by department. For example, while nearly one-fourth of the area of La Paz is highly exposed to this natural hazard, less than one percent of the area of Gracias a Dios is. The eastern portion of the country does have significant exposure to hurricanes, while western Honduras has almost none (IHCIT 2012). Additionally, more than one-tenth of the country is at risk of flooding, with the most exposed areas being the coastal and river regions. The relative area at risk of flooding varies widely across departments. While more than half of the area of Gracias a Dios is at risk of flooding, none of Isla de la Bahía is. The country's exposure to droughts also varies largely at the subnational level, as does its exposure to earthquakes, tropical storms, and forest fires (IHCIT 2012). This evidence shows that it is crucial to analyze the interaction between different types of natural hazards and poverty at the subnational level.

Honduras is marked by high-risk exposure and ranks 34th on the 2022 national Inform Risk Index (INFORM 2022).[60] The country scores 6.5 out of 10 on the Natural Risk Index. It has one of the highest exposures to earthquakes globally, with a risk index of 9.4 out of 10. The country's vulnerability to tsunamis is also high, with a risk index of 7 out of 10. Therefore, the high-risk exposure is mainly driven by its exposure to natural hazards and not to human risks (INFORM 2022). Figure A.1.12 plots the subnational 2018[61] Inform Risk Index by municipality. The graph shows considerable variation with respect to municipalities' exposure to overall risks at the subnational level. Several municipalities with the highest Inform Risk Index are located in the southwest of the country, while the municipalities located in the center of Honduras are less exposed.

Analysis of the relationship between the moderate poverty headcount ratios and the subnational Inform Risk Index shows there is a positive association. The correlation coefficient of the 2019 moderate poverty headcount ratio and the 2018 subnational Inform Risk Index is 0.36. Municipalities with high poverty headcount ratios are more exposed to natural and human risks and vice versa. The R-squared is 0.13, so about 13 percent of the total variation in municipal poverty rates can be explained by the subnational Inform Risk Index in a linear model. Figure A.1.13 shows the related scatter plot. The figure confirms that there is a positive relationship between both variables.

There is a clear spatial pattern in the bivariate relationship between the 2019 moderate poverty headcount ratio and the 2018 subnational Inform Risk Index at the municipality level. Figure 3.5 below plots the two underlying variables by tercile cutoffs in the different municipalities. There is a clear spatial concentration of municipalities with high poverty rates and high exposure to risks in the southwest of the country. Several of the municipalities with high moderate poverty headcount ratios have high exposure to risks (see the municipalities in dark gray). These municipalities are mainly in western Honduras, with some in central Honduras. Additionally, many municipalities are marked by low moderate poverty rates and low exposure to risks (municipalities in light gray). This stresses that the country might need targeted approaches that tackle both poverty and risk exposure at the subnational level. Geographic targeting approaches might be well suited to reducing both phenomena in the country. There is no full overlap between the poor and the high-risk populations, as many of the municipalities with high-risk exposure are in the bottom third of the distribution of subnational moderate poverty headcount ratios (municipalities in blue). Similarly, many municipalities with high-risk exposure report lower subnational moderate poverty headcount ratios (municipalities in red). Therefore, geographic targeting could increase both the cost-effectiveness and cost-efficiency of interventions.

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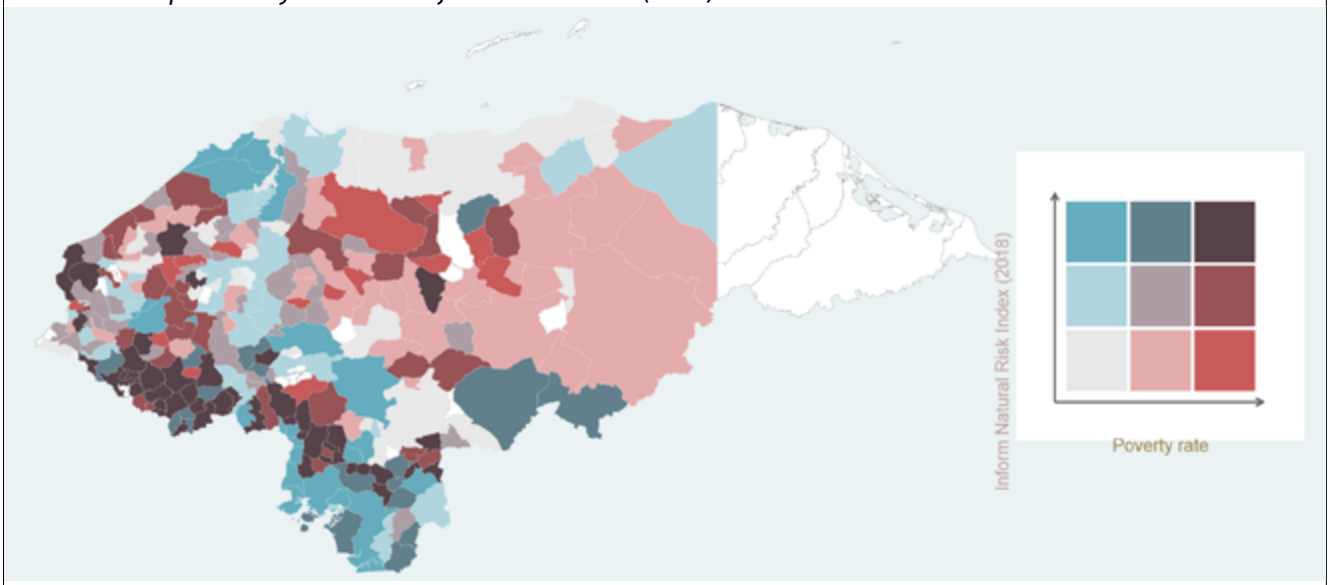
60 The INFORM Risk Index is a composite indicator that emerged in 2012, from a global initiative (INFORM) led by The Joint Research Center of the European Commission, that involved the United Nations, donors, nongovernmental organizations, and research centers. The objective was to establish a homogeneous system for the analysis and identification of countries and territories at risk of suffering a humanitarian crisis and disasters that exceed national response capacities. The INFORM Risk Index has three dimensions of risk: hazard and exposure (natural and human), vulnerability (socioeconomic and vulnerable groups), and lack of coping capacity (institutional and infrastructure). It is available at a subnational (municipal) level for Honduras. Natural hazards include earthquakes, floods, tsunamis, tropical cyclones, droughts and epidemics. Human hazards include current conflict intensity and projected conflict risk. Socioeconomic vulnerability includes development and deprivation, inequality, and aid dependency. Vulnerable groups include uprooted people and other vulnerable groups. Institutional vulnerability includes disaster risk management and governance, and infrastructure includes communication, physical infrastructure, and access the health system. While the national INFORM Risk Index is available for 2022, this is not the case for the subnational index. Consequently, we rely on the latest available subnational INFORM Risk Index, which is from 2018.

61 When this publication was written, the latest INFORM INDEX was for 2018, but more recently, the 2021 INDEX has become available. We have gone with the 2018 INFORM INDEX in this analysis for several reasons. First, it is the closest available year to the subnational-level poverty estimates (2019). Second, we expect the current level of poverty to be determined by the country's past risks. Therefore, we use the INFORM index as lagged covariates in some of the models to explain the current incidence of poverty.

Figure 3.5: Joint distribution of moderate poverty headcount ratios, 2019, and subnational Inform Risk Index, 2018

Bivariate Map: Poverty rate and Inform Risk Index (2018)



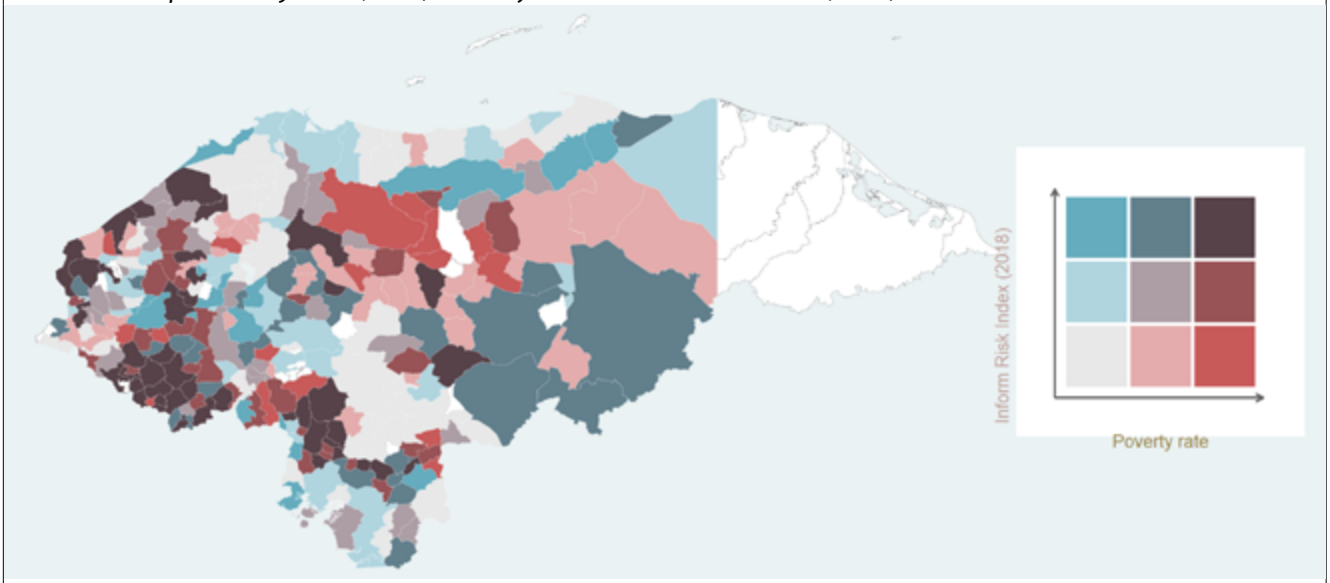
Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and the Subnational Inform Risk Index 2018. In addition, nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE are leveraged.
Note: The map shows risk exposure and the national poverty headcount ratio using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. They are also missing from the municipality-level INFORM data.

The positive relationship between risk factors and poverty headcount ratios is lower when the Inform Risk Index is restricted to natural hazards. The Inform Risk Index includes not only information about natural hazards but also about human hazards. As we are mainly interested in analyzing the subnational correlations of poverty rates and natural hazards, the following analysis is restricted to the Inform Natural Risk Index from 2018. The resulting correlation coefficient is 0.24 and lower when compared to the overall subnational Inform Risk Index. The R-squared is also closer to 0 in this case (0.06). Therefore, a lower share of the variation in 2019 municipal poverty headcount ratios can be explained by the variation in the 2018 subnational Inform Natural Risk Index. Figure A.1.14 plots the exposure to natural risks at the municipality level and Figure A.1.15 shows the underlying scatter plot. The municipalities with the highest exposure to natural hazards are in the country's southwest, while the central regions of Honduras are less exposed.

Municipalities with high moderate poverty headcount ratios and exposure to natural hazards concentrated at the southwestern border; there was not a full overlap of both populations. Figure 3.6 makes clear that as of 2019 there was a significant overlapping of municipalities with high moderate poverty rates and high natural risk exposure at the southwestern border (municipalities in dark gray). Still, the two populations (the poor and the population highly exposed to natural hazards) did not fully overlap. Many of the municipalities with high risk exposure reported relatively low shares of subnational moderate poverty rates (municipalities in blue). Similarly, many of the poorest municipalities were relatively less exposed to natural hazards (municipalities in red). This is in line with the findings from the joint distribution of poor and overall risk exposure and makes the case for a granular perspective on poverty reduction and natural hazard risk management.

Figure 3.6: Joint distribution of poverty headcount ratios, 2019, and subnational Inform Natural Risk Index, 2018

Bivariate Map: Poverty rate (2019) and Inform Natural Risk Index (2018)



Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and the Subnational Inform Risk Index 2018. In addition, nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE are leveraged.
Note: The map shows risk exposure to natural hazards and the national poverty headcount ratio, using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. They are also missing from the municipality-level INFORM data.

Municipalities with high poverty rates were marked by higher exposure to droughts and landslides; this did not seem to be the case with earthquakes. When analyzing the interaction of poverty and each of the natural hazards included in the Inform Risk Index separately, the poverty rate had the highest correlation with droughts,[62] followed by landslides[63] (figures 3.7 and 3.8). This means that municipalities with a higher poverty headcount ratio are also more exposed to droughts and landslides and vice versa. One explanation could be that droughts and landslides directly create losses for those working in the primary sector. A large share of the poor work in the agricultural sector, which is generally badly affected by these events. Nearly half of the poor in Honduras worked in the primary sector in 2019, compared to 20.3 percent of the non-poor (consolidated 2019 EPHPM). Surprisingly, the correlation between the poverty headcount ratio and earthquakes is close to zero, being 0.0128. This might be because earthquakes are limited to the western part of Honduras (figure 3.9). There is little overall variation across municipalities with respect to their exposure to earthquakes.

Municipalities with high poverty rates were less exposed to typhoons and floods, and vice versa. By comparison, poverty rates and typhoons, as well as floods, are negatively correlated at the municipality level. This indicates that municipalities with higher poverty headcount ratios were less exposed to floods and typhoons and vice versa. Still, figure 3.10 shows that these results should be taken with caution in the case of typhoons. Only two parts of the country are at risk of this specific natural hazard, namely the

62 The correlation coefficient is 0.35.

63 The correlation coefficient is 0.32.

southern edges and the northeastern corner. Floods, on the other hand, mostly affected the northern coastal areas as well as municipalities in the south of Honduras (figure 3.11). These were municipalities with lower poverty headcount ratios.

Figure 3.7: Exposure to droughts, 2018

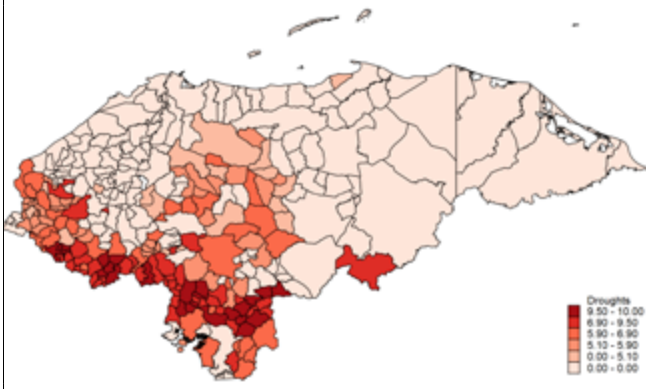


Figure 3.8: Exposure to landslides, 2018

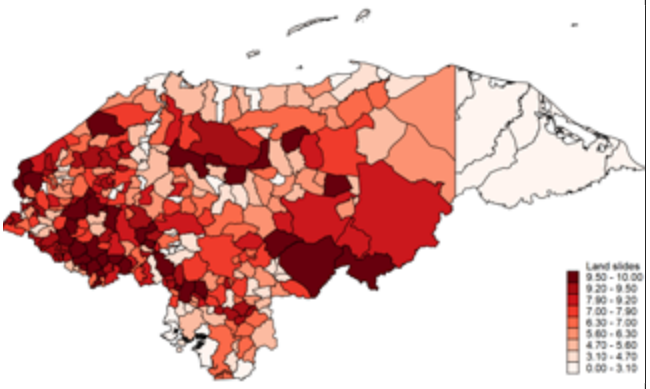


Figure 3.9: Exposure to earthquakes, 2018

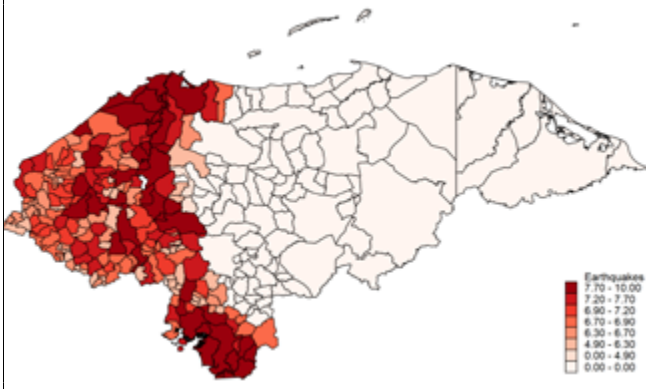


Figure 3.10: Exposure to typhoons, 2018

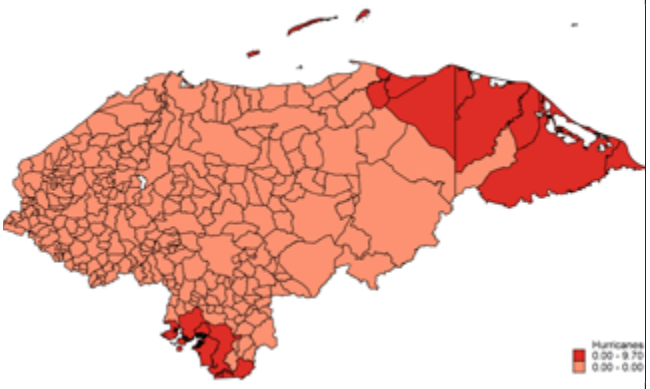
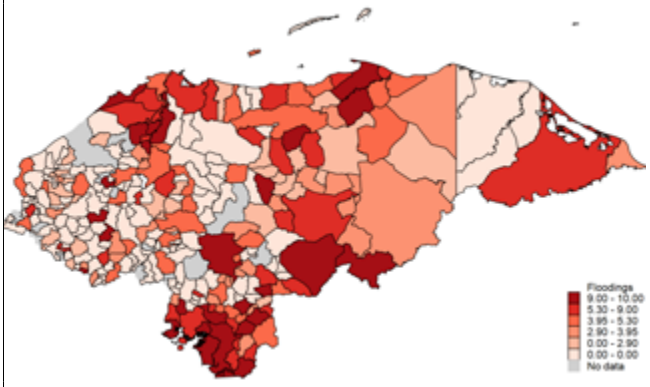


Figure 3.11: Exposure to floods, 2018



Source: World Bank elaboration based on Inform Natural Risk Index 2018.
Note: Data are missing only for exposure to floods.

Results from spatial autoregressive regression models confirm our previous findings. First, we start by only including a spatial lag of the main dependent variable under consideration. To explain this further, the regression model analyzing the impact of droughts on poverty considers not only the exposure to droughts in the municipality itself, but also the poverty rate in neighboring municipalities. The underlying rationale

is that there might be spillover effects between the different municipalities (see annex 5.2). The results in table A.5.2.1 show that the spatial regressions confirm our previous results. The overall effects go in the same direction. In the case of earthquakes, floods, and droughts, the indirect effects (meaning the spillover effect from neighboring municipalities) go in the same direction and therefore increase the direct effects (meaning the effect in the municipality under consideration). The same is true of our education and return migration indicators. In contrast, in all other cases these effects go in the opposite direction and decrease the magnitude of the direct effects. When allowing for spatial lags in the explanatory variable (the poverty rate is influenced by the related risk exposure in the municipality under consideration as well as by that of neighboring municipalities), the empirical findings are similar (see table A.5.2.2).

» Poverty and resilience: Are the poor affected by lower coping capacity?

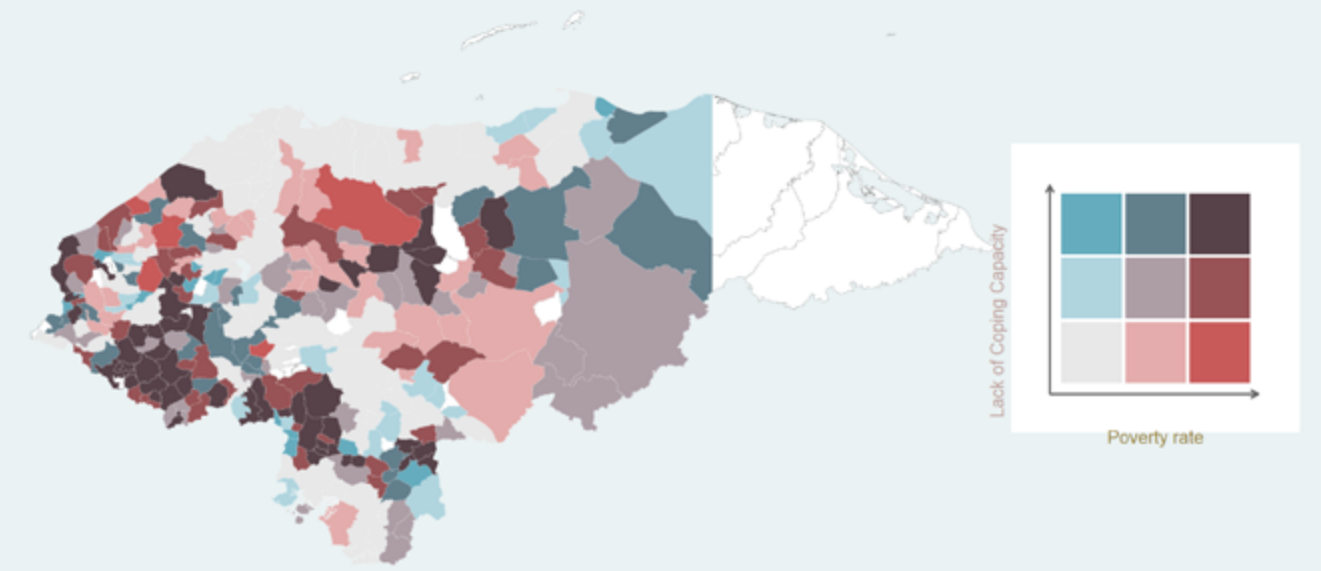
Resilience plays a crucial role in the interaction between poverty, natural hazards, and climate change. A study by the World Bank (2021) finds that investing in resilience has important economic benefits, with each dollar invested in resilience infrastructure resulting in a benefit of four dollars. Investing in coping capacity in Honduras could reduce some of the climate-induced income losses mentioned earlier in this chapter. The poor are especially exposed to natural hazards due to their poor coping capacity. One example is poor rural households, who have little savings to absorb crop or livestock losses after a natural hazard (UNDDR 2022). Institutions can foster the poor's coping capacity through different instruments. One possibility is the introduction of adaptive social safety nets. Investments in infrastructure or urban upgrading are further examples. Consequently, it is crucial to identify those areas affected by both poverty and low coping capacity.

Importantly, there is a large overlap between the poorest municipalities and those municipalities with the lowest capacity to deal with natural and human hazards. The Inform Index also measures a country's coping capacity (INFORM 2022). This subindicator gives insights into the resilience of a nation with regard to disasters. It consists of two components: an institutional and an infrastructure one. While the former measures the existence of disaster risk reduction programs, the latter measures a country's capacity for emergency response and recovery. Overall, Honduras ranks 61st on the lack of coping capacity indicator with 5.3 points, a value close to the global mean (INFORM 2022). Figure A.1.16 shows significant spatial variation in the coping capacity at the municipality level. Moreover, there is a strong and positive correlation between moderate poverty headcount ratios and the lack of coping capacity at the municipality level (see figure A.1.17). The R-squared is 0.35, which indicates that slightly more than one-third of the variation in moderate poverty can be explained by the variation in coping capacity. The correlation coefficient is 0.59—larger than the rest of the correlation coefficients analyzed in this report. Therefore, coping capacity (or the lack thereof) might play a crucial role in the persistence of poverty at the municipality level.

The joint distribution in figure 3.12 makes clear that there is a strong spatial clustering in poverty and a lack of coping capacity at the municipality level. The spatial clustering of those municipalities affected by high poverty and low coping capacity (municipalities in dark gray) is in line with the clustering observed in figures 3.5. and 3.6. Consequently, these municipalities are affected by a triple vulnerability: a high exposure to poverty, natural hazards, and low resilience, and as such should be prioritized for targeting strategies. Additionally, it is crucial to invest in their coping capacity. Not doing so could push the poor further into poverty in the medium and long runs.

Figure 3.12: Joint distribution of moderate poverty headcount ratio, 2019, and lack of coping capacity, 2018

Bivariate Map: Poverty rate (2019) and lack of coping capacity



Sources: World Bank elaboration based on the 2019 EPHPM, the 2013 Population Census, and Subnational Inform Risk Index 2018. In addition, nightlight data provided by the National Geophysical Data Center of NOAA and data on population estimates provided by INE were leveraged.
Note: The map shows the lack of coping capacity and the national poverty headcount ratio using the updated poverty measurement methodology. Both variables are divided into terciles. Darker areas are municipalities with high values in both variables, while lighter areas indicate municipalities with low values in both variables. The data for the departments of Islas de la Bahía and Gracias a Dios (in white) are not reported, because the EPHPM does not capture information in those geographic areas. They are also missing from the municipality-level INFORM data.

3.4 Policy Recommendations

The more-recent poverty maps for Honduras show that there is a large spatial variation in poverty rates at the municipal level; this implies that there is scope for using geographic targeting for poverty alleviation strategies as well as designing pro-poor adaptation policies. While certain municipalities report very high poverty rates, others are barely affected by poverty. The municipalities with the highest share of poor are for the most part in the country's south and southwest and to a lesser extent in the center of Honduras. The pattern is similar when considering the extreme poverty headcount ratio at the municipality level. In the face of dwindling or limited fiscal resources, geographic targeting may be a viable and cost-efficient approach to reduce poverty by targeting smaller areas and reducing leakage to the non-poor. This approach can be used to improve the targeting of social programs and the design of pro-poor adaptation policies.

More updated and reliable maps could result in important changes in public policies targeting poverty reduction and social protection programs. One example is the CCT program, which currently uses a geographic targeting approach (CEPAL 2022). The updated poverty maps could complement the current targeting strategies by identifying areas where need has recently intensified and should be prioritized going forward.

The National Statistical System (NSS) in Honduras should improve its capacity to produce policy-relevant data of high quality with up-to-date methodologies. The 2020 Statistical Capacity Indicator (SCI) for Honduras was lower than the Latin America and the Caribbean (LAC) average and slightly below the IDA average, as many available Honduran data sources have become more outdated every year. Strengthening the statistical system would yield several benefits, including updated and reliable data for empirically based policy, more coordination across institutions, and a less fragmented system with fewer data gaps and less duplication of efforts, which would build more trust in official statistics in the eyes of some population segments and civil society. In addition, a well-established monitoring and evaluation system is fundamental to assess the effectiveness of programs and allocate scarce budget resources among them. Measuring poverty by following the best international standards is key to identifying which poverty reduction strategies work and which do not. Poverty measurement also helps developing country guide their development strategy in a rapidly changing economic environment.

National intervention strategies targeting crime might be more appropriate in the case of Honduras. The above analysis shows that homicide rates and poverty rates are not strongly related at the municipal level. Other factors, such as human capital accumulation, might play a more significant role in the spatial distribution of poverty rates. Additionally, crime might be driven by national dynamics, such as harmful gender norms in the case of gender-based violence. Therefore, national intervention strategies might be most appropriate to tackle crime in Honduras. Conversely, crime and poverty might interact at a more disaggregated level, such as individual neighborhoods. The evidence should be taken with caution, because it might be subject to important empirical shortfalls (examples are functional form misspecifications or omitted variable biases). The *Honduras SCD Update* (World Bank 2022a) identified a knowledge gap with respect to potential interventions to tackle the country's high levels of crime and violence. While significant resources have been spent during the last years to tackle crime and violence in Honduras, impact evaluations are missing.

On the other hand, there is a clear positive relationship between poverty rates and the exposure to natural risk factors, and targeted interventions to lagging areas might help with the country's mitigation and adaptability policies. This is in line with previous evidence showing that climate change might result in significant losses for the poorest population, especially in rural areas (for example, Hallegatte et al. [2018]). Therefore, policy makers should prioritize those municipalities most affected by both poverty and natural hazards (exacerbated by climate change) when designing mitigation and adaptation policies.

In terms of adaptation policies and investments, some examples are listed below:

- ***Target adaptation investments toward municipalities with high risks of poverty and natural hazards as part of a "pro-poor" adaptation policy.*** A pro-poor adaptation policy starts by identifying the measures to protect those identified as vulnerable, which primarily involves reducing risk and improving capital resilience among the poor. For example, expansion and improvement of protective infrastructure and services and safe housing should include focusing on the areas with a high incidence of poverty and natural hazards. This way, attention is paid to the adaptation needs of the poor. This is particularly important in the context of limited fiscal resources, where adaptation and resilience measures are underfunded. From an equity point of view, investments must be directed to locations where the incidence of disasters is high, but also where a larger share of the population is poor, who can lose proportionally more when exposed and who may have less resilience, that is, less ability to recover after a disaster hits.

- *Introduce geographically targeted investments in agricultural technologies to increase the country's agricultural output and the adaptability of the agricultural sector to natural hazards.* This is particularly important, because a large fraction of the poor (close to 50 percent) in Honduras are employed in the primary sector and 885,452 out of 4.5 million (19.3 percent) of the poor are concentrated in the poorest municipalities.

- *Prioritize lagging regions with high risk levels in grant distribution schemes and green financing mechanisms.* The bivariate maps in this report show that there is spatial clustering of the poor and risk-affected populations. Several municipalities face high exposure to both and are, therefore, especially vulnerable. These municipalities should be prioritized when designing interventions addressing both risk and poverty exposure. Examples of interventions are cash transfers conditional on sustainable agriculture investments or grants generating green jobs, such as jobs in the forestry sector.

- *Prioritize municipalities affected by both poverty and low coping capacity.* Institutional strengthening is crucial in those municipalities affected by poverty and low coping capacity. This can help to increase the resilience in the face of and strengthen the response to natural hazards in these areas and avoid a downward spiral of poverty. The report at hand shows that the correlation between poverty and low coping capacity is especially strong when compared to other factors analyzed.

- *Design and implement when needed effective resettlement programs for those displaced by natural hazards.* Many households are forced to flee their homes when facing natural hazards. With their move to urban areas or safer regions, these households might then face other vulnerabilities, which could push them further into poverty. These include restricted access to the labor market and public services, higher exposure to crime and violence, and worse living conditions. It is crucial to formulate strategies that highlight these barriers and reduce the multiple vulnerabilities displaced populations face. Examples of interventions include special education services for displaced children, labor market policies targeting the internally displaced, or social protection programs explicitly directed at refugees.

In terms of social policies to reduce poverty, the Honduran government could:

- *Use poverty maps to improve the geographic targeting of poverty reduction policies and programs, with the aim of improving the effectiveness of targeted public spending.* Such maps can be quite informative for the development of new poverty reduction strategies.

- *Introduce the features of an adaptive social safety net to protect not only the current poor, but those at risk of falling into poverty as a result of natural hazards.* This could include an adaptive cash transfer scheme or indexed weather insurance for farmers, among other intervention strategies.

- *Design interventions targeting human capital accumulation in the lagging areas.* It is crucial to boost human capital in those areas most affected by climate change and poverty to foster innovation, alternative income sources, and entrepreneurship in the long run, as well as employment-generating programs to support the development of alternative economic sectors in the lagging areas.

- *Assess the spatial progressivity of public expenditures in terms of their distribution across local administrative units at the LAU2 level (municipality/towns) and incorporate distributional concerns in allocation from central government to municipalities.* In many countries, resource allocation from central to municipal governments is guided by equity considerations, among others (such as population). In Honduras, the allocation from the central government to the municipalities currently does not have an equity criterion. Resources are allocated based on the following criteria: (1) 40 percent of the transfers are distributed equally to the municipalities and (2) the remaining 60 percent of the transfers are allocated in proportion to the number of inhabitants based on the last population projections from national population census.[64] This pattern of allocation of national sources of funds may be skewed in favor of the less poor municipalities. In this context, it is also critical to perform an assessment of the effectiveness of public expenditures in terms of their distribution across local administrative units at the LAU2 level. More equitable intergovernmental transfers can be achieved by introducing an equity criterion (such as poverty rates) so that municipalities with high poverty incidence receive higher per capita transfers. Addressing the spatial distribution of poverty as well as the bivariate distribution with respect to climate change is crucial to improving the country's spending efficiency and equity.

Ex ante cost-benefit analyses are crucial to determine the cost-efficiency of potential interventions. Identifying those places that are being left behind—so-called poverty "hotspots"—as well as interventions that could potentially accelerate their development is critical for poverty reduction. However, geographic interventions should be carefully evaluated against the costs they imply. It is recommended that thorough ex ante cost-benefit analyses be conducted before implementing potential interventions addressing the gaps and developments identified in this report.

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Chapter 4. The Role of Fiscal Policy in Rural and Urban Poverty and Equity

Key Messages: This chapter presents a detailed assessment of the distributional incidence of Honduran fiscal policy. In particular, the analysis addresses the impact of taxes and transfers on poverty and inequality by applying the methodology of the Commitment to Equity (CEQ) Institute and survey and administrative data for the fiscal year 2019. The main findings are given below:

- *Fiscal policy slightly reduces income inequality in Honduras, though less than in other countries in the region; this is driven mainly by education and health benefits.* This incidence analysis shows that most fiscal programs are inequality reducing in Honduras. On the income side, personal income tax (PIT) and social security (health) contributions are progressive, while the VAT is mildly progressive. On the expenditure side, the results indicate that direct transfers are progressive except for the Scholarship program; however, the effect of these transfers on inequality is still quite modest. Meanwhile, all in-kind transfers (education and health) are equalizing, with primary education being associated with the largest contribution to reducing inequality. The VAT is also equalizing, but the impact on inequality is small. Finally, the redistributive effects of fiscal policy in Honduras on inequality are still quite modest compared to other LAC countries, including the neighboring Central American countries.
- *Despite the positive impact on inequality, the net fiscal system contributes to poverty increases in Honduras and the impact is larger than in other countries in the region; the heavy burden of indirect taxes on households plays a role.* When comparing 2019 income before and after taxes and transfers using the CEQ methodology, fiscal policy leads to just a small rise in extreme national poverty; it has a larger effect on moderate poverty. When looking at international poverty, the impacts are more sizable than in other countries in the region. Poverty increases are primarily driven by a heavy burden of indirect taxes (especially the VAT) on poorer households, which is not sufficiently compensated for by direct transfers. Direct transfers do tend to be well targeted (particularly the conditional cash transfer [CCT] program), but are insufficient to compensate for the effect of indirect taxes, resulting in increased poverty rates.
- *The largest impact of fiscal policy on inequality reduction is observed in rural areas; in contrast, fiscal policy has a larger impact on poverty in urban areas than in rural areas, contributing to the narrowing of the urban-rural gap.* In-kind transfers, such as public spending on education and health care, play an even more critical redistributive role in rural areas, leading to larger inequality reductions. Most of the increases in poverty in both rural and urban areas are driven by the limited positive impact of direct transfers. However, the burden of indirect taxes on the urban poor tends to be higher, as these households pay a higher proportion of their income in taxes than their richer counterparts in urban areas.
- *Poverty and inequality could be reduced more effectively if Honduras reallocated spending to targeted social transfers and primary education.* Our simulations show that expanding the coverage of direct transfers could reduce inequality. At present, their effect on poverty is relatively small unless generosity is also augmented. Increasing coverage in primary education by 30 percent in rural areas would improve the distributional impacts of the fiscal system, with the Gini coefficient decreasing by 0.016 Gini points. Expanding primary education coverage, particularly in rural areas, should be on the agenda for reducing inequality in the country.
- *The tool build for this analysis also represents a critical tool for simulating the poverty and distributional impacts of the government's ongoing fiscal reform and thus can contribute to the fiscal policy dialogue underway in Honduras.*

4.1 Introduction

Implementing sound fiscal policies and ensuring their effectiveness in promoting growth, expanding opportunities, accelerating poverty reduction, and reducing inequality, particularly in rural areas, are critical priorities for Honduras. The compounded crises of 2020 have shrunk the country's fiscal space, challenging economic recovery and fiscal sustainability. The government enacted targeted fiscal and monetary policies to cushion the impacts of the crises on economic activity, public health, and livelihoods. Meanwhile, tax collection represented only 77 percent of the expected budget, mainly due to economic contraction and tax deferrals. Despite Honduras's relatively low public debt and deficit levels and access to concessional financing, the country allocated a relatively small fiscal package in response to the COVID-19 pandemic compared to other LAC economies with similar output decline. This was partly due to the government's commitment to achieving a fiscal deficit of 1 percent for the nonfinancial public sector by 2023, as the Fiscal Responsibility Law (FRL) requires, to preserve fiscal sustainability.[65] The commitments to fiscal consolidation and revenue mobilization efforts looking forward could limit the benefits to the less well-off and underinvestment in lagging regions may undermine economic growth prospects.

The previous fiscal incidence analysis conducted in the country in 2017 found that fiscal interventions (taxes and direct transfers) increase rural and urban poverty in the country, with a higher impact in urban areas. According to this earlier work, the positive redistributive impact of fiscal policy was higher in rural than urban areas, but the poverty-increasing effect was higher in urban areas. This study also concluded that direct transfers were progressive but provided low coverage for the poorest, which suggested the need to reinforce direct transfer programs in order to target this population segment more widely. Further analysis is needed to get a detailed picture of the role of social transfers in terms of this poverty-increasing effect.

Important reforms undertaken since 2011 were not included in this Commitment to Equity Approach (CEQ) study. An expansion of the conditional cash transfer (CCT) program (Bono Vida Mejor, formerly Bono 10,000) was implemented in 2015. These reforms also included the reduction of electricity subsidies and an increase in the general VAT rate from 12 to 15 percent and from 15 percent to 18 for specific goods such as alcoholic beverages, cigarettes, and beer. These reforms increased tax collections by 3.2 percent in 2014 with respect to the previous year (SEFIN 2015, 103). Therefore, an updated fiscal incidence analysis to understand the potential poverty and distributional impacts of the current fiscal system is needed.

The body of empirical evidence on the role of fiscal policy in Honduras has recently expanded, but most studies analyze a subset of fiscal policy instruments and do not provide a comprehensive view of the fiscal system. In general, the literature on this topic is still scarce in Honduras. Randomized evaluations were conducted in 2013 and 2017 to assess the CCT program in Honduras. These studies suggested a significant positive impact on the health and education outcomes of children in beneficiary households as well as poverty reduction. For instance, the cash transfer program helped increase school enrollment by 7 percentage points (World Bank 2020). A recent study by Oré et al. (2017) examined the fiscal and welfare implications of electricity subsidies and simulated policy options aimed at improving spending efficiency. The simulations suggest that affordability could be increased for low-income households, thus reducing fiscal costs.

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65 In 2017, the government enacted a Fiscal Responsibility and Transparency Law (FRL) that set a declining path for the non-financial public sector deficit ceiling, which fell from 1.6 percent of GDP in 2016 to 1 percent in 2019. The limits on the real growth of current spending set by the FRL provided an anchor for fiscal policy and helped contain the impact of external and internal vulnerabilities.

This chapter assesses the poverty and distributional impacts of the existing fiscal system to understand the role of fiscal policy in narrowing or widening the urban-rural gaps. As noted in the asset framework described in chapter 2, transfers are a key component in the ability of households to generate income, because they can provide protection; however, taxes can also reduce household income. The fiscal incidence analysis is based on the Commitment to Equity (CEQ) methodology (Lustig 2018), which enables comparisons with earlier work for Honduras using this method, as well as benchmarking with other countries.[66] This analysis aims to estimate the impact of taxation and social spending on rural and urban inequality and poverty and how each fiscal intervention contributed to the observed changes in poverty and inequality to provide a roadmap to build a more equitable society. This analysis requires a combination of survey and administrative data to provide a complete view of the fiscal system. Public transfers are not adequately captured in the official household survey. The number of recipients of these transfers is underestimated when compared to national accounts. Thus, it is beneficial to correct this underreporting using administrative data based on the eligibility criteria of programs. For further details of the methodology, data, and assumptions, see annex 5.3.[67]

This chapter answers the following questions:

- How much income redistribution and poverty reduction are being accomplished through the fiscal system (taxes, social spending, and subsidies) in rural and urban areas and how do the results differ from the previous CEQ analysis?
- How equalizing and pro-poor are specific taxes and government spending?
- How effective are taxes and government spending in reducing inequality and poverty and narrowing the urban-rural divide?

4.2 Main Results

What Is the Net Impact of Fiscal Policy on Poverty and Inequality in Honduras?

In 2019, the Honduran fiscal system contributed slightly to the reduction of inequality, with most reductions being driven by in-kind education and health transfers. The overall impact of fiscal revenue collections (taxes) and fiscal expenditures such as direct cash and near-cash transfers and in-kind benefits on inequality are estimated using the CEQ Methodology through pre- and postfiscal income measures. Panel a of figure 4.1 shows the change in the Gini coefficient going from households' market income (which treats pensions as deferred income), to net market income (removing direct taxes and contributions), to disposable income (adding direct transfers to households), to consumable income (removing indirect taxes), and to final income (adding in-kind transfers). In Honduras, the Gini coefficient of prefiscal income was 0.493 and decreased by 0.04 points after taxes and transfers were introduced. Though direct transfers contribute slightly to inequality reduction, most of the reduction of inequality is driven by public spending on education and health, as shown by the significantly larger reduction in the Gini from consumable to final income.

66 The previous CEQ for Honduras, by the Central American Institute of Fiscal Studies (Instituto Centroamericano de Estudios Fiscales, ICEFI), was published in 2017; it relied mostly on 2011 data (household survey, government spending, and tax structure) (ICEFI 2017).

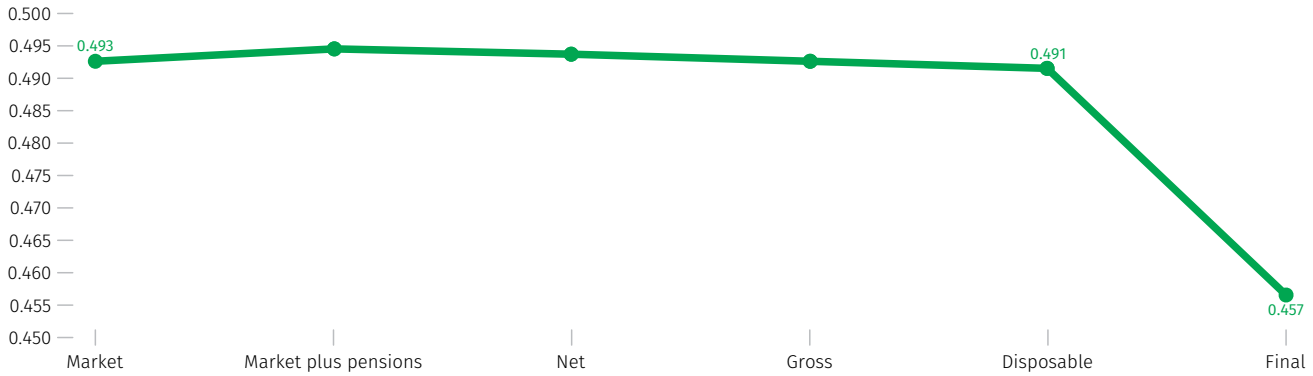
67 While the analysis captures the most important fiscal interventions, some elements of the fiscal system were not modeled due to the lack of data. For example, green fiscal policies and energy subsidies were not analyzed.

These findings are in line with the previous fiscal incidence study. The previous CEQ study, by ICEFI (2017), found similar results; that is, the reduction in inequality was more sizable when adding in-kind transfers in health and education. However, this study highlighted that in-kind transfers presented both inclusion and exclusion errors. For instance, these transfers only covered 10 percent of the population at the bottom of the income distribution (ICEFI 2017). However, the present study and the earlier one are not comparable for methodological reasons. First, the country has implemented changes in the poverty methodology. Second, the present study does not include electricity subsidies, due to data limitations (see annex 5.3 for details), which makes its results not comparable to the earlier one, at least in terms of observing changes in consumable and final income. Furthermore, the exclusion of electricity subsidies from the model, as noted in annex 5.3, potentially biases the overall distributional impacts and limits this study's comparability to the earlier study.

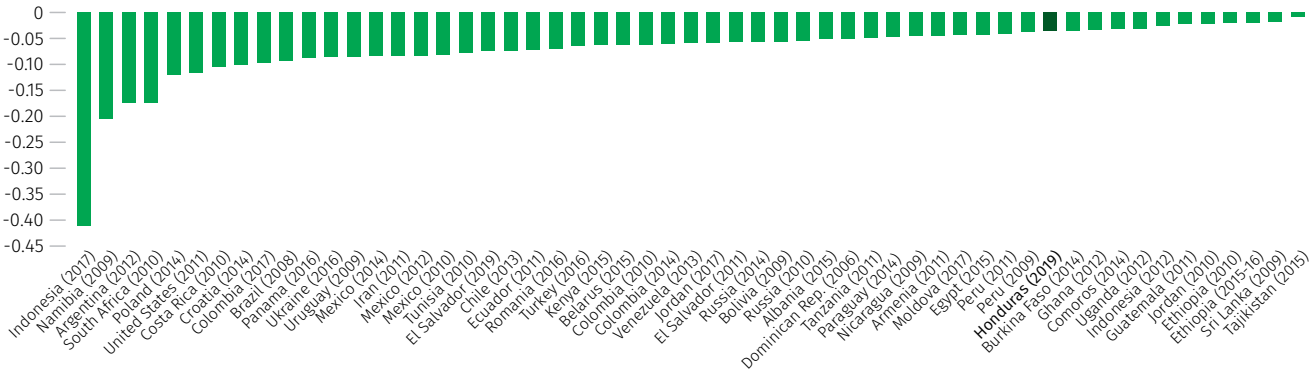
However, the fiscal system in Honduras has a substantially lower redistributive effect, compared to the fiscal systems of other Latin American and Caribbean (LAC) countries, including those of its neighbors (El Salvador, Nicaragua, and Costa Rica). A common pattern across countries is that fiscal policy contributes to reducing inequality. The results for the Honduran fiscal system are in line with the findings from similar

Figure 4.1: The 2019 fiscal system reduces inequality in Honduras, but less so than in other countries

a. Redistributive effect (Gini coefficient), changes from market plus pensions to final income, Honduras



b. Redistributive effect (Gini), changes from market plus pensions to final income, selected countries

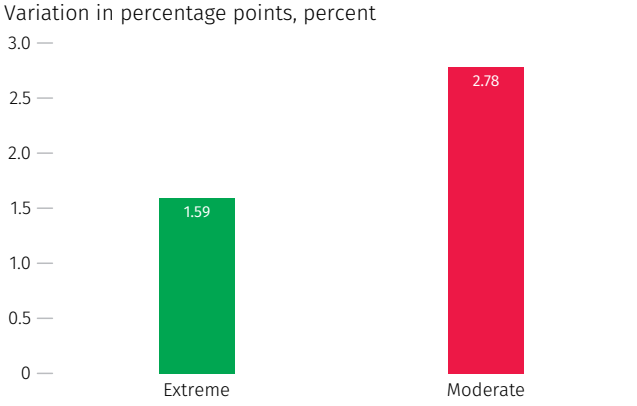


Sources: World Bank estimates for Honduras based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology and CEQ studies from Albania (Davalos et al. 2018), Argentina (Rossignolo 2017), Bolivia (Paz Arauco et al. 2014), Chile (Martinez-Aguilar and Ortiz-Juarez 2016), Colombia (Melendez and Martinez 2019a, 2019b), Costa Rica (Sauma and Trejos 2016), El Salvador (Oliva 2019, 2020), Ethiopia (Hill et al. 2014), Ghana (Younger et al. 2016), Guatemala (Cabrera and Moran 2019), Honduras (Castaneda and Espino 2019), Indonesia (Afkar et al. 2019), Iran (Enami et al. 2017), Kenya (Kulundu et al. 2019), Mexico (Scott 2013), Moldova (Davalos et al. 2018), Nicaragua (Cabrera and Moran 2019), Panama (Martinez-Aguilar 2019), Peru (Jaramillo 2019), Poland (Goraus and Inchauste 2016), Romania (Inchauste et al. 2018), Sri Lanka (Arunatilake et al. 2016), Tanzania (Younger et al. 2016), Turkey (Caglayan 2016), Uganda (Jellema et al. 2016), Uruguay (Bucheli et al. 2014), and Venezuela (Molina-Millan et al. 2016).

studies for countries in the region, such as Guatemala, El Salvador, and Nicaragua, but the redistributive effect is significantly smaller (figure 4.1, panel b). In-kind transfers in education and health effectively reduce inequality in most countries; however, they are less inequality reducing in Honduras than in other LAC countries (for example, Argentina, Mexico, and Colombia), including its neighbors (El Salvador, Nicaragua, and Costa Rica).

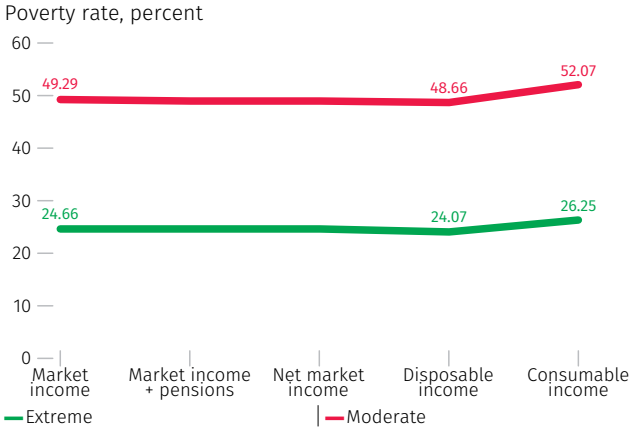
When looking at poverty, we found that the 2019 fiscal system contributed to rising moderate and extreme poverty,[68] and most of the increase was due to the heavy burden of indirect taxes, which were not compensated by social transfers. Focusing on households' absolute income level, we found that the fiscal system led to poverty increases, regardless of the poverty line used. Using national poverty lines, we found that moderate and extreme poverty increased by 2.78 and 1.6 percentage points after taxes and transfers are incorporated, respectively (figure 4.2). Following the literature and examples from other countries, the poverty effect of in-kind transfers is not computed, given that households do not observe the monetary value of health and education spending. However, it is important to note that this incidence analysis uses a higher share of total revenue compared to the share of total spending (annex 5.3), which may make our results on the distributional impacts of Honduran fiscal policy on poverty look worse than they are. As noted above, electricity subsidies are not included in the analysis; this is an important omission that may overstate the overall impact of fiscal policy on poverty with respect to studies from other countries.

Figure 4.2: Change in poverty headcount at moderate and extreme official poverty lines (from market to consumable income)



Source: World Bank estimates using the 2019 EPHPM.

Figure 4.3: Poverty headcount at moderate and extreme official poverty lines from market to consumable income



Source: World Bank estimates using the 2019 EPHPM.

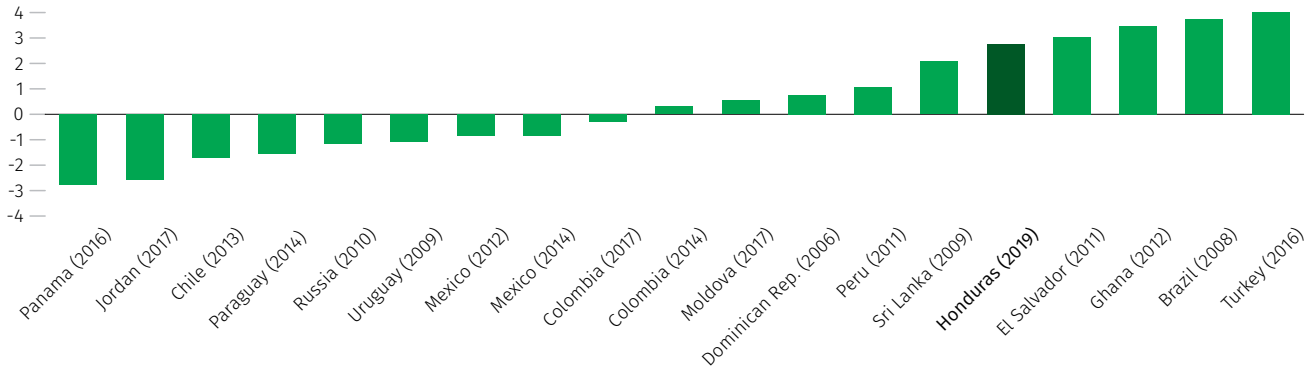
Targeted transfers played a critical role, but they were insufficient to compensate for the poverty-increasing impact of indirect taxes. In fact, the small reduction achieved with direct transfers, which contributed to reducing poverty (as reflected by the change from market income to disposable income), was later more than offset by indirect taxes that households faced (figure 4.3). However, as mentioned before, indirect subsidies are not included in the analysis. Therefore, the poverty impact of the overall fiscal system may be overstated; if included in the analysis, they would have raised household income.

68 This comes from comparing poverty levels using income before and after taxes and transfers.

Fiscal policy has a greater poverty-increasing effect in Honduras than in other countries in the region, particularly when using the upper-middle-income (US$5.5 per day, 2011 PPP) poverty line. Using international poverty lines (US$5.5 per day and 1.9 per day [2011 PPP]) across countries with available CEQ studies, our findings show larger poverty increases in Honduras after the combined effects of direct and indirect taxes, contributions, and direct transfers. Fiscal policy increases poverty in the country by 2.8 and 1 percentage points, using the US$5.5 and 1.9 per day lines, respectively. This is different from the case in other countries such as Panama, Chile, Mexico, and Colombia, where the net fiscal system tends to reduce poverty, but similar to what has been found for other countries in the Northern Central American region, such as El Salvador (figure 4.4).

Figure 4.4: Effect of the fiscal system on poverty (US$5.5 per day, 2011 PPP)

Reduction effect on poverty (changes headcount) market income plus pensions vs consumable



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology and CEQ studies from Brazil (Higgins and Pereira 2017), Colombia (Melendez and Martinez 2019a, 2019b), Chile (Martinez-Aguilar and Ortiz-Juarez 2016), Dominican Republic (Aristy-Escuder et al. 2016), El Salvador (Oliva 2020), Ghana (Younger et al. 2016), Honduras (Castaneda and Espino 2019), Jordan (Abdel-Halim et al. 2016), Mexico (Scott 2013; Scott et al. 2017), Moldova (Davalos et al. 2018), Panama (Martínez-Aguilar 2019), Paraguay (Galeano et al. 2017), Peru (Jaramillo 2019), Russia (Popova 2019), Sri Lanka (Arunatilake et al. 2016), Turkey (Caglayan 2016), and Uruguay (Bucheli et al. 2014).
Note: For international comparisons, results are only available for poverty measures using the 2011 PPP poverty lines. The Honduras estimates do not include indirect subsidies.

How Does the Picture Change when Looking at Urban and Rural Poverty?

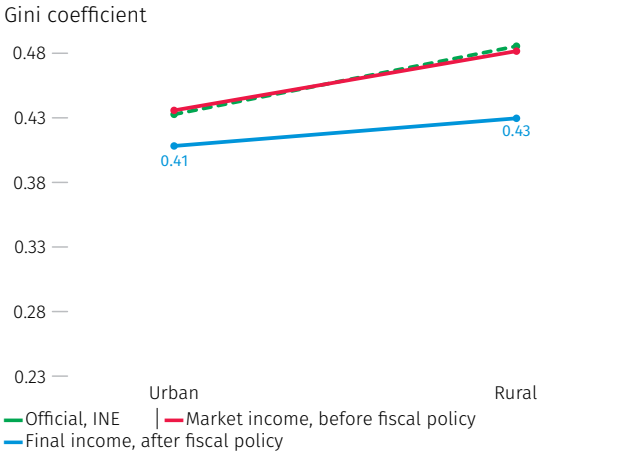
Fiscal policy tends to reduce inequality more in rural areas. The fiscal system contributes to inequality reductions in both urban and rural areas; however, the redistributive impact is larger in rural areas (figure 4.5). Figure 4.6 shows that the larger reduction of the Gini coefficient occurs from consumable to final income, pointing out the critical importance of these equalizing transfers in rural areas. Direct transfers play a small role in both areas.

Fiscal policy tends to increase poverty more in urban than rural areas; therefore, it contributes to narrowing the urban-rural gap. The fiscal system had a larger impact on poverty in urban areas than in rural areas: 3.61 vs. 2.1 percentage points, respectively (figure 4.7). Most of the increases in poverty in both rural and urban areas were due to changes between disposable and consumable income, because indirect taxes were not fully offset by transfers (figure 4.8).[69] This is consistent with the fact that the burden of indirect taxes is higher on urban households, as the urban poor pay a larger proportion of their income in taxes than the urban rich. These results are relevant since, as mentioned in chapter 1, urban-rural gaps have

69 The inclusion of indirect subsidies would have partly offset this effect.

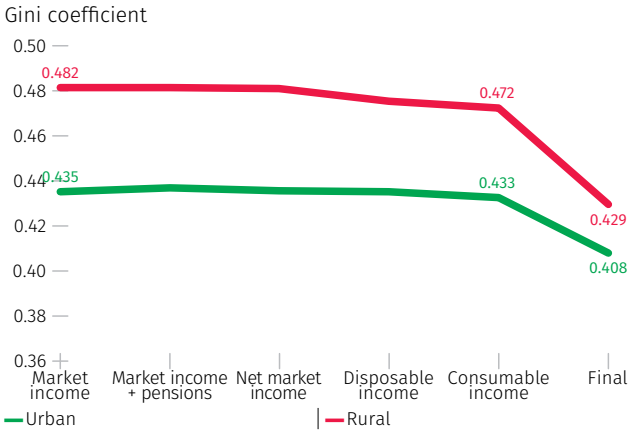
historically been large in Honduras. As mentioned in chapter 1, the population living in rural areas presents lower levels of educational attainment, a higher rate of informal employment, and poor access to public services when compared to the population living in urban areas.

Figure 4.5: Changes in Gini in urban and rural areas, from market to final income



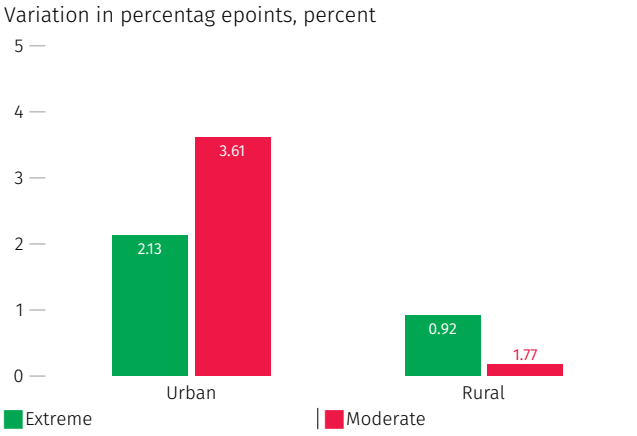
Source: World Bank estimates using the 2019 EPHPM.

Figure 4.6: Changes in Gini from market to consumable income



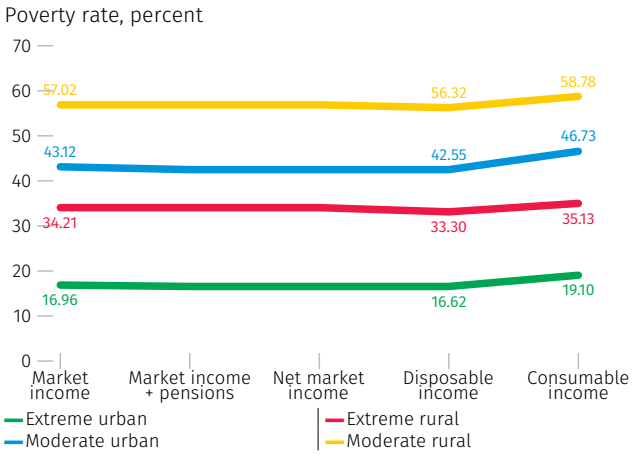
Source: World Bank estimates using the 2019 EPHPM.

Figure 4.7: Changes in poverty headcount (moderate and extreme national lines) from market to consumable income



Source: World Bank estimates using the consolidated 2019 EPHPM.

Figure 4.8: Poverty headcount (at moderate and extreme national poverty lines) from market to consumable income



Source: World Bank estimates using the 2019 consolidated EPHPM.

What Is the Impact of Individual Taxes or Transfers on Poverty and Inequality?

How does each of the fiscal interventions contribute to the observed changes in poverty and inequality? A particular fiscal intervention's effect may differ from that of the overall fiscal system. One way to answer this question is by examining the extent to which taxes and transfers affect household income across the welfare distribution. Another way is by looking at the marginal effect[70] of each fiscal component on the Gini

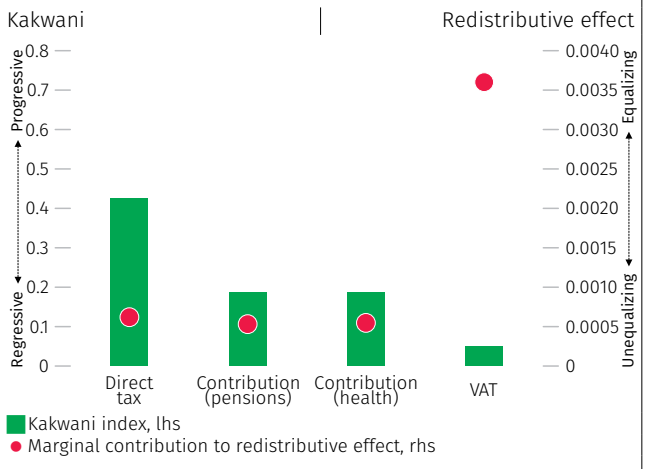
70 The marginal effect is the change in market income plus pensions due to adding or subtracting only the given benefit or tax from market income plus pensions.

coefficient and the poverty headcount. Intuitively, a tax or transfer has a sizable poverty and distributional impact if it is strongly targeted at those at the bottom of the distribution (as captured by the concentration coefficients) and if it is large relative to their incomes (as captured by the size).

» Taxes (Direct and Indirect) and Contributions

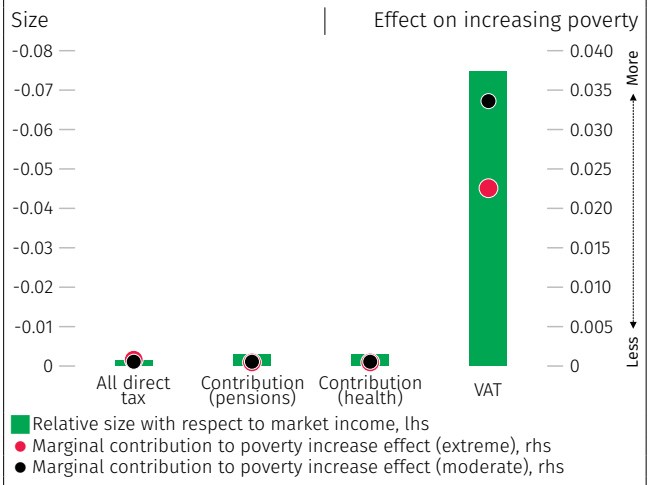
Direct taxes (personal income tax) and social security contributions are progressive in Honduras, but contribute little to inequality reductions. Figure 4.9 shows the Kakwani index, a key measure of progressivity, and the marginal contribution to the redistributive effect, which unambiguously predicts whether a tax or a transfer is equalizing or not. Direct taxes, which include only personal income tax (PIT), have a Kakwani index[71] significantly higher than in other Latin American countries (for example, Guatemala, Mexico, and Peru). They are also inequality reducing, because their marginal contributions[72] are positive. The progressivity of the income tax is explained by a progressive tax rate schedule and the fact that only formal-sector workers, who tend to be more affluent and pay proportionately more tax than the poor, pay PIT. Contributions to social security (pensions and health[73]) are progressive as well, as shown by a positive Kakwani index, but coverage is low. Overall direct taxes and contributions result in a modest redistributive effect of 0.0023 Gini points.

Figure 4.9: Progressivity and redistributive impact of taxes and contributions, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Figure 4.10: Effect of taxes and contributions on extreme and moderate poverty, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Despite being progressive, direct taxes and contributions are poverty increasing, though their impacts are small. For instance, direct taxes contribute to a poverty headcount ratio increase of about 0.08 percentage points using the national extreme poverty line. The effect is smaller using the national moderate

71 A useful summary statistic to measure progressivity, the Kakwani index for taxes is defined as the difference between the concentration coefficient of the tax and the Gini for prefiscal income; for transfers, it is defined as the difference between the Gini for prefiscal income and the concentration coefficient of the transfer. A Kakwani index for taxes is positive (negative) if a tax is globally progressive (regressive). A Kakwani index for transfers is positive if a transfer is progressive in relative terms.

72 The redistributive effect captures the marginal contribution of the net fiscal system element(s) to the Gini coefficient of inequality. The marginal contribution is understood as the difference between the Gini coefficient with and without the tax or transfer. If positive, it captures a redistributive effect that will be reflected by decline in the Gini.

73 This analysis only includes contributions to the Honduran Social Security Institute (Instituto Hondureño de Seguridad Social, IHSS).

poverty line, with a marginal contribution to poverty[74] from direct taxes of 0.06 percentage points and 0.06 percentage points for pensions and health insurance contributions, respectively (see figure 4.10), which when combined increase the poverty rate by 0.19 percentage points.

Indirect taxes are progressive, but their impact on inequality is minimal. This analysis only includes the value-added tax (VAT), which is mildly progressive, as shown by a positive Kakwani coefficient (0.049). Its marginal contribution to equity is small, as shown in figure 4.9.

The VAT contributes to a rise in poverty. Among all taxes and contributions, the VAT contributes the most to a rise in poverty in Honduras, mainly due to its large size (relative to market income). Although taxes are progressive, direct transfers included in the analysis are not large enough to mitigate their impact, worsening the poverty impacts. According to estimations using national poverty lines, indirect taxes can lead to an increase in the poverty headcount of 3.3 percentage points (moderate) (see figure 4.10). In other words, the VAT pushes a share of households into poverty to the extent that direct transfers cannot offset. It is useful to mention some caveats regarding this result: for instance, this study does assume VAT tax evasion (see annex 5.3), because the information on the place of purchase, usually used to construct a proxy for tax evasion, is not collected by the household survey. This means the impact of VAT on poverty may be overstated.

In addition, other taxes, such as excise and road taxes, are not included due to data limitations (see annex 5.3), and cascading effects related to exempt items in the VAT structure are not considered. It is important to note that these limitations make our estimates of the distributional impacts of fiscal policy on the poor lower than they really are.

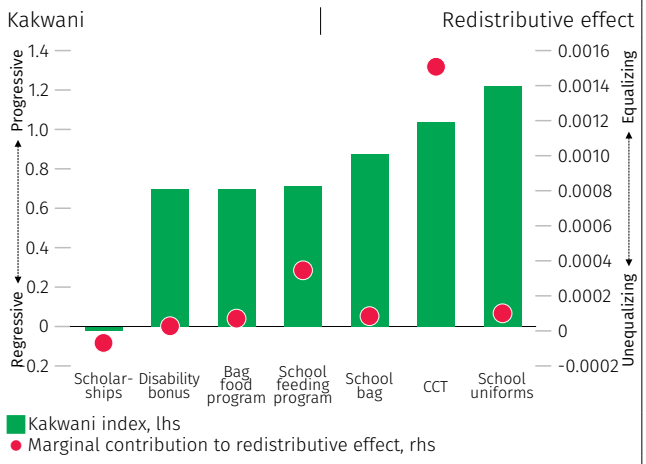
» Direct and In-Kind Transfers

Direct transfers are progressive and reduce inequality, except for the scholarship program; the CCT is the most progressive and inequality-reducing transfer. Figure 4.11 displays the Kakwani coefficient and the marginal contribution to inequality of direct transfers in Honduras. The Kakwani coefficient is positive for the following programs: School Bag, the School Feeding Program (SFP), Disability Bonus, Bag Food Program, and the CCT. The CCT program is highly progressive (Kakwani index of 1.03), and reduces inequality the most. Conversely, the scholarship program is regressive (Kakwani index of –0.02) and does not contribute to reducing inequality.

Direct transfers are poverty reducing; the CCT stands out as the transfer with the largest poverty reduction effect, mainly due to its relatively larger size. All transfers are designed to target poor beneficiaries, except scholarships and the SFP. Still, their targeting performance, size, and poverty impacts vary widely. Most direct transfers, with the exception of the CCT, are relatively small in size and have limited poverty reduction effects. The CCT program, significantly larger in size and relatively well targeted, contributes significantly more to the reduction of poverty than other direct transfers (the poverty headcount ratio is reduced by 0.28 percentage points using national extreme poverty lines) (see figure 4.12). Additionally, the CCT programs

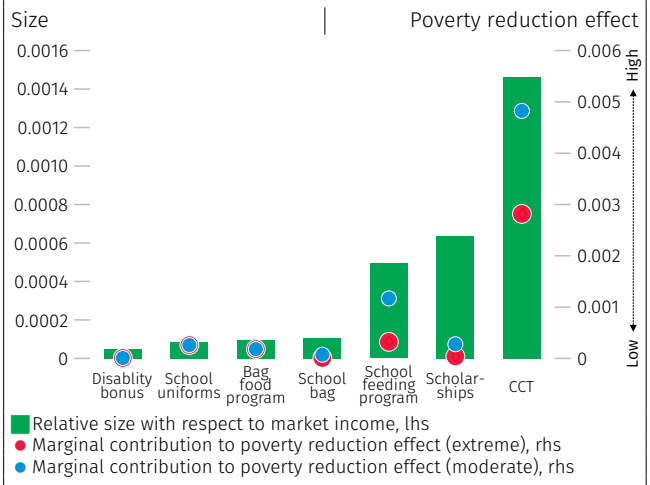
74 The poverty reduction effect captures the marginal contribution of the net fiscal system element(s) to a poverty headcount defined at a certain poverty line. Again, the marginal contribution is understood as the difference between the poverty rate with and without the tax or transfer. If positive, it captures a poverty reduction effect, which translates into a decline in poverty.

Figure 4.11: Progressivity and redistributive impact of direct transfers, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Figure 4.12: Effects of direct transfers on poverty, 2019

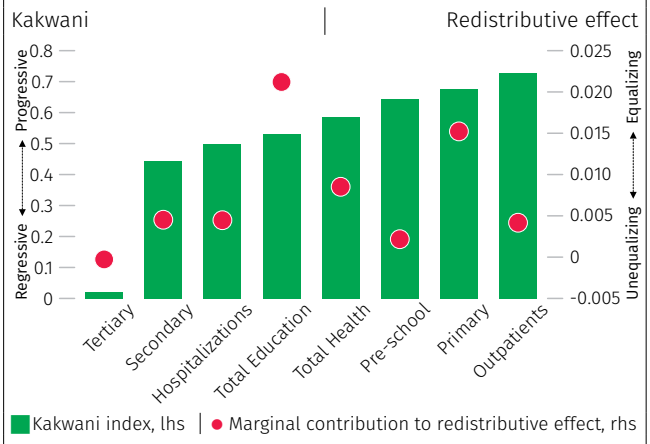


Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

may have positive effects that go beyond monetary poverty. For example, international evidence shows that well-designed CCT programs can improve outcomes in education and health (Molina-Millan et al. 2016; De Brauw and Peterman 2020).

All in-kind transfers in education and health exhibit a progressive pattern and are inequality reducing; tertiary education is an exception, because it does not reduce inequality. All in-kind transfers in education and health[75] are progressive and inequality reducing, as shown by their positive marginal contributions. An exception is tertiary education, which is less progressive than the others and has a negative redistributive effect, mostly because those accessing it are more likely to belong to higher income families. Not surprisingly, primary education reports the largest contributions among all in-kind transfers (see figure 4.13). In Honduras, primary education is compulsory and expenditures associated with it accounted for 2.3 percent of GDP in 2019 (see table A.5.3.1). However, children living in poorer households have a lower probability of being enrolled in school, as reported in section 1.2. These results suggest that expanding coverage in primary education, particularly among the poor, could be equalizing and as such are in line with the previous CEQ study. This indicates that education policies focused on improving access to public education, particularly in rural areas, should continue to be a priority for Honduras.

Figure 4.13: Progressivity and redistributive impact of in-kind transfers, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

75 The education benefits modeled are preschool (grades 1–3), primary (grades 1–9), secondary (grades 1–3), and tertiary education levels. In-kind health benefits include two levels: primary care (outpatients) and hospitalizations.

On the health benefits side, the results suggest that public health spending has the potential to benefit the poor and could increase access. However, it is important to note several caveats, particularly regarding the effect of public spending on poverty and inequality. This study uses a user approach to estimate in-kind transfers in health, which may imply that households likely make use of public health services are shown as being better off.

Pensions present a large negative marginal contribution to equality. Following the CEQ methodology, pensions can be treated as transfers (scenario-PGT) or deferred income (scenario-PDI).[76] Both scenarios may be useful for estimating the distributional impact of the Honduran pension system. Nonetheless, it is important to note that the country does not have a noncontributory pension scheme. We find similar results using both scenarios, although when contributory pensions are treated as transfers, inequality is slightly lower compared to the scenario where they are treated as deferred income. Pensions could be the main source of income for households with elderly members, but the contribution of pensions is clearly marginal in Honduras. They play a limited role in poor households due to low levels of coverage. Also, the contributory pension system may present a vulnerable financial structure, due to a low average replacement rate (contributions and retirement ages) (Badillo et al. 2009; Alvarez et al. 2020, 177, 190). In order to increase the overall coverage of pensions, policy makers should design strategies for (1) expanding the coverage of the contributory scheme, particularly in rural areas, and (2) providing a noncontributory pension scheme.

Public pension income is the largest source of income inequality (0.0032 Gini points), followed by tertiary education (0.0025 Gini points) and scholarship programs (0.00006 Gini points) (see figure 4.14). This is likely linked to the low pension coverage in the country in the first quintile when compared to other countries in LAC and the world (benchmarking exercise). The extremely high informality rate likely drives an unequal distribution of pension benefits in the country among the bottom quintiles. Those with higher incomes are significantly more likely to be formally employed, thus contributing more to the system and receiving higher pensions.

Zooming in on the elements of the fiscal system across the income distribution provides a better understanding of the distributional effects. Figure 4.15 shows the share of broad categories of taxes and transfers in prefiscal income (market income plus pensions) by income decile.[77]

Education and health benefits are relatively more concentrated in the bottom deciles; in contrast, direct taxes and indirect taxes are more concentrated in the upper part of the income distribution. This key finding explains the progressivity and inequality-reducing effect of in-kind transfers, which is important, given that Honduras still reports lower levels of education and health coverage compared to other LAC countries, as mentioned in chapter 1. The richest deciles are net payers of the fiscal system.

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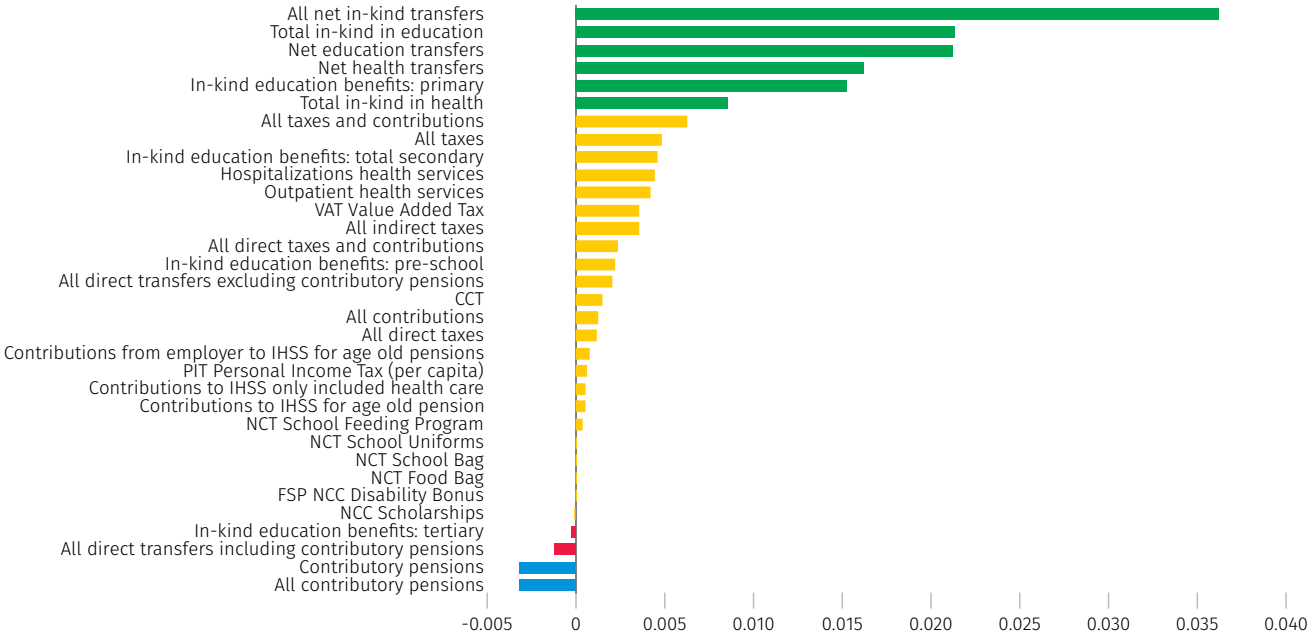
76 In the public contributory Pensions as Deferred Income (PDI) scenario, pension system income is treated as (Market) income earned previously deferred until today, while pension system contributions are treated as mandatory savings (income deferred to one's future self). In contrast, the contributory Pensions as Government Transfer (PGT) scenario, the pension system income is treated as a pure transfer, while the pension system contributions are treated as a tax. In the PDI scenario pensions are prefiscal income while in the PGT scenario the public contributory pension system is a fiscal tax and transfer system that redistributes income from today's working-age population to today's pension-age population.

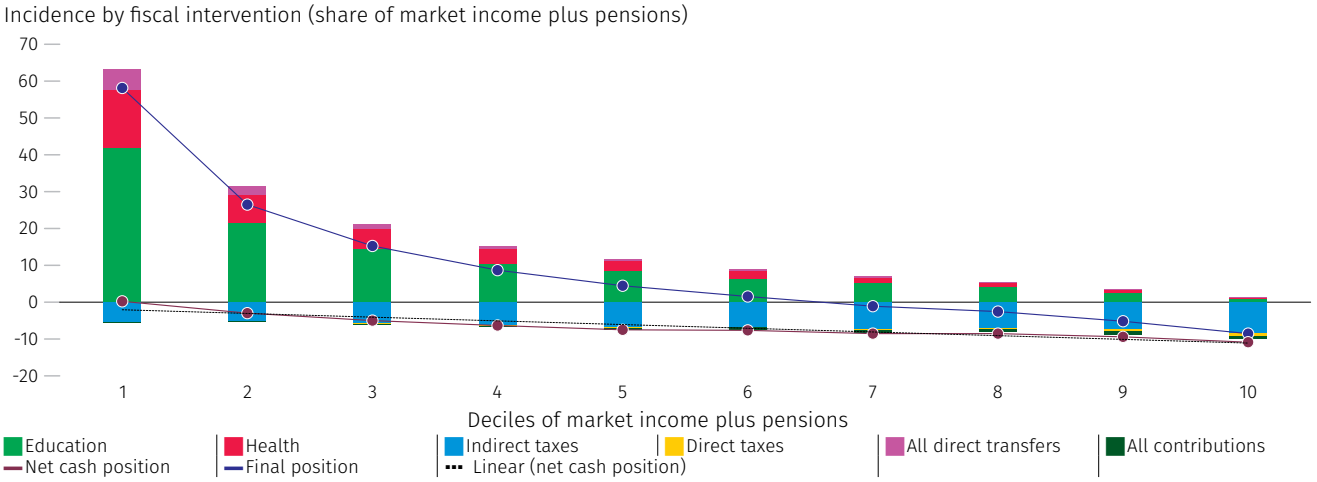
77 This section relies on the scenario PDI. The net cash position captures the difference between market income plus pensions and consumable income (equivalent to all payments of taxes and cash benefits) as a share of market income plus pensions.

Figure 4.14: Marginal contribution of interventions to inequality, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Figure 4.15: Distribution of taxes and transfers across income deciles, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.
Note: The figure reports the net cash position of households as the difference between cash transfers received and taxes paid.

We assess how the 2019 Honduran fiscal system affected households across the income distribution. The analysis divides the population into 10 deciles ranked by market income plus pensions (prefiscal income). For each decile, the bars show the incidence of the fiscal intervention with respect to market income plus pensions. All the fiscal interventions that represent an income gain to the household are above the zero axis (direct transfers and in-kind education and health benefits) and all the fiscal interventions that represent an income loss for the household are below the zero axis (direct and indirect taxes). The net cash position shows the aggregate sum of all cashable interventions (all taxes and direct transfers) for each decile; the total cash position includes all cashable interventions plus in-kind benefits. Direct transfers represent a sizable share of household income for the first two income deciles, reflecting decent targeting performance, though exclusion and inclusion errors vary significantly by program. In-kind health

and education benefits are sizable for most deciles, particularly among those at the bottom, declining gradually as we move along the income distribution. Households belonging to upper-income quintiles tend to pay more in direct taxes, contributions, and indirect taxes than those at the bottom. Direct taxes and contributions represent a small share of income in the bottom deciles; indirect taxes represent a heavier burden, accounting for 5.3 percent of income in the bottom decile. As noted above, moving from disposable to consumable income, poverty rates increase in both rural and urban areas. Nonetheless, the poverty incidence would be further reduced by the combined action of direct transfers and indirect subsidies and similarly an urban-rural gap reduction would be observed. Therefore, our results may change at the lower part of the distribution if indirect subsidies were included in the incidence analysis.

The first decile of the distribution is a net receiver of social benefits, as shown by the positive though small net cash position;[78] contrarily, starting at the second decile, Honduran households are net payers in the fiscal system. When looking at the net cash position (how much cash is left in households' pockets after paying all taxes and receiving all cash transfers), the results show that households in the poorest income decile receive slightly more in direct transfers than what they pay in taxes and contributions. All the other households are net payers in the fiscal system. This is consistent with the main finding that the fiscal system increases poverty. A different picture emerges when looking at the total cash position (adding in the monetized value of in-kind benefits from public health and public education). The first six deciles are net receivers in the fiscal system, reflecting the strong equalizing effect of education and health, and consistent with the fact that the fiscal system in Honduras is equalizing.

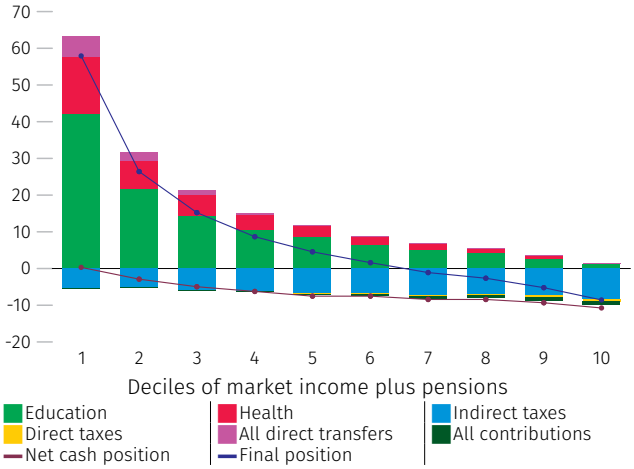
In urban areas, direct transfers have a limited positive effect on poverty, despite a very high level of progressivity. For a better understanding of the distributional effects in urban and rural areas, we assess the incidence of the main components of the Honduran fiscal system across the income distribution. Figure 4.16 displays the share of each fiscal intervention in prefiscal income (market income plus pensions) by deciles in urban areas. Poorest households in the first decile of the distribution are net receivers of social benefits, as shown by their positive net cash position. The burden of indirect taxes is high for all households across the distribution, but mostly among the richest decile in urban areas (accounting for 8.39 percent of their income). Note that direct transfers are strongly targeted at the bottom of the income distribution (figure 4.16). This limited effect may be explained by the relatively small size of the programs (accounting for 0.14 percent of market income plus pensions). The large impact of indirect taxes on urban poverty is highly related to its size, given that it is significantly larger than other fiscal policy instruments (figure 4.17).

In rural areas, in-kind health and education benefits are sizable for most deciles, declining gradually as we move along the income distribution. Direct taxes and contributions represent a much smaller share of income at the lower part of the distribution, reaching 0.33 percent in the poorest income decile. In comparison, they amount to 0.70 percent in the richest decile. The composition of taxes gradually changes from indirect to direct taxes as we move along the income distribution. We also observe how well the in-kind transfers are targeted by looking at the shares of the benefits going to the poor. In-kind health and education benefits are sizable along the income distribution and these benefits in particular tend to decline gradually as we move upward in the income distribution (figure 4.18). In addition to their progressivity, these in-kind benefits are larger in size compared to other social transfers (figure 4.19), explaining their larger redistributive impact.

78 The net cash position captures the difference between market income plus pensions and consumable income (equivalent to all payments of taxes and cash benefits) as a share of market income plus pensions.

Figure 4.16: Distribution of taxes and transfers across income deciles in urban Honduras

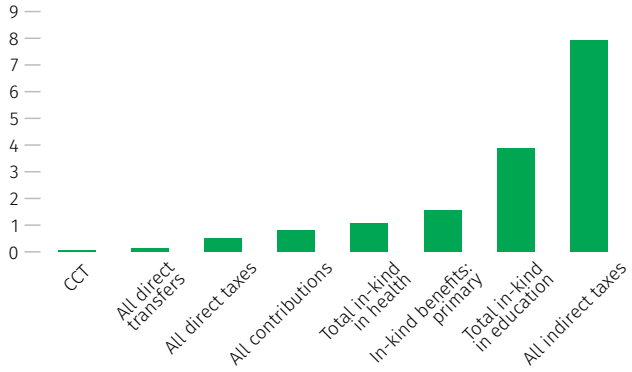
Incidence by fiscal intervention (share of market income plus pensions)



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.
Note: The figure reports the net cash position of households as the difference between cash transfers received and taxes paid.

Figure 4.17: Size of fiscal interventions in urban areas

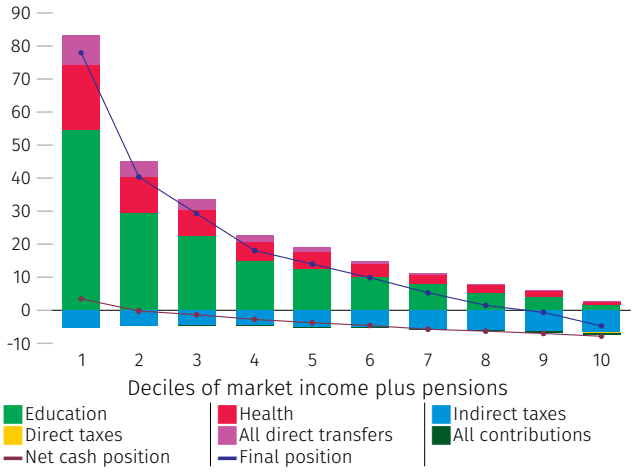
Share of market income plus pensions, percent



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Figure 4.18: Distribution of taxes and transfers across income deciles in rural areas

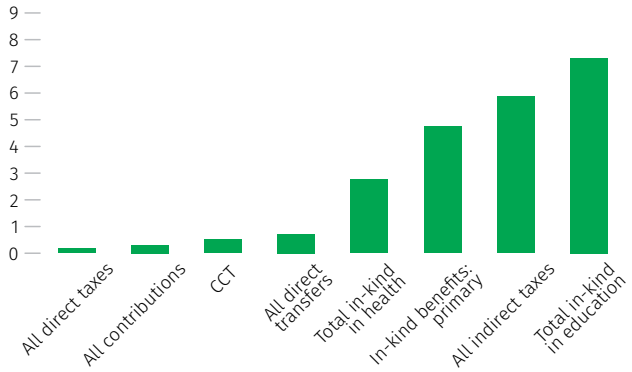
Incidence by fiscal intervention (share of market income plus pensions)



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.
Note: The figure reports the net cash position of households as the difference between cash transfers received and taxes paid.

Figure 4.19: Size of fiscal interventions in rural areas

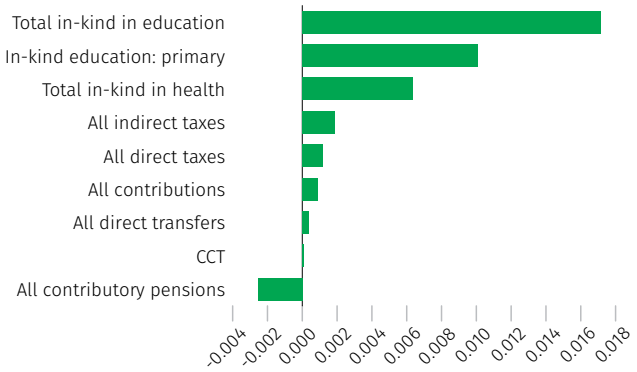
Share of market income plus pensions, percent



Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

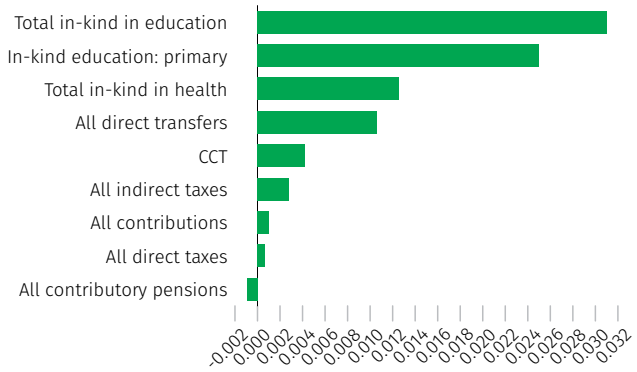
Education and health benefits and direct transfers can help tackle income inequality, particularly in rural areas, as shown by their relatively large marginal redistributive effect. Figures 4.20 and 4.21 show the marginal effect of each main fiscal component on inequality in urban and rural areas. In-kind transfers in education have a sizable distributional impact on inequality, accounting for 0.038 and 0.031 Gini points in rural and urban areas, respectively. Direct transfers, particularly the CCT, contribute more to reducing inequality in rural areas. In urban areas, taxes and transfers have little impact on inequality. Pensions report the largest marginal contribution to the increasing of inequality, particularly in urban areas.

Figure 4.20: Marginal contributions to inequality in urban areas, Honduras, 2019



Source: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

Figure 4.21: Marginal contributions to inequality in rural areas, Honduras, 2019



Source: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.

» Simulations of Policy Reforms

Beyond providing a static view of the distributional impact of the fiscal system, the model allows for fiscal policy simulations. The findings above present a detailed picture of the net poverty and distributional impacts of the Honduran fiscal system, as well as the potential impacts of individual taxes or transfers. Additionally, the methodology can be used to simulate potential fiscal policy reforms and inform relevant stakeholders, contributing to the ongoing fiscal policy debate. Using the 2019 data we estimate these impacts by changing the relevant parameters associated with each policy, thus abstracting from any other changes that would have affected the income distribution.

This section presents the main results of two policy simulations that are relevant from a distributional perspective: an expansion of the CCT in rural areas and an expansion of primary education access.

- *Simulation 1: Expanding the coverage of the existing CCT program in rural areas by 20 percent*
  The CCT, the main poverty-targeted program, also uses geographic targeting to identify beneficiaries. In addition, the program's conditionalities are geared to participation in education and health (for example, children's attendance in grades 1–6 and the use of preventive health services for children under five years of age and pregnant women). The CCT is the most progressive direct transfer, but has relatively low coverage among the poor, particularly in rural areas (around 17 percent). In this simulation scenario, we expand the current coverage in rural areas by 20 percent. To identify the new beneficiaries, we estimate a probit model using the eligibility criteria as control variables and assign the benefit using the corresponding probabilities.

- *Simulation 2: Expanding the coverage of primary education in rural areas by 30 percent.*
  Although primary education is compulsory in Honduras, access is not universal, particularly among the bottom quintiles in rural areas. To simulate the expansion, we use a random selection among children ages 7–14 living in rural areas. Then, we impute the per capita spending on primary education to this group. This makes sense, considering the extremely low primary enrollment levels by LAC standards (benchmarking exercise) and the large urban-rural disparities. From a distributional perspective, our results are promising, because they show that the education transfers at the primary level are quite progressive and can contribute significantly to reducing inequality, as shown by their large marginal redistributive effects.

The impacts of these policies on poverty and inequality in rural areas across the different income concepts are shown in Table 4.1 below.

Table 4.1: Simulated impact of a rural expansion of the CCT program and primary education coverage on poverty and inequality in rural areas

Indicator/ rural	*Scenario*	*Market Income (0)*	*Market Income + Pensions (1)+Pensions*	*Net Market Income (2)= (1)-Direct Taxes*	*Disposable Income (3)= (2)+Direct Transfers*	*Consumable Income (4)= (3)-Indirect Taxes*	*Final Income (5)= (4)+In-kind transfers*
Gini coefficient							
	Baseline	0.482	0.482	0.481	0.476	0.472	0.429
	Simulation-CCT	0.482	0.482	0.481	0.475	0.471	0.429
	Simulation-Primary education	0.482	0.482	0.481	0.476	0.472	0.413
Poverty headcount							
Extreme	Baseline	34.21%	34.11%	34.11%	33.30%	35.13%	
Extreme	Simulation-CCT	34.21%	34.11%	34.11%	33.27%	35.04%	

Sources: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.
Note: The results of the simulation of primary education policy on poverty are not presented, because these are in-kind transfers and therefore affect only final income.

The CCT expansion in rural areas contributes slightly to the reduction of income inequality and poverty in these areas, though the impacts are small, likely due to its small size. In this scenario, the expansion of the CCT program contributes to the reduction of inequality, with the Gini coefficient of final income (baseline versus simulation) decreasing slightly (from 0.429 to 0.413). On the other hand, rural poverty (measured using the extreme poverty line and consumable income) slightly decreases, from 35.13 to 35.04 percent, on account of the policy changes. The effect on extreme national poverty is limited, as reported in table A.5.3.3. These findings indicate that CCT programs could be even more effective in offsetting the impoverishing effect of the fiscal system if generosity, in addition to coverage, is also augmented.

Expanding in-kind benefits in primary education in rural areas reduces rural inequality. The results suggest that a primary education expansion positively affects inequality, with the Gini coefficient decreasing by 0.016 Gini points, from 0.429 (final income under baseline) to 0.413 (final income under simulation). Moreover, this policy is expected to narrow urban-rural poverty gaps. When looking at changes at a national level, the policy could lead to a small decline in inequality, with the Gini coefficient decreasing by 0.04 Gini points, from 0.457 (final income under baseline) to 0.453 (final income under simulation) (table A.5.3.3). These simulated effects suggest that expanding education coverage in rural areas could be one way to reduce the existing urban-rural gaps.

4.3 Policy Recommendations

Social mechanisms such as well-targeted direct transfers and equalizing education transfers can play an important role in reducing poverty and inequality.

The Honduran government should consider expanding the CCT coverage in rural areas to reduce poverty. This analysis found that the equalizing effect on poverty of the CCT is higher than the rest of the direct transfers. Furthermore, the CCT program has the capacity to enhance human capital in the long term. The CCT program is well targeted (with a few inclusion errors), but it still presents exclusion errors, given that it only covers 30 percent of the population in the poorest income decile. It is possible to have positive poverty and redistributive impacts by reinforcing the CCT's targeting scheme and expanding the coverage, focusing on rural areas. Geographic targeting using the latest poverty maps presented in chapter 3 may enable the targeting of lagging regions, and combined with other targeting methods, it has the potential to increase the accuracy of the targeting.

Expanding primary education coverage, particularly in rural areas, should be on the agenda for reducing inequality in the country. The analysis shows that public spending on primary education is inequality reducing. Honduras has made important progress in education coverage, but it still reports low educational attainment relative to LAC countries. Furthermore, inequalities persist, as children in urban areas can attend private school or public schools, whereas those in rural areas only have public schools as an option. In addition, there are large differences in human capital accumulation by geographical area, as reported in chapter 1. For example, while 94.5 percent of poor children ages 6–12 living in urban areas are enrolled in school, only 10 percent of poor children ages 6–12 in rural areas are.

The simulation results show that these policy changes could improve the redistributive effects of the fiscal system. In particular, with an increase in in-kind benefits in primary education, fiscal policy in the country could likely be more equalizing. Expanding the coverage of well-targeted transfers could also contribute to poverty reduction. In addition, some of these policies could contribute to reducing the substantial urban-rural gaps in Honduras. The model could also inform the ongoing fiscal reform the government is considering.

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Key Messages: This chapter first analyzes how climate and environmental shocks affect welfare in Honduras using an asset-based framework. Then, it develops a macro-micro simulation model to evaluate the ex ante poverty and distributional impacts of natural hazards and potential adaptation strategies. Finally, the chapter explores the potential for green jobs and the possible bottleneck for a "just" transition. The main findings are as follows:

- *The realization of climate and environmental risks will have a detrimental effect on households' income-generating capacity.* Negative climate shocks will affect households' stock of assets by threatening human capital accumulation (due to an increase in diseases and food insecurity) and the loss of physical assets. Moreover, climate shocks are expected to have adverse effects on labor and agricultural productivity. In addition, an increase in prices due to climate-driven events is expected to affect most Hondurans, because only a few households are net food producers.
- *Adaptation strategies need to have progressive features in their design to protect the poor.* Simulation results show that the cost of climate inaction is already high. Simulations show that not all climate policies will benefit poor households or have significant impacts on poverty. Some policies could have adverse distributional effects. Thus, adaptation strategies need to have progressive features designed to address the adaptation needs of poor and vulnerable households and to benefit and protect them.
- *An adaptive social protection system with well-targeted transfers is critical for reducing poverty and closing the urban-rural gap.* The fiscal cost of reducing poverty through a well-targeted transfer is significantly lower and can help vulnerable households protect themselves against the negative impacts of climate shocks, particularly in rural areas.
- *There are challenges on the path to green jobs.* Employment in Honduras is concentrated in nongreen jobs in nongreen sectors. In addition, the country lags in terms of human capital and social insurance coverage to prepare or protect workers for a green transition.

5.1 Introduction

Honduras's high exposure to extreme natural hazards is a constant threat to its economic stability and its population's well-being, with climate change increasing this vulnerability and amplifying the current development challenges, particularly among the poor in rural areas. Disasters associated with natural hazards, in particular climate-related events, have translated into severe economic and welfare impacts. Hurricane Mitch in 1998 was the worst disaster in the country's recent history; it generated economic damages estimated at 59.6 to 70 percent of GDP[79] and significantly impeded Honduras's development process and poverty reduction efforts. Moreover, climate change is expected to increase the country's vulnerability, specifically through an increase in mean temperatures and in the number and intensity of weather events such as floods, heatwaves, drought, and sea level rise (World Bank 2022b). Under a high-emission scenario (Representative Concentration Pathway [RCP] 8.5), Honduras's mean annual temperature is projected to rise by 1.8°C by 2050 and by 3°C to 5.6°C by the end of the century.[80] The impacts of climate change are expected to disproportionally affect the poorest, who often live in the most vulnerable areas and are more dependent on agriculture. Climate change is already affecting crop yields and causing food insecurity in affected areas in the country's southwestern areas, in which 60–70 percent of the population depends on agriculture or natural resources for their livelihoods (World Bank 2022b).

79 Estimates vary among different sources, ranging between 59.6 percent (EM-DAT) to 70 percent (CEPAL 1999).

80 Climate Change Knowledge Portal (CCKP) of the World Bank. Base temperature used was 23.99°C.

Climate change impacts, compounded by natural resource degradation and limited access to basic needs services, are expected to continue fostering migration from rural areas to urban centers and outside Honduras, with implications for poverty and inequality. Events such as drought and erosion can have permanent effects on migration. Climate-driven agricultural impacts on harvests or livestock (on which the rural poor overwhelmingly rely) increase migration from rural areas to cities and emigration abroad (Wodon et al. 2014; Šedová et al. 2021). After climate-driven disasters or shocks occur, the opportunity cost to rebuild livelihoods at home or abroad is perceived to be similar, while the expected long-term returns on income, education, and health outcomes abroad might be higher. Hurricane Mitch triggered the first large emigration wave in Honduras.[81] The share of vulnerable migrants (refugees, asylum seekers, and internally displaced persons) as a percentage of the total migrant stock is particularly high in Honduras (27 percent in 2015), one of the highest shares compared to the global average of 13 percent. It is the only country in Central America with a gender disparity in its migrant population (59.2 percent female in 2020).[82]

This chapter starts by analyzing how climate and environmental shocks affect welfare (income, poverty, and equity) in Honduras using an asset-based framework to understand the challenges and opportunities related to climate and natural disaster resilience and the lasting effects on the country's growth and poverty path. As described in chapter 2, we use an adaptation of the asset framework developed by Lopez-Calva and Rodríguez-Castelán (2016) to analyze how climate and environmental shocks affect the income-generation capacity of households. The evidence builds on and complements the novel evidence produced in the *Honduras Country Climate and Development Report* (World Bank 2022c).

Then, the chapter develops a macro-micro simulation model to evaluate the ex ante poverty and distributional impacts of natural hazards and potential adaptation strategies. Simulations that rely on historical and hypothetical scenarios to illustrate channels of transmission and potential quantitative welfare impacts are undertaken. First, we analyze a baseline scenario in which the country follows a similar growth pattern as in the past. In this scenario, the country is affected by climate-induced natural hazards with the same median incidence and intensity as in the past and no adaptation or mitigation policy changes are implemented. Then, to capture the uncertainty of these natural hazards, we simulate a "worst-case" scenario with downside risks from natural disasters, so larger economic losses occur when disasters hit; still, no adaptation policies are implemented. Finally, we simulate policy scenarios where different adaptation and social protection policies are implemented. Having multiple and even worst-case scenarios is valuable, because they provide important information on comparative policy options and a range of magnitudes of impacts. The results highlight the importance of certain adaptation and social protection actions to mitigate welfare impacts.

Finally, going beyond adaptation, it is also relevant to understand the distributional implications of transforming the Honduran economy into an environmentally sustainable, low-carbon, and climate-resilient economy; in this context, the chapter explores the potential for green jobs in the Honduran labor market and the potential bottleneck for a "just" transition. Building on the regional work conducted by the LAC Stats Team (World Bank, forthcoming) on green jobs, this chapter estimates the stock of green jobs in order to understand the skills needed for a "just" transition. The chapter assesses the profile of workers in nongreen occupations and sectors to understand the potential distributional implications of green policies through labor market channels.

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81 UN-DESA 1990–2020: https://population.un.org/unmigration/logon_sql.aspx?ReturnUrl=%2funmigration%2fmigrantstockbydestination.aspx.

82 UN-DESA 1990–2020.

This chapter answers the following questions:

- What is the potential impact on poverty and inequality in rural and urban areas of climate and environmental shocks?
- What are the potential effects of natural hazards on poverty and inequality in 2030 and 2050? Which are the best adaptation policies from a poverty reduction perspective?
- What is the potential of green jobs in the Honduran urban and rural labor market? What are the bottlenecks for a "just" transition?

5.2 Analyzing the Effect of Climate on Poverty and Equity using an Asset-Based Framework

To understand how climate and environmental shocks affect poverty in Honduras, we make use of an asset-based framework. This framework helps us analyze the capacity of households to generate income and how climate or other risks could reduce that capacity. The realization of an external shock can affect the stock, utilization, and returns to households' productive assets, as well as prices and transfers received by households. Although households may suffer different shocks, this chapter will only focus on the role of climate and environmental risks. The focus is on the role of climate shocks; therefore, to the extent the available data allow it, this chapter will present some key components of the asset framework related to climate and environmental risks and will not undertake an exhaustive analysis of all elements.

The Stock of Assets and Climate

» Human Capital

Climate change is expected to significantly impact human capital (health outcomes), with larger repercussions for the poor, who have less access to basic services and health care. Severe weather events such as floods, heatwaves, and drought, as well as changes in the disease pattern as a result of the changing climate, are expected to increase the risk of food and water shortages, injuries, and illness. The already unequal access to basic services in health care, water, and sanitation will contribute to an increase in malnutrition and diarrheal diseases, particularly affecting infants and young children in the most vulnerable areas and groups, such as the country's southwestern areas and in the department of Gracias a Dios (World Bank 2022b). The prevalence of malaria, dengue, and diarrhea is expected to increase as a result of rising temperatures and changes in precipitation patterns. Vector-borne diseases, such as dengue, which is already endemic to Honduras, will expand both their geographical and seasonal ranges and malaria might reemerge (World Bank 2022b). The incidence of water-borne diseases is also expected to increase as a result of extreme precipitation, which result in flooded water sources and of droughts, which lead to increased disease transmission through water stored in containers. These conditions can inhibit the labor force's human capital formation and productivity, thus perpetuating future inequality.

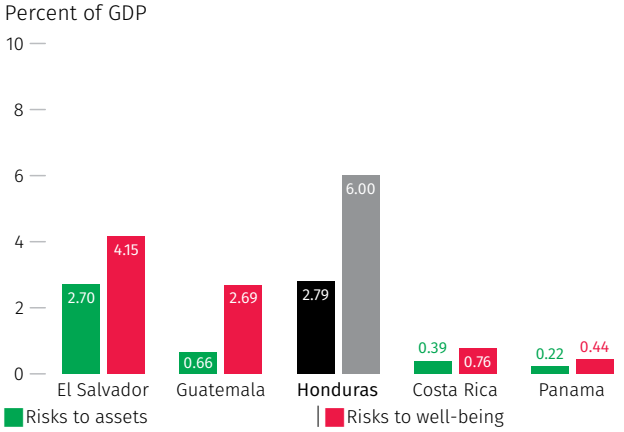
Climate changes are already affecting crop yields, causing food insecurity in affected areas in the country's southwestern areas and posing a threat to human capital formation. The lack of food throughout the country was exacerbated due to the global pandemic. The number of Hondurans experiencing food insecurity almost

doubled from before 2020 (1.8 million) to October 2021 (3.3 million) (World Bank 2022b). Moreover, climate change threatens to aggravate food security and malnutrition, because crop yields are being affected in the southwestern areas, where households depend on agriculture or natural resources for their livelihoods. In these areas, 58 percent of children under 5 suffer from chronic malnutrition and food insecurity associated with low incomes, limited access to clean water, a nutrient-deficient diet (predominantly corn, sorghum, and beans), poor sanitation, and insufficient breastfeeding and complementary feeding practices (World Bank 2022b). As noted in chapter 1, high malnutrition remains a key barrier to human capital formation in Honduras. Moreover, exposure to extremely hot days and poor conditions might negatively affect student performance.

» Physical Assets

The risk to assets and well-being losses resulting from high disaster risk is high in Honduras compared with other countries in Central America. Disaster risks, partly as a result of climate change, could have significant macro impacts and jeopardize any further progress on poverty reduction. Recent evidence shows that the risk of well-being losses in Honduras is estimated at 6 percent of GDP, while the risk to assets is 2.8 percent, the highest among other countries in Central America (figure 5.1).[83] Poor people tend to be disproportionally affected by natural hazards, losing a larger fraction of their wealth and income and having lower socioeconomic resilience[84] and less ability to cope with the impacts of natural hazards (Hallegatte et al. 2016).[85] Because of the disproportionate impact of natural disasters on the poor, disaster risk management and climate change policies, if well designed, can contribute to poverty reduction in developing countries like Honduras.

Figure 5.1: Risks to assets and well-being in Central America, circa 2015



Source: Hallegatte et al. 2016.
Note: More recent estimates are not available.

The impacts of natural hazards disproportionately affect the poorest and marginalized segments of the population, because poor people often live in the most vulnerable and risk-exposed areas. In 2019, about 6 percent of all Honduran households reported being affected by a natural hazard during the previous year; however, among the extreme poor, nearly double the number of households (11 percent) reported damage due to natural events. Moreover, 12 percent of the conditional cash transfer (CCT) beneficiary households, which are disproportionately poor, reported damage, but as a result of their being covered the government could potentially address the needs of this population rapidly through the current social protection system. Departments in the country's southwestern areas—Choluteca, Ocotepeque, and Lempira—had the highest percentage of households affected by a natural hazard (around 15 percent).

83 Risk to assets is defined as the annual average of asset losses. Risks to well-being are measured as the expected asset losses as a share of socioeconomic resilience. The latter is defined as the ratio of asset losses to well-being (consumption) losses.

84 Resilience is the ability to resist, recover from, or adapt to the effects of adverse shocks and stresses, and to adapt and learn to live with changes and uncertainty.

85 Hallegatte et al. 2016.

Not only does a larger fraction of the poor and vulnerable live in areas with more risk exposure, but this population is also more likely to lose a larger share of housing income (imputed rent) when their houses are affected; agricultural assets among the poor can also be disproportionately affected. Based on the household survey (2019 EPHPM), 63.2 percent of the households in the bottom decile of the income distribution reported that they owned their house and had a title of property (the national average is 75.2 percent).[86] In terms of income, a significantly larger share of the total household income of those in the lowest decile was imputed rent[87] (42.7 percent versus 14.1 percent among the top decile) (figure 5.2). While damage to houses was the most common damage reported by affected households (71 percent), 27 and 31 percent of rural and extreme poor households also reported damage to food/crops (national average was 20 percent), negatively affecting the farm income of agricultural households and posing a more significant threat to food security and malnutrition (figure 5.3).

Figure 5.2: Share of imputed rent over total monthly household income by decile, 2019

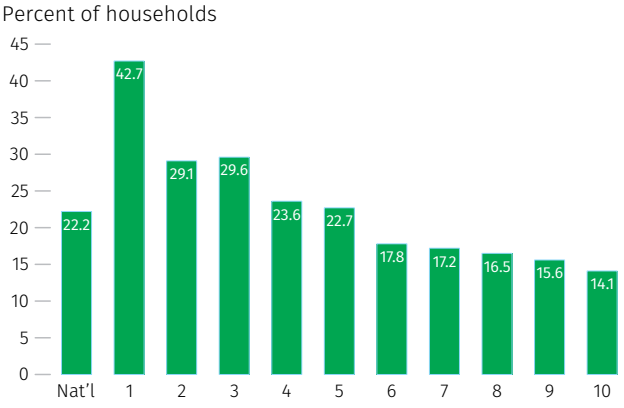
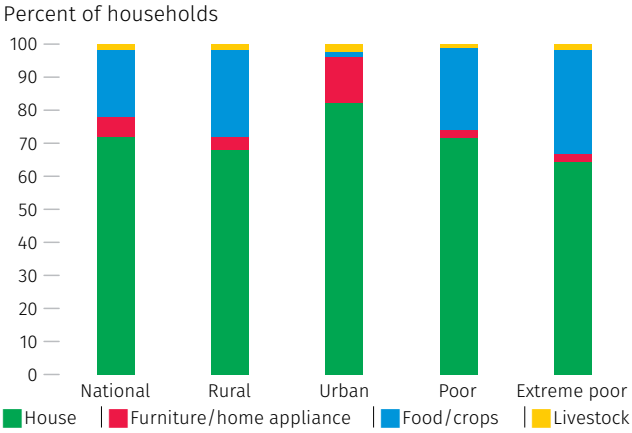


Figure 5.3: Type of damage suffered by households affected by natural hazards, 2019



Source: World Bank estimates based on the 2019 EPHPM.
Note: Decile 1 is the poorest and decile 10 is the richest. Exposure to natural hazards and damage is self-reported in the household survey. Natural hazards include floods, landslides, hurricanes, and droughts. Environmental damage refers to households' having been affected by a natural hazard over the last 12 months.

» Land

Land is likely to become an even more scarce resource due to expected climate-led impacts, making women and indigenous populations (with already limited access to land) potentially more vulnerable to poverty and food insecurity. The loss of productivity of agricultural land, high deforestation rates, and loss of lands near coastlines due to flooding are expected to reduce access to land. In Honduras, indigenous populations and smallholder farmers dependent on subsistence agriculture face aggregated risks and are particularly vulnerable to climate change. This vulnerability is related to their small landholdings, land tenure insecurity, attachment to place, and their reliance on a narrow resource base for their livelihoods. Although women make up 50 percent of the rural population, their participation in agriculture is low due to limited access to land or financing. Women who are heads of households make up about 9 percent of the country's smallholder farmers (World Bank 2022b). Female producers have lower access to training, capital, inputs, and markets for their goods than their male counterparts. When women have access to

86 A large percentage of households in the bottom quintile do own houses (82.5 percent); however, not all of them have titles for them.

87 Imputed rent is defined as the income the household would have to pay if they were renting their dwelling.

land, they have smaller plots on less fertile soil and are less likely to produce export crops than male farmers. In Honduras, already dotted with conflicts over land, the loss of land linked to climate change could exacerbate these conflicts, particularly those in rural areas between small and large agricultural producers and indigenous populations.

Intensity of Use and Return of Assets

» Labor Force Participation

Climate change is expected to continue fostering migration from rural areas to urban centers and outside Honduras, which in turn is expected to have repercussions on the labor market. For example, the number of Honduran immigrants in the United States (the leading destination country) has grown sixfold from 1990 (115,000) to 2020 (over 700,000) (World Bank 2022a). Moreover, as the effects of climate change intensify, immigration outside Honduras will likely continue its upward trend. Rapid-onset events such as earthquakes and floods have temporary effects on migration, while slower-onset events such as drought and erosion can have permanent effects (Wodon et al. 2014). After climate-driven disasters or shocks occur, the opportunity cost to rebuild livelihoods at home or abroad is perceived to be similar, while the expected long-term returns on income, education, and health outcomes abroad might be higher.

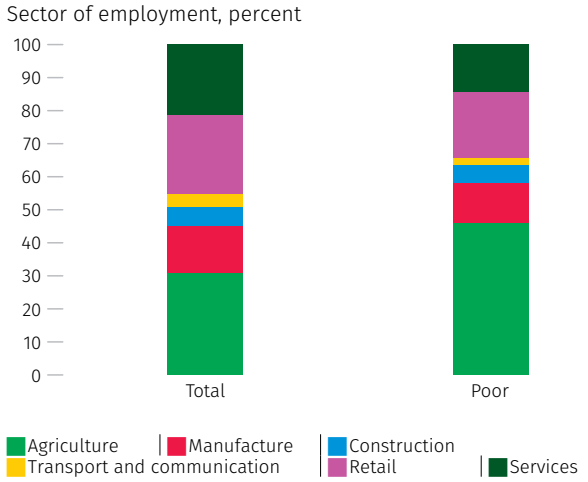
» Labor Productivity and Wages

Labor in Honduras is concentrated in low-productivity sectors and increased heat and damage due to natural hazards could further reduce labor productivity. Low-productivity and low-wage sectors such as retail services concentrated a large share of labor nationally (24 percent), and among the poor (19 percent) (figure 5.4). As employment remains concentrated in sectors marked by unskilled labor that feature high rates of self-employment and informality (such as retail), increased heat could affect the productivity of the poor disproportionally, who have fewer opportunities for adaptation (for example, air conditioning that mitigates the effect of heat). Labor productivity is sensitive to temperature and most countries are beyond the optimum; thus, further temperature increases are expected to reduce labor productivity (Burke, Hsiang, and Miguel 2015).

Climate change has already been affecting rural areas through lower agricultural wages. In rural areas, agricultural wages had the lowest labor income growth rate between 2015 and 2019 compared to the other sectors (figure 5.5). Lower agricultural labor incomes are closely related to climate-driven agricultural shocks, as agricultural production has declined due to the extensive flooding of key plantations, damaging existing crops and delaying cultivation cycles (World Bank 2022a).

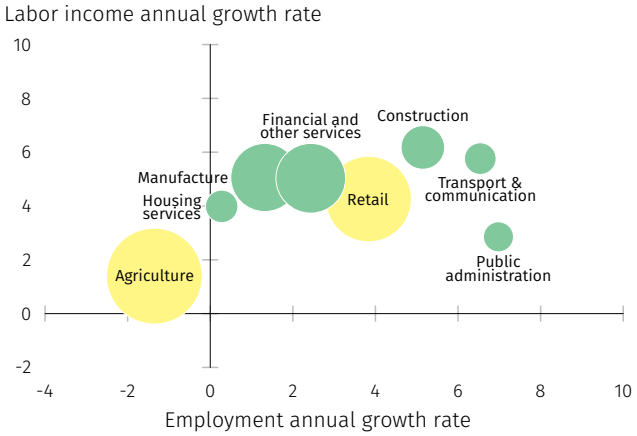
The agricultural sector in particular is expected to suffer reductions in productivity due to climate change, affecting the welfare of poor households living in rural areas. In 2019, while 30 percent of all employed population worked in the agricultural sector, almost half of all poor workers were employed in this sector (figure 5.4). This sector is characterized by a high degree of informality, with low-quality jobs, low productivity, and wages that are only about one-fourth of the formal minimal wage. The agricultural sector is dominated by small-scale farmers, most of whom are poor. Under a high emissions scenario (RCP 8.5), four of the five crops with the most harvested area in Honduras (maize, coffee, beans, and sugarcane) are

Figure 5.4: Sector of employment, total and poor, 2019



Source: World Bank estimates based on the 2019 EPHPM.

Figure 5.5: Annual growth rate of employment and real labor income by sector, 2015–19



Source: World Bank estimates based on the 2019 EPHPM.
Note: The bubbles reflect the share of each sector in total employment in 2015. The bubbles in yellow indicate that a sector offered below-average pay in 2015, whereas green bubbles indicate above-average pay.

expected to be impacted (Sanders et al. 2019), with near-term losses that will only increase over time. By 2050, projections show reductions in yields of rain-fed sugarcane by 37 percent, irrigated sugarcane by 30 percent, and coffee by 21–26 percent (World Bank 2022b). These are also the highest-value agricultural commodities for Honduras. Coffee alone accounted for 40 percent of total agricultural exports in 2010–11 and provided income for more than a million people in Honduras. Other crops produced mostly by the subsistence sector (like maize and beans) are expected to reduce their yields by 12 and less than 10 percent, respectively. These crop yield reductions will significantly impact poor households in the subsistence sector, representing more than 70 percent of agriculture families (GOH 2014).

The Role of Transfers

» Public Transfers

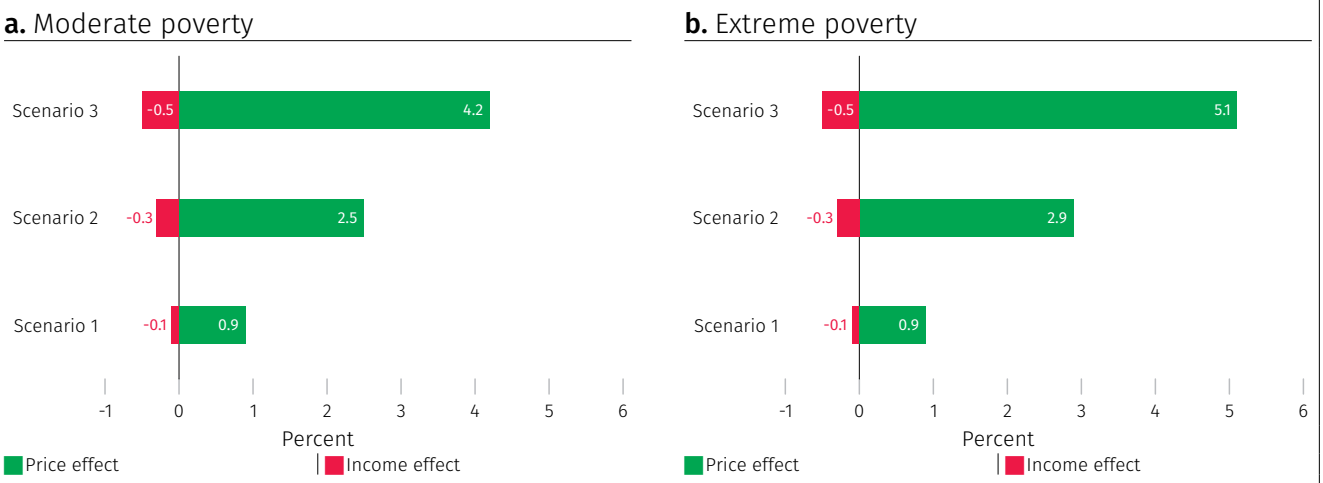
As climate change exacerbates vulnerabilities and exposes more people to climate threats, social assistance instruments will need to protect vulnerable households whose livelihoods may be eroded. To address chronic vulnerabilities, a wide range of safety net instruments provides cash or in-kind transfers to poor households (Grosh et al. 2008). When used effectively, such measures have an immediate impact on reducing inequality and can address the poverty implications of climate-induced price increases; they also support households in managing risk by reducing the incidence of negative coping strategies, such as selling off assets during droughts (World Bank 2010). Moreover, complementary interventions—such as top-up transfers of CCT programs for agricultural households—have led to a diversification of economic activities and better protection from shocks compared to the basic CCT program (Macours, Premand, and Vakis 2012).

The CCT program in Honduras has already served as an instrument to respond to shocks, including those related to climate change (Hurricanes Eta and Iota) and the COVID-19 pandemic. Empirical evidence has shown that the rural component of the CCT program now called Bono Vida Mejor has been effective in reducing the poverty headcount and gap and in increasing school enrollment and attendance among youth ages 6–17 (Attanasio and Murgueitio 2017). In terms of targeting, by 2019 over 63 percent of the urban and rural program beneficiaries belonged to the poorest two income quintiles and over 90 percent of the grantees were women. The CCT program also enabled a rapid response during the COVID-19 pandemic in terms of the identification of beneficiaries for the emergency programs, in part because it permitted a retroactive top-up to the CCT's beneficiary households in the most affected municipalities. However, despite its high progressivity, simulation results estimate that the emergency public transfers had a relatively small impact in 2020, reducing poverty by just 0.6 percentage points due to its low coverage and amount of transfer, although they were more beneficial for extremely poor households. Thus, strengthening social protection in Honduras to make it more resilient in the face of and adaptable to climate change could support economic recovery among the poor and vulnerable.

The Role of Agricultural Prices

The net effect on a household's welfare of the rise in food prices due to climate change will depend on the products involved, the market position of households, and households' expenditure patterns. An increase in the number and intensity of extreme weather events—such as droughts, floods, and heatwaves—will contribute to reduced food availability and increased food prices, threatening food security, nutrition, and the livelihoods of many people. Higher food prices might lead to a reduction in consumption and food quality, because many households are net food buyers; at particular risk are low-income urban and rural households and other vulnerable groups such as women and indigenous populations (FAO et al. 2018). Yet the impact of climate-induced food price changes on welfare is not always negative, because increases in food prices may affect households differently through price changes and earnings. For instance, net food producers will benefit from the increase in the prices of agricultural products.

Figure 5.6: Change in moderate poverty incidence attributed to price and income effects, 2019



Source: World Bank estimates based on the 2019 EPHPM.
Note: The figure presents simulation results for three hypothetical scenarios of food inflation—Scenario 1: food inflation of 3 percent, Scenario 2: food inflation of 9 percent, and Scenario 3: food inflation of 16 percent. Income effect for net food producers: net food producers are those households whose agricultural incomes are higher than total expenditures on food. For further details of this exercise, see box 1.3.

Our analysis shows that the negative effects of the higher cost of the consumption basket will strongly dominate the positive effect of higher agricultural incomes, as the price increases will affect most of the population while the benefits will reach only a minority of net food producers. The aggregate effect on consumer purchasing power will be mitigated to the extent that households can produce food for sale. In Honduras, only 11 percent of households are net food producers; the proportion of poor households who are net food producers is slightly higher (13 percent). If food prices increase as they did during the 2008 food crisis (figure 5.6, scenario 3), then poverty is expected to increase by 4.2 percentage points, because all households would lose welfare due to higher prices. Yet because the fraction of net producers is so small, the income effect would account for a reduction in poverty of only 0.2 percentage points under the same scenario.

5.3 Ex Ante Poverty and Inequality Effects of Lost Income due to Climate Shocks Using a Macro-Micro Methodology

In this subsection, we use a microsimulation model linked to the World Bank's Macro Fiscal Model Framework with climate feature extension (MFMoD-C) to simulate the impacts of different hypothetical increases in climate-induced disaster risk and alternative policy packages. Despite severe data limitations that prevent a comprehensive assessment of the economic cost of disasters caused by natural hazards and climate change, scenario simulation can provide valuable insights into the direction and order of magnitude of climate change impacts and policy responses. Annex 5.4 describes in detail the methodology and gives an overview of the data limitations encountered in the modeling work. In light of these shortcomings, the modeling focuses on the current stock of disaster risk (which includes climate change effects to the extent they have already materialized) rather than climate change modeling. Modeling techniques are applied to simulate the impact of different hypothetical increases in disaster risk due to climate change and alternative policy responses.

The following scenarios are simulated:

- *Baseline Scenario:* In the baseline scenario, the country follows a similar growth pattern as in the past. It is affected by climate-induced natural hazards with the same incidence and intensity and no additional policy changes are implemented either to reduce emissions (mitigation), adapt to climate change and enhance resilience (adaptation), or mitigate the welfare impacts of disasters through social protection measures.
- *Scenario A – Natural hazards:* To capture the uncertainty associated with natural hazards, we model a scenario with downside risks from natural disasters, but with no mitigation policy in place. Under this scenario, the frequency and intensity of disasters do not change, but the expected cumulative losses associated with disasters are higher, so the distribution of macroeconomic outcomes is strongly skewed to the downside.
- *Scenario B1 – Accelerated reconstruction:* Accelerated reconstruction capacity refers to the speed with which public and private entities can rebuild the capital stock affected by natural hazards. This scenario shows the impact of relaxing a model-imposed restriction on the maximum amount of capital stock that can be repaired in a given year.
- *Scenario B2 – Postdisaster universal cash transfer:* A postdisaster transfer is intended to provide social and economic relief in the short run and smooth consumption levels for those affected,

decreasing the reliance on coping mechanisms that might have adverse effects in the long run. This scenario simulates a universal postdisaster cash transfer's impact on households to support housing reconstruction.

- *Scenario B3 – Adaptation investment:* Adaptation investment reduces the resulting damages to productive capital, but has no intrinsic productive value. In this policy scenario, all spending measures are financed through reallocation within the budget, assuming no additional financial resources are made available, and fiscal policy remains reactive.
- *Scenario C1 – Combined scenario:* This scenario combines all policy measures from B1, B2, and B3 (accelerated reconstruction, postdisaster cash transfer and adaptation investment) with no additional financing (all adaptation expenditure financing is through reallocation within the budget).
- *Scenario C2 – Combined scenario with proactive fiscal policy:* This scenario combines the same policy measures as in C1 with a financing strategy that uses disaster risk insurance to provide additional liquidity quickly in the event of a disaster, additional borrowing in the short term to finance adaptation policies, and medium-term additional revenue generation equivalent to 0.25 percent of GDP per year by 2030.
- *Scenario C3 – Combined scenario with CCT:* This scenario includes the same adaptation policies included in C2, but instead of a universal transfer, it includes a targeted social transfer.

Our modeling approach focuses on the welfare impacts of climate-induced hazards and policies to cope with them via three main channels: labor market, prices, and remittances. While there are many transmission channels of climate-induced hazards on welfare, as presented in section 5.2, building and calibrating a quantitative model capturing all or most of these channels is extremely challenging and not feasible with the available data for the country. Therefore, we focus on understanding how natural disaster shocks affect key macroeconomic outcomes that affect household welfare across the income distribution, such as sectoral wages and employment, inflation, and remittance outcomes.

Under the baseline scenario, the macroeconomic outputs from the Macro Structural Modeling Framework with climate extension (MFMoD-C) are critical inputs into the microsimulation and therefore crucial to explaining long-term poverty reduction trends. The outputs are as follows:

- Real GDP growth is expected to grow more or less in line with long-term historical trends (3.2 percent annually in 2019–30, and slightly slower, 2.5 percent annually, in 2030–50).
- Employment is expected to grow 0.9 and 1 percent per year, respectively, over the same periods. These growth rates are expected to be lower than the employment growth rate over the period 2012–19 (2.2 percent), but more in line with long-term "structural" employment, which is obtained by smoothing employment with a Hodrick-Prescott (HP) filter.
- Average real wages are expected to grow 2.7 and 0.2 percent per year, respectively, over the same periods.
- Sectoral employment and real wages are growing in line with the MFMoD-C Model projections. For example, over the 2019–50 period, agricultural (retail) real wages are expected to fall at a 1.6 (0.7) percent annual rate, while agricultural (retail) employment is expected to grow at 2.1 (1.7) percent. This is a key transmission channel when looking at welfare impacts, because a large fraction of the poor is employed in agriculture and unskilled labor-intensive sectors, such as retail.
- Real remittances are expected to grow 3.4 and 1.1 percent annually, respectively, over the same periods. Only 12 percent of poor households received remittances in 2019, so even though remittances matter to a certain extent, most of the dynamics are driven by labor market outcomes in key sectors

in which the poor concentrate (agriculture and low-skilled services). For an explanation of how remittances enter into the model, see annex 5.4.

- Changes in the size and the age composition of the population are expected to be consistent with UN population projections (medium variant). Under these projections, the age dependency ratios are expected to decline from 2019 to 2042, after which they increase again, indicating a closing demographic dividend. Therefore, in this scenario international migration follows past trends and does not accelerate due to climate change.[88]

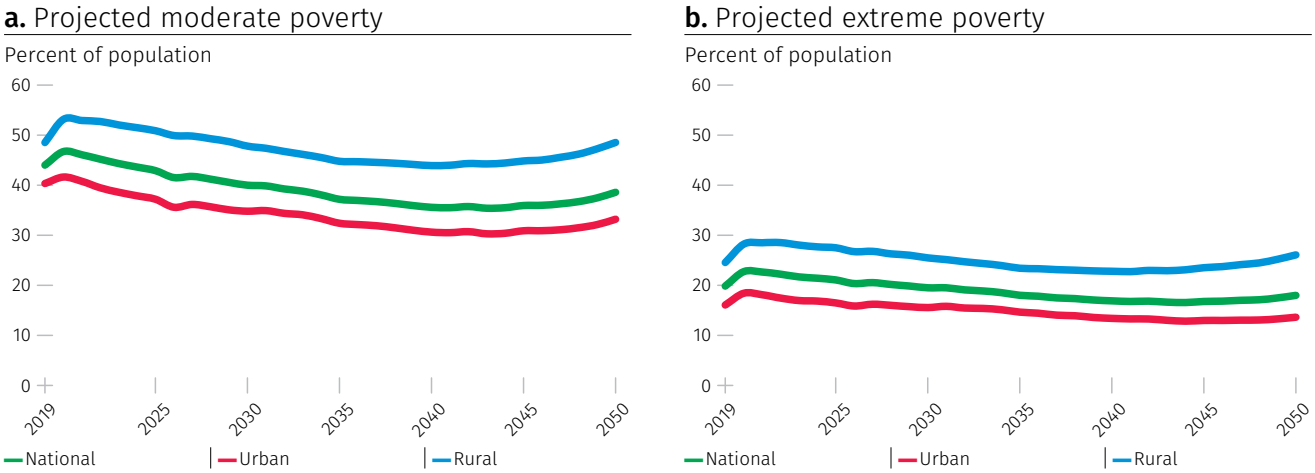
The analysis is divided into two periods: (1) the period 2019–30 and (2) the period 2030–50, when relevant. First, we present the evolution of poverty and inequality under baseline conditions, with no climate change and policy changes. Then, we present scenario simulations for the potential effects of natural hazards and introduce the role of adaptation strategies and social protection measures.

The current incidence of natural hazards, even without further climate change, represents an obstacle to poverty reduction in the country. In the baseline scenario, the country is expected to continue experiencing weak poverty reduction in the long term (2019–50). Poverty will decline with the growing economy of the 2020s before beginning to climb again in the subsequent decades when growth slows down. After the shocks in 2020, slow and stable economic growth is expected to be accompanied by a moderate reduction in moderate and extreme monetary poverty. The trend is expected to be reversed in the subsequent period, 2030–50, when poverty reduction is expected to slow down and then increase at a faster rate, for a total poverty reduction of 5.4 percent over nearly three decades. Even though the country will experience a decrease in the poverty rate, the number of poor is expected to increase significantly from 3.9 million in 2019 to 5.3 million in 2050 due to population growth. Extreme poverty is expected to show similar trends and remain stagnant over the period, but the number of extreme poor is expected to increase from 1.7 million in 2019 to 2.4 million in 2050 (figure 5.7). These overall trends are similar to those observed in 2014–19 when progress on moderate and extreme poverty was limited.

The already large urban-rural divide is expected to widen in the long term (2019–50), as rural poverty is expected to stagnate while urban poverty is expected to decline (figure 5.7). In 2050, poverty in rural areas is expected to be at the same level as in 2019, mostly driven by sizable declines in labor earnings, particularly through lower production and productivity of agriculture. Nonlabor income (pensions, the value of housing services, and capital income) is expected to partially counteract labor losses. Public transfers, remittances, employment, and demographic factors played a marginal role in mitigating the negative income shock in the period 2019–50. Conversely, the projected decline in urban poverty is expected to be driven primarily due to substantial increases in nonlabor income, an effect reinforced by the benefits of remittances, public transfers, and the demographic dividend. These positive income effects will more than compensate for the sizable decline in urban labor earnings. Employment is expected to contribute very little to these poverty dynamics (figure 5.8).

88 Given the uncertainty about future outcomes, namely how migration will be quantitively affected by climate change and how the size and structure of the population will be affected by migration, we assume that changes in the size and the age composition of the population are consistent with the medium variant of UN population projections, which corresponds to the median of several thousand distinct trajectories of each demographic component derived using the probabilistic model of the variability in changes over time.

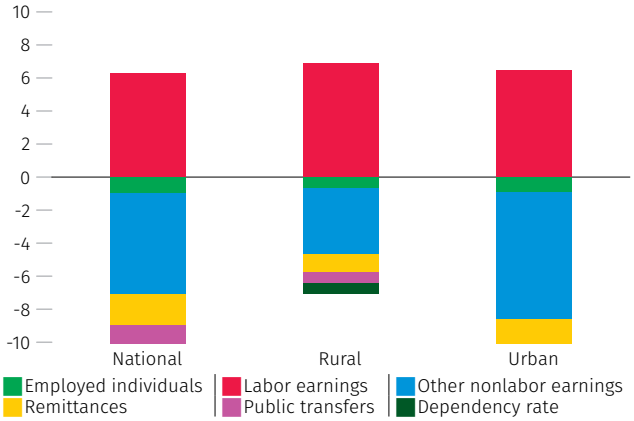
Figure 5.7: Projected moderate and extreme poverty headcount under baseline conditions, 2019–50



Source: World Bank projections.

Inequality is expected to increase in both rural and urban areas over the period 2019–50 and lagging regions may fall further behind as well. The Gini index is expected to increase from 49.1 to 51.3 between 2019 and 2050. Similar to poverty, most inequality outcomes are driven by sectoral labor market outcomes that are projected by the MFMoD-C model. For example, income inequality is mostly driven by rising earning inequality, as suggested by a rising Gini index of labor incomes in both urban and rural areas. This is driven by higher annual wage growth in some high-paying jobs. Negative wage growth is predicted for low-paying sectors such as agriculture (−0.8) and mining (−1.9 percent). Conversely, positive growth of 1.13 percent is expected in low but slightly higher-paid sectors such as manufacturing, and 1.2 percent growth is expected in higher-paying sectors such as transport and communication. However, these trends assume no further changes in social policy (which would affect the poor more). These inequality trends are concerning, considering that the country is already among the most unequal countries in LAC. Regional disparities are expected to widen: our simulations show that poorer departments may experience increased poverty while already better-off departments may experience more considerable poverty reduction. These results suggest that the welfare cost of inaction is high.

Figure 5.8: Decomposition of changes in poverty by income source under baseline scenario, 2019–50



Source: World Bank projections based on the consolidated 2019 EPHPM.
Note: Values along the y-axis are percentage points.

Impact of Natural Hazards

Scenario A. Higher downside risks from natural hazards do not seem to lead to significant variations in poverty compared to the baseline scenario, suggesting that current disasters already represent significant welfare damage. In 2050, combined losses from excessive rain, strong winds, and earthquakes will likely

increase poverty by 1.9 percentage points compared to a hypothetical scenario without natural disasters. To illustrate the economic impact of the nonuniform distribution of disaster risk, scenario A applies a Monte Carlo simulation over the historical distribution of disaster risk. For instance, in 2030 the difference between the baseline (p50) and the worst outcome (p95) is expected to increase poverty by 0.8 percentage points. The difference is expected to increase over time. By 2050, the national poverty rate is expected to be 1.6 percentage points higher compared to the baseline scenario (figure 5.9, panel a). Two opposing effects can explain this small variation. On the one hand, lower labor earnings in the worst scenario are driving poverty up. On the other hand, employment in poor-dependent sectors such as agriculture is increasingly driving poverty down.[89] These simulations indicate that the current incidence of natural hazards has significantly damaged households' welfare and poverty. Still, the *increased* risk from natural hazards could have a relatively smaller *additional* impact on poor households.[90]

Adaptation Strategies

In this exercise, we simulate climate adaptation and social protection policies with the potential of shaping the poverty reduction path that would happen if no action is taken. While there are a variety of policies to mitigate income losses (including labor policies), this section is restricted to adaptive social protection (ASP) and social transfers (cash transfers) to cover income losses. Further analytical work is needed to understand a "just" and equitable transition of mitigation policies through labor markets (for example, see section 5.4 on bottlenecks for a green transition).

Scenario B1. *An accelerated reconstruction of capital stock is not expected to have a significant effect on poverty reduction; in fact, it could even increase poverty if resources are reallocated from other spending priorities.* To illustrate the impact of accelerated reconstruction, scenario B1 raises the budget parameter from 50 to 70 percent of the public investment envelope. This decreases the likelihood that damages become too large to be repaired in a given year, but at the same time adds to the opportunity cost of budget reallocation away from other spending priorities. Increasing the budget to implement reconstruction projects is expected to have a limited effect on poverty reduction (about 0.1 percentage points in 2050). Moreover, reallocating resources from other spending priorities could potentially increase poverty (as in 2030, particularly in urban areas) if resources are taken away from other pro-poor projects and spending (figure 5.9, panel c). Accelerated reconstruction has a relatively larger effect in the worst scenario, suggesting that this policy could reduce the downside risk from natural hazards, but that there is a risk of aggravating opportunity costs as a result of budget reallocation.

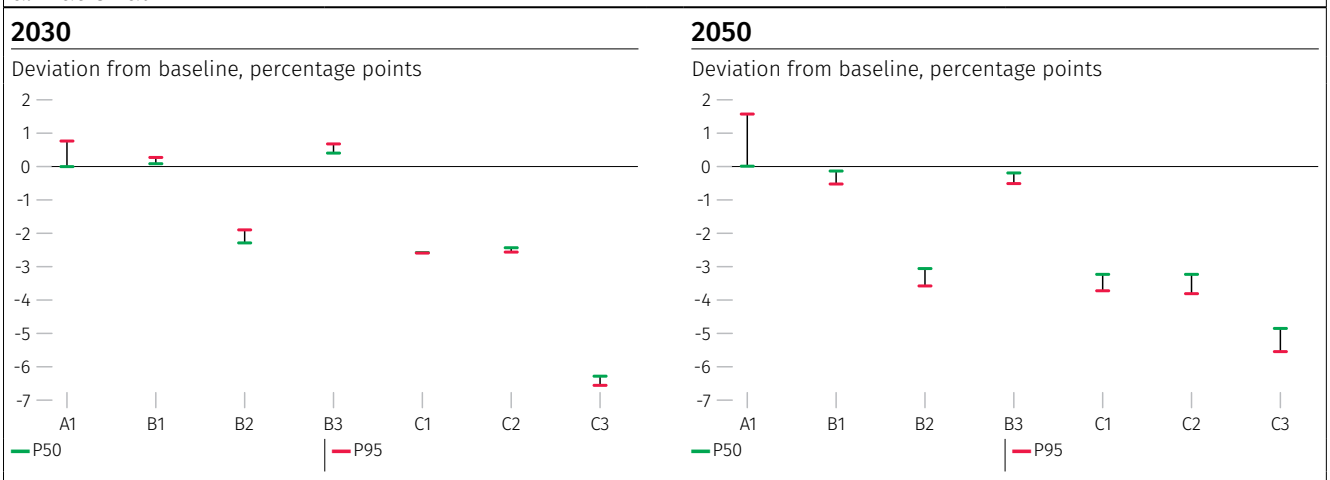
Scenario B2. *A postdisaster transfer as a universal cash transfer is expected to significantly reduce poverty and erase the negative welfare effect entailed in a scenario with downsized risks of natural hazards.* The magnitude of the transfer is set to approximately 20 percent of total damages to privately owned residential real estate for any given natural hazard impact. For illustrative purposes, we assume that the postdisaster transfer is a universal cash transfer. Simulation results show that a universal transfer of 0.06 percent of GDP is expected to decrease poverty by 2.3 percentage points by 2030 and 3.1 percentage points by 2050

89 There is no available information on the potential impacts of water scarcity and heat on agriculture. However, previous evidence for Honduras has shown that agricultural employment does serve as a buffer in times of crisis.

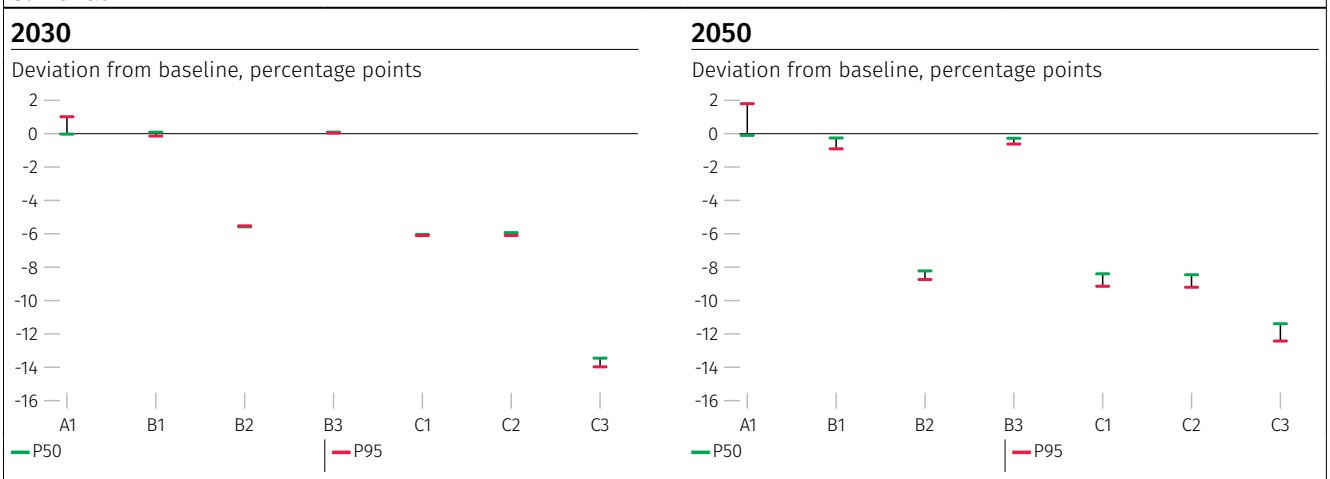
90 These results should be interpreted with caution, because they depend on modeling assumptions and are subject to the caveats mentioned above.

Figure 5.9: Simulation results: Deviations of moderate poverty under different adaptation scenarios

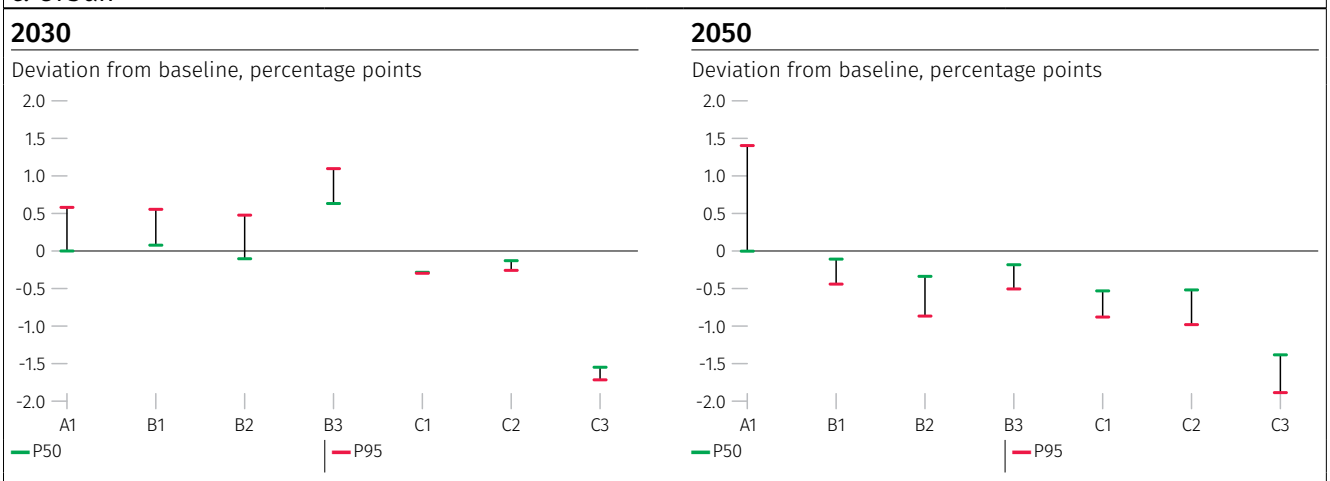
a. National



b. Rural



c. Urban



Source: World Bank staff calculations.
Note: The "Baseline" column shows a scenario where the country follows a similar growth pattern as in the past, the country is affected by climate-induced natural hazards with the same incidence and intensity, and no additional policy changes are made. The model follows a stochastic approach. In scenario A, the median is the baseline scenario, and information on the stochastic distribution of results in the worst 5 percent of outcomes is added. The results for scenarios B1 to C3 show deviations at the median and at the 95th percentile. Scenarios B2, C1, and C2 include the simulation of a universal cash transfer. Scenario C3 includes a simulation of a targeted cash transfer.

(figure 5.9, panel a). This transfer would be enough to bring poverty down below the simulated rates in a baseline scenario. For example, poverty in 2030 and 2050 with a universal social transfer is expected to be 37.8 and 35.6 percent, respectively, while poverty under the baseline scenario is 40.3 and 38.7 percent. These results are driven by the large poverty reduction in rural areas (the CCT would be targeted mostly at the rural poor), where simulations for 2050 show that poverty is expected to decrease by 8 percentage points compared to 0.3 percentage points in urban areas (figure 5.9, panels b and c). These poverty changes likely represent lower bounds, because cash transfers can also have important positive effects on long-term welfare not picked up by the macro model. For instance, cash transfers can encourage people not to emigrate after losing their livelihoods in a disaster or prevent human capital losses due to malnutrition and students' dropping out of school.

Scenario B3. *Adaptation investments alone are not expected to have a sizable effect on the income losses of households due to natural hazards. In the simplified MFMod-C modeling framework, while having no productive value of its own, for any given natural hazard impact adaptation investment reduces the resulting damages to productive capital.* Under scenario B3, adaptation investment is assumed at 20 percent of expected annual damage, which is about 0.4 percent of GDP annually (or 2 percent of total investment).[91] Investments to protect productive capital against natural hazards are expected to have a limited effect on poverty reduction, particularly in urban areas, where they could be poverty increasing. In 2030, simulations show that adaptation investment could increase poverty by 0.4 percentage points (if funds are reallocated from other pro-poor projects such as investments in health or education), and in 2050 poverty is likely to be reduced only by 0.2 percentage points. These results (scenarios B2 and B3) show that not all climate policies are pro-poor or have significant impacts on poverty. The impact depends on the policy tool, the sector addressed, the design of the policy, and the initial socioeconomic conditions (Zachmann et al. 2018). Some adaptation policies and investments by themselves can have adverse distributional effects; thus, they need to have progressive features to protect the most vulnerable households.

Scenario C1 and C2. *Long-term policy solutions need to increase the resilience of households and roll out effective social protection to mitigate negative welfare impacts from natural hazards in a fiscally responsible manner.* To improve households' resilience, adaptation policies need to increase access to reliable infrastructure and assets and proper insurance. Additionally, vulnerable households, which already struggle to meet basic needs, require direct support when natural hazards arrive. An effective ASP system is also needed. However, an alternative combination of policies may lead to different outcomes; hence, it is important to simulate how well they would support households in order to achieve optimal design while being fiscally responsible. Scenario C1 is a combination of all policy measures from B1, B2, and B3 with no additional financing (all adaptation expenditure financing is from reallocation within the budget). Scenario C2 combines the same policy measures with a financing strategy that uses disaster risk insurance to provide additional liquidity quickly in the event of a disaster, additional borrowing in the short term to finance adaptation policies, and medium-term additional revenue generation equivalent to 0.25 percent of GDP per year by 2030.[92] Simulation results show that policy scenarios C1 and C2 are expected to reduce poverty by 3.3 percentage points in the baseline and by 3.8 percentage points in the worst scenario (p95), mostly driven by the positive income effect of the universal cash transfer.

91 The 0.4 percent per year would go toward building this adaption capital stock, which is not otherwise productive but which protects existing capital stock in the event of a shock.

92 The impacts under this scenario are partial, because the microsimulation model does not currently produce ex ante analysis of the distribution impact of taxes and spending.

Scenario C3. *As shown above, adding a yearly cash transfer to adaptation policies decreases poverty and offsets the negative effect of being in the worst scenario with downsized risk from natural hazards; using a targeted social transfer is even more effective.* As shown in chapter 4, direct cash transfers in Honduras are progressive and equalizing; moreover, CCT programs have the largest marginal impact on poverty reduction. A top-up cash transfer of the same size directed toward the beneficiaries of the existing CCT program[93] would yield even better results on poverty. Because the CCT is already decently targeted, recipients are more likely to be poor (currently 68 percent are poor) and are more exposed to hazards, as shown above. The simulation results show that this additional transfer would reduce expected poverty by about 4.9 percentage points in 2050 compared with the baseline scenario. Moreover, in 2050 the poverty reduction is expected to be much larger in rural areas (11.4 percentage points) compared to urban areas (1.4 percentage points), which would help close the urban-rural gap considerably (figure 5.9, panel b). The size of the simulated top-up transfer is 0.06 percent of the GDP of the corresponding year, which is very generous, considering that the fiscal cost of the CCT was close to 0.14 percent of GDP in 2019. It would also be more effective compared to the universal transfer. In fact, in order to obtain the same poverty reduction as in the scenario with a universal transfer (scenario B2), it would only take 0.01 percent of the GDP with a targeted transfer such as the CCT.

This simulation exercise points to several conclusions regarding the cost of climate inaction and the optimal policies to protect the poor from natural hazards and climate change. First, while future economic growth should continue to reduce poverty, it will not sustain poverty reduction efforts by itself. Second, not all climate policies benefit poor households or significantly impact poverty. Third, some mitigation policies can have adverse distributional effects or minimum poverty reduction. Also, adaptation policies and investments, such as the one modeled here, need to have progressive features designed to address the adaptation needs of poor and vulnerable households and to benefit and protect them. As a starting point, geographic targeting (as proposed in the next section on spatial assessment) can help direct adaptation investments to municipalities with a high risk of poverty and hazards. Additionally, it is critical to mitigate the expected increases in poverty through the social protection system, with well-targeted transfers playing a key role in poverty reduction. Consistent with international evidence (Macours, Premand, and Vakis 2012), the fiscal cost of reducing poverty through a well-targeted transfer compared to a universal transfer is significantly lower in Honduras and can help vulnerable households protect themselves against the negative impacts of climate shocks. However, the design of the targeted transfer, implementation, and fiscal costs need to be carefully considered. For example, eligibility conditions should be set to include groups more likely to be affected by climate-induced hazards, the size of the transfer should be linked with welfare losses, and so forth.

5.4 Green Jobs: Bottleneck toward a "Just" Transition

Mitigation policies and policies to promote green growth can lead to rising inequality via the labor market channel. In particular, the transition from fossil fuels to renewables may involve significant shifts from a sectoral and a spatial perspective. From a sectoral perspective, there may be job losses depending on the ability of workers to move toward skill-biased intensive green industries or even to move to

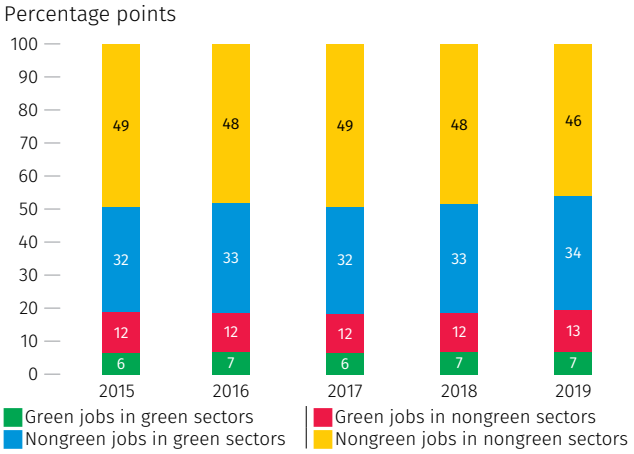
93 While other social programs may also work in this context, there is limited quantitative evidence on their potential poverty impacts for Honduras.

new occupations within the same sector. From a spatial perspective, some jobs at the local level may be displaced, for example, if coal plants in certain areas are closed. These distributional implications are important for political economy reasons: identifying and mitigating the negative impacts can lead to increased acceptance of decarbonization and policies promoting green growth.

To understand the potential magnitude and direction of the job losses resulting from the transition to renewables, as well as which workers are more likely to be affected, it is important to first classify occupations as "green jobs."[94] We used the classification of Sofroniou and Anderson (2021), which distinguishes between three categories of "green occupations" in an attempt to show variation in the impact of greening on the job market: (1) new and emerging green occupations: green occupations that are either completely new or have emerged from other occupations; (2) green enhanced skills occupations: green occupations are not new, but have been subject to substantial greening effects, altering existing work and worker requirements; and (3) green increased demand occupations: green occupations are not subject to any significant change in work and worker requirements, but are in increasing demand due to greening.

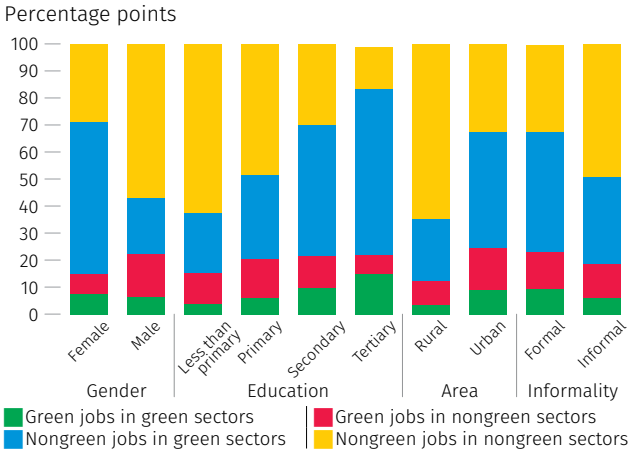
In Honduras, employment is concentrated in nongreen jobs in nongreen sectors, which comprise the most vulnerable groups in the transition toward a green economy. The share of nongreen jobs in nongreen sectors has fallen slightly over time with green sectors absorbing most of this decline. Nevertheless, in 2019 46 percent of employment was concentrated in nongreen jobs in nongreen sectors, much higher than the LAC average of 34 percent (figure 5.10). The good news is that nongreen sectors (such as utilities, mining, transport, and manufacturing) have a higher share of green jobs, which could facilitate the transition of displaced workers.

Figure 5.10: Prevalence of green jobs in green and nongreen sectors, 2015–19



Source: World Bank, forthcoming.
Note: Green jobs are occupations that reduce the use of fossil fuels, decrease GHG emissions, improve energy efficiency, increase recycling, and adopt renewable forms of energy. Green sectors are sectors where GHG emissions per worker are below the median. Green jobs are measured following the Occupational Information Network (O*NET).

Figure 5.11: Prevalence of green jobs in green and nongreen sectors by groups, 2019



Source: World Bank, forthcoming.
Note: Green jobs are occupations that reduce the use of fossil fuels, decrease GHG emissions, improve energy efficiency, increase recycling, and adopt renewable forms of energy. Green sectors are sectors where GHG emissions per worker are below the median. Green jobs are measured following the Occupational Information Network (O*NET).

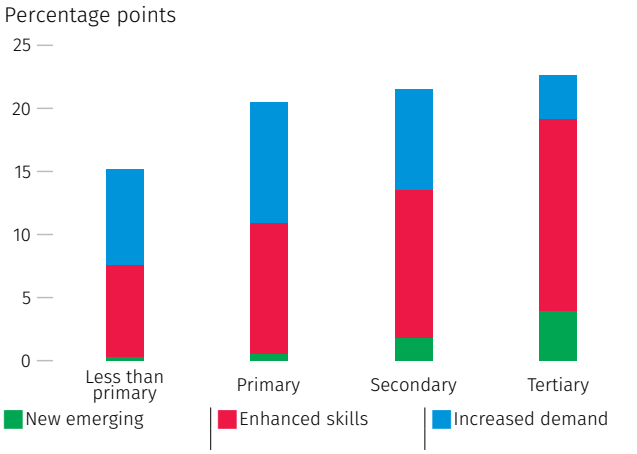
94 Authors classify sectors of economic activity in two groups (green and nongreen) by whether their emissions per worker are below or above the median within the country. Therefore, the greenness of a sector is defined in relative terms and not linked to a standard threshold of greenhouse gas emissions, as those set under the Paris Agreement. One implication of using a relative measure is that a sector today—using this definition—may not be evaluated in the same way in the future.

The high concentration of nongreen employment in agriculture could be a challenge during the process of structural transformation toward more modern and greener sectors. The agricultural sector is among the least green sectors and concentrates a large share of employment, mostly non green. In 2019, about 30 percent of the employed population and almost half of all poor workers worked in agriculture. Moreover, 96 percent of agricultural employment are nongreen jobs, challenging the process of structural transformation (figure 5.11).

Women, informal, and rural workers are less likely to have green jobs. While green jobs account for 22 percent of all male employment, such jobs are held by only 15 percent of employed women. In particular, males are more likely to work in existing occupations that may see increased demand with an expanding green economy. Rural workers represent the most vulnerable group: 65 percent of the employment in rural areas is concentrated in nongreen jobs in nongreen sectors. In addition, driven by the agricultural sector, almost half of informal workers are in the most vulnerable group.

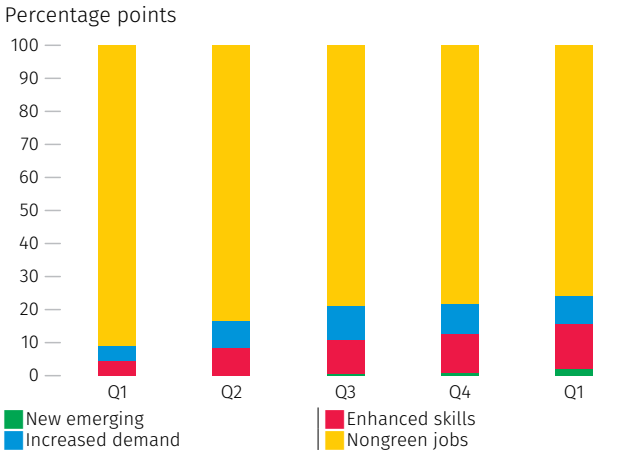
The share of green jobs is rather similar across education levels, but there are heterogeneities in terms of the types of green jobs. For every education level (primary, secondary, and tertiary), green jobs represent about 21 percent of all employment. However, the type of green job differs, depending on the level of education. All green jobs for workers with less than primary education are existing occupations with increased demand (8 percent) and jobs that require enhanced skills (7 percent); there are no new emerging green jobs among this education group (figure 5.12). By contrast, high-skilled green jobs (occupations that emerge as a result of the green economy) are more prevalent among those with higher levels of education.

Figure 5.12: Green jobs by education level, 2019



Source: World Bank, forthcoming.
Note: Types of green jobs refer to (1) those in increasing demand as the green economy expands (occupation already exists), (2) those involving enhanced skills (occupation exists and but new skills are required), and (3) new emerging jobs (unique work and worker's requirements).

Figure 5.13: Green jobs by quintile, 2019

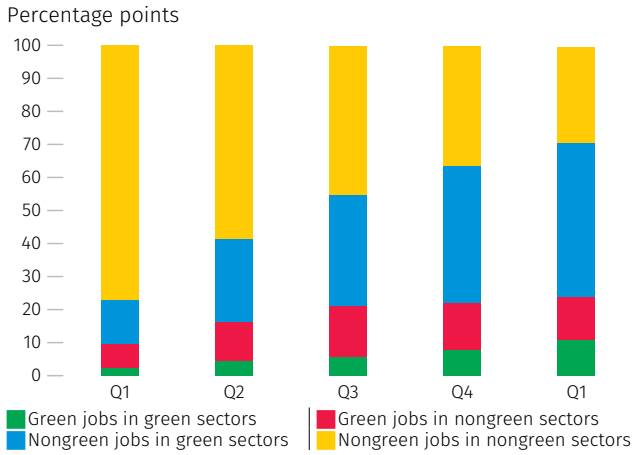


Source: World Bank, forthcoming.
Note: Types of green jobs refer to (1) those in increasing demand as the green economy expands (occupation already exists), (2) those involving enhanced skills (occupation exists and but new skills are required), and (3) new emerging jobs (unique work and worker's requirements).

Nongreen jobs are more prevalent in poorer quintiles and the share of vulnerable workers is significantly higher (figures 5.13 and 5.14). For example, in 2019 about 90 percent of occupations in the poorest quintile were nongreen jobs, and a mere 5 and 4 percent were green jobs with increased demand and green jobs with enhanced skills, respectively. In contrast, 76 percent of jobs in the top quintile were nongreen jobs, 8 percent were green jobs with increased demand, 14 percent green jobs with enhanced skills, and 2 percent were new emerging green jobs (figure 5.13). Moreover, more than 3 out of 4 workers in the poorest

quintile are in the most vulnerable employment category (they have nongreen jobs in nongreen sectors) compared to 29 percent in the top quintile (figure 5.14).

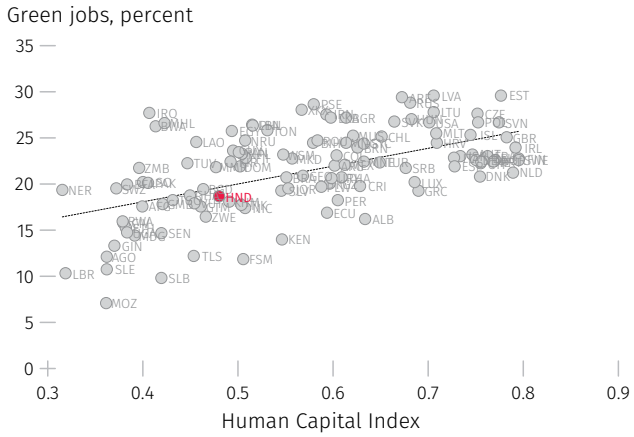
Figure 5.14: Prevalence of green jobs in green and nongreen sectors by quintile, 2019



Source: World Bank, forthcoming.
Note: Green jobs are occupations that reduce the use of fossil fuels, decrease GHG emissions, improve energy efficiency, increase recycling, and adopt renewable forms of energy. Green sectors are sectors in which GHG emissions per worker are below the median. Green jobs are measured following the Occupational Information Network (O*NET).

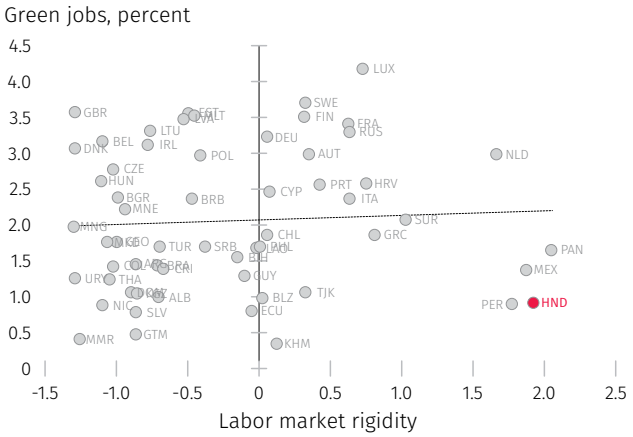
Honduras lags behind in terms of human capital and social insurance coverage to prepare workers for a green transition; in addition, the rigidity of labor market regulations could hinder the transition. Without improving human capital, labor market disruptions may widen gaps within and between countries. Better human capital is linked to more green jobs (World Bank, forthcoming). Yet Honduras lags behind in terms of human capital accumulation compared to other LAC countries, hindering the preparedness from upgrading the skills of workers (figure 5.15). Furthermore, given the high levels of informality in the country, the lack of access to social insurance when facing job displacement may affect poorer people disproportionately. In addition, rigid labor market regulations may slow down the process of labor reallocation (figure 5.16). Thus, the lower prevalence of green jobs and more rigid labor market regulations put the country at a disadvantage in relation to the transition.

Figure 5.15: Green jobs and Human Capital Index, 2019



Source: World Bank, forthcoming.
Note: Honduras is indicated by the red circle.

Figure 5.16: Green jobs and labor market rigidity, 2019



Source: World Bank, forthcoming.
Note: Honduras is indicated by the red circle.

5.5 Policy Recommendations

The welfare cost of climate inaction is already high for Honduras, hindering the ability to close gaps between rural and urban areas, even if the worst conditions do not materialize. As shown with the microsimulation model, while future economic growth should continue to reduce poverty, it will not reduce poverty significantly, nor will it close the gap between urban and rural areas. This implies that implementing policies to reduce poverty and mitigate the negative welfare impacts of natural hazards is critical, even if the country does not experience accelerating climate change, a higher incidence and greater intensity of natural hazards, or higher expected cumulative losses associated with disasters. Improving resilience against disaster risk will depend on the ability of households, firms, and governments to avoid the generation of new risks, invest more in risk mitigation, and enhance preparedness and a timely response.

Not all climate policies are pro-poor or have significant impacts on urban poverty or rural poverty. Some climate adaptation policies can have adverse distributional effects. The impact depends on the policy tool, the sector addressed, the design of the policy, and the initial socioeconomic conditions (Zachmann et al. 2018). A more proactive fiscal policy (versus a reactive policy with reallocations within the budget in response to a disaster) could combine adaptation investment with fiscal provisions with distributive implications. Further empirical analysis for Honduras is needed in this regard to understand the difference between rural and urban areas. This is critical in order to mitigate the potential adverse effects of climate policies and increase the acceptability of decarbonization. Adaptation policies, such as the one modeled here, that include accelerated reconstruction and adaptation investments need to have progressive features so that they focus on the adaptation needs of the poor. They should be designed to benefit poor households, protect those identified as vulnerable, and be aware of the different adaptation needs in urban and rural areas.

In addition to pro-poor adaptation investments, an effective and adaptive social protection system is also critical—with well-targeted transfers playing a key role in poverty reduction. To mitigate impacts from natural hazards, long-term policy solutions need to increase the resilience of households and roll out effective social protection in a fiscally responsible manner. An ASP system aims to ensure that social protection systems are well equipped and flexible enough to provide timely and appropriate responses to changing circumstances and the needs of those affected when a shock occurs (Bowen et al. 2020). Consistent with international evidence, the fiscal cost of reducing poverty through a well-targeted transfer compared to a universal transfer is significantly lower in Honduras. The design, implementation, and fiscal costs of the targeted transfer need to be carefully considered. For example, eligibility conditions need to take into account the characteristics of the groups more likely to be affected by climate-induced hazards, the size of the transfer needs to be linked with the welfare losses, and so forth.

The social protection system and labor regulation could support the poor and vulnerable during the transition to a green economy. Instruments such as the CCT program could provide support to poor displaced workers during the adjustment to a new market. However, a recent analysis of the entire social protection system suggests it has two major problems (Ham and Membreno-Cedillo 2021). First, workers are not effectively protected from diverse risks and those in need do not receive enough resources. Second, inefficient rules and use of resources reduce productivity and growth, essentially taxing formality and subsidizing informality, and reducing incentives to contribute. Furthermore, Honduras does not have unemployment insurance, which could help workers transition into green jobs. Thus, it is vital to develop policies that can support firms and workers as they make the transition to the new market.

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Chapter 6. The Interplay of Human Capital and the Labor Market

Key Messages: This chapter assesses the potential medium-term impacts of human capital, formalization reforms, and policies facilitating labor market matching on employment levels, the shares of formal and informal work, wage distributions, poverty, and GDP per capita growth in Honduras. The main findings are as follows:

- *Informality is disproportionately a rural phenomenon that affects the low-educated workers significantly more than the educated.* The high level of informality in rural areas is explained by low job destruction rates among the low-educated workers and high job creation rates in the informal sector, compared to the formal sector, at all educational levels.
- *Unemployment is significantly higher in urban areas, particularly among the youth.* Our results highlight two factors that explain the high levels of unemployment in urban areas. The first is the high level of job destruction in the informal sector, particularly among the young (ages 16–24), especially those with a higher level of education. Young workers living in urban settings do not keep their informal-sector jobs for long, particularly if they are highly educated; these workers prefer to be unemployed and look for better formal-sector opportunities. The second is the low level of job creation in the formal sector at all educational levels.
- *The country is also characterized by significant overall wage inequality; formal-informal wage differentials in Honduras are large, even when compared with other countries in the region, with differences in educational attainment playing a role.* In both urban and rural areas, workers in the formal sector are, on average, more educated than those in the informal sector. The large differences in wages between sectors may result from a combination of factors. Our results show that most wage differentials across sectors are explained by differences in worker characteristics, such as educational attainment and experience; unobserved productivity differences contribute to wage inequality as well.

In terms of policies, our simulations show that:

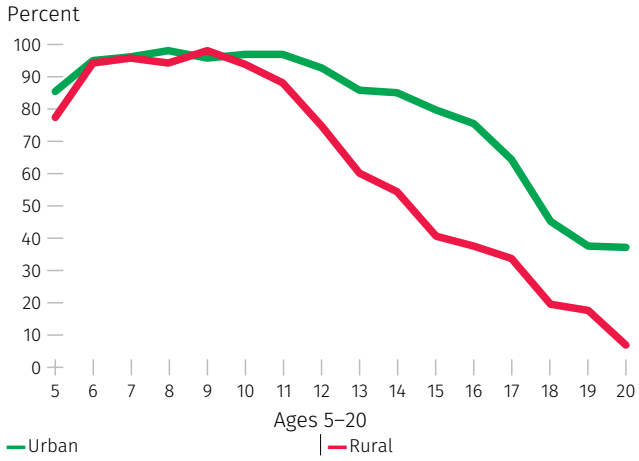
- *Human capital policies that expand education coverage to levels closer to those of other Central American countries can lift incomes above the low-wage thresholds and significantly impact poverty and economic growth in the medium term; when targeted to rural areas, they can contribute significantly to reducing the urban-rural poverty gap.* Such policies induce formalization and generate significant productivity and wage growth in the formal and informal sectors while reducing wage inequality. Education is critical in enabling the transition from informal to formal employment; more-educated people transition easily, while the low-educated youth in particular have difficulties accessing and matching formal jobs. Lifting labor incomes above poverty levels is critical for increasing GDP per capita growth and reducing poverty levels in Honduras. Based on this evidence and consistent with the evidence presented in the other chapters of this report, there is an urgent need for investments in human capital, particularly human capital policies focused on expanding access to education and raising average schooling levels. In contrast, the poverty and economic growth impacts of productivity-enhancing policies are smaller.
- *Formalization policies, which decrease firms' cost to operate formally or increase the costs of operating in the informal sector, raise labor productivity and wages and shift employment from the informal to the formal sector; they can reduce poverty and boost economic growth, but to a lower extent than education-enhancing human capital policies.* These policies can raise labor productivity by shifting a large share of workers to the highly productive formal sector, though not all workers can be absorbed by the formal sector and thus some will join the pool of the unemployed. Their impact on poverty and economic growth is more limited than that of human capital policies, given the slightly lower productivity impacts. These policies also have the potential to reduce the urban-rural poverty gap, but their impact is smaller than that of targeted education policies.
- *Intermediation policies designed to improve the process of connecting vacancies with job seekers could lead to a slight decrease in unemployment among certain groups, growth in the formal sector, and rising productivity and wages.* Compared to other policies, reducing friction and mismatches has the potential to reduce unemployment, but this happens mostly among the highly educated, who likely suffer more from frictions and skill mismatches.

6.1 Motivation

Despite high spending on education, Hondurans continue to face deep and persistent disparities in terms of the access to and quality of education, with rural areas heavily penalized, even before the COVID-19 pandemic. The benchmarking analysis shows Honduras fares relatively well on education spending (as a percentage of overall government expenditure) compared to other countries in the Latin America and Caribbean (LAC) region or countries with similar income levels. Although the country has made significant progress in expanding access to primary education, low enrollment for youth ages 5–20 remains strongly associated with geography (figure 6.1) and family income (World Bank 2022a). Gross and net school enrollment levels at all educational levels (primary, secondary, and tertiary) remain low by LAC standards (benchmarking exercise).

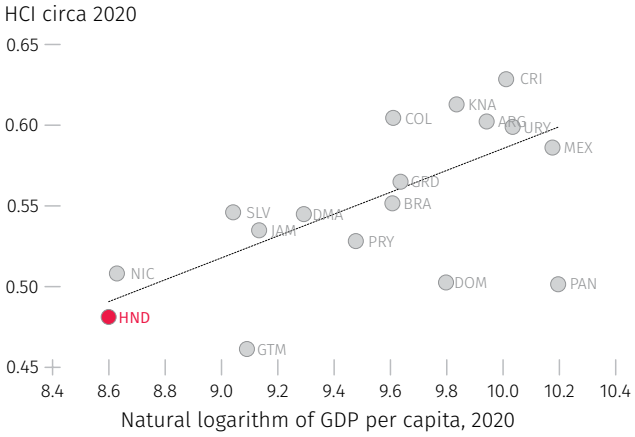
The Human Capital Index (HCI) shows that low access to quality education translates into lower lifetime productivity in Honduras.[95] A child born in Honduras today will be 48 percent as productive when she grows up as she could be if she enjoyed complete education and full health. This productivity indicator is one of the lowest in the LAC region, even when considering GDP per capita levels (figure 6.2). Expected years of school, measured as the number of years of education a child born today can expect to achieve by the age of 18, are relatively low (9.6 years); this is consistent with low enrollment rates. Factoring in what children actually learn results in only 6.1 expected years of school, the lowest in the region.

Figure 6.1: Honduras urban-rural enrollment, 2019



Source: World Bank estimates using the Consolidated EPHPM 2019.

Figure 6.2: Human Capital Index (boys and girls), LAC countries



Source: World Development Indicators (WDI) World Bank 2022b.

The consequences of the COVID-19 pandemic threaten to leave generations behind and exacerbate existing inequalities. Recent World Bank simulations point to potentially severe impacts of the pandemic on learning poverty and learning-adjusted years of schooling, with significant implications for lifetime earnings and productivity. Prior to COVID-19, 75 percent of children in Honduras could not read with proficiency by the late primary age, the second-largest share in LAC after the Dominican Republic. The World Bank's COVID-19 learning losses simulation tool estimates the effects of school closures and mitigation efforts

95 Subnational HCI values are not available for Honduras.

on learning-adjusted years of schooling (LAYS).[96] The simulation estimates that 18 percent of pre-COVID-19 LAYS could be lost in Honduras due to the pandemic (World Bank 2021). Though there are no estimates available, learning losses are likely to be higher among the poorest households, particularly those in rural areas, who have low levels of access to the internet and lower levels of educational attainment, as shown in chapter 2. These losses in human capital are concerning, considering the insufficient stock of human capital before the pandemic and the potential long-term impacts on labor earnings, returns to schooling, and labor productivity.

Labor markets and human capital are closely interrelated and creating more and better jobs has become a top priority for the country.[97] Prior to the pandemic, a larger share of workers in rural areas, particularly unskilled workers, remained in low-productivity and informal jobs. The urban-rural hourly wage gap was large and increasing during this period.

The informal sector accounts for a substantial fraction of employment, regardless of how it is measured, and the incidence is particularly high in rural areas. According to our benchmarking exercise, the country is one of the worst performers globally, in LAC, and among lower-middle-income (LMI) countries in terms of informality rates.[98] At the same time, Honduras does not have high unemployment levels relative to any comparator groups (LAC, LMI, or the world), though underemployment is prevalent. The overwhelming majority of Honduran workers are employed in the informal sector, particularly in rural areas. In 2019, the share of informal[99] employment in rural areas was close to 94.4 percent and the majority of the informally employed worked in agriculture (56 percent). Informality is significantly lower in urban areas (71.8 percent) and only 6.8 percent of urban workers are in the agricultural sector.[100] Informality is partly driven by high formal-sector minimum wages and burdensome tax administration procedures, which increase the cost of operating formally (Michel and Walker 2020). A more detailed characterization of the informal sector and the drivers of informality is needed.

The urban-rural wage gap is high and widening and could be associated with differences in human capital and the types of employment in urban and rural areas. Differences in median hourly earnings for urban and rural wage workers are sizable and expanded in the period 2014–19. This wage gap could be driven by systematic differences in the employment types of and human capital accumulation in the employed population. While nearly half of the employed rural population is unpaid or self-employed, this is the case for just 3 out of 10 urban workers. Similarly, a higher share of the employed urban population has salary employment (59.9 percent versus 41.1 percent for rural workers) (figure 6.3). Productivity differences associated with lower educational attainment also seem to play a role. For example, while 4 out of 10 working-age individuals in rural areas only have primary education or less, this is true of 18 percent of working-age individuals in urban areas (figure 6.4).

96 LAYS is a measure that combines the amount of schooling that children typically attain with the quality of learning during school years relative to a benchmark.

97 According to the country's strategic vision (República de Honduras 2010), the government aims to reduce the rate of *open* unemployment to 2 percent and the rate of *invisible* unemployment to 5 percent (Objective 3).

98 Informality is defined here as both a percentage of non-agriculture employment and as a percentage of overall employment.

99 Here the definition of informality is based on the legal or social protection definition.

100 World Bank estimates based on the 2019 Permanent Multipurpose Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples, EPHPM).

Figure 6.3: Distribution of employment by type and urban-rural, 2019

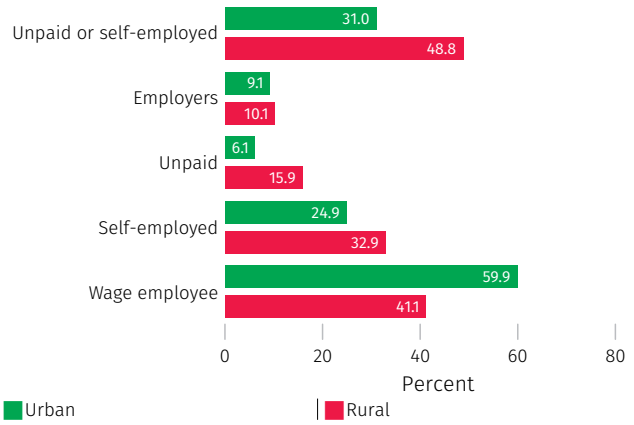
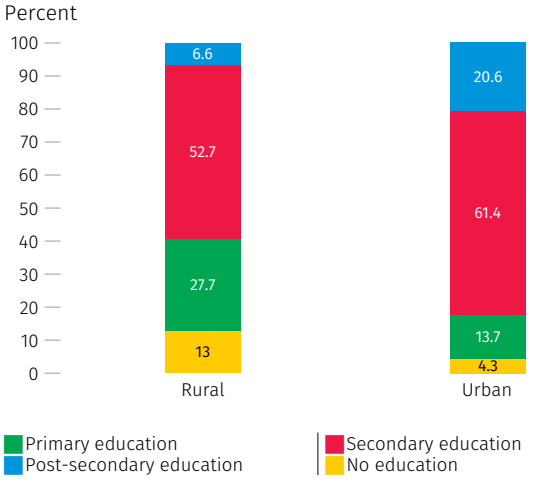


Figure 6.4: Distribution of educational attainment of the working-age population by urban-rural, 2019



Source: World Bank estimates using the 2019 EPHPM.

This chapter constructs a macro-micro labor simulation model, not previously developed for Honduras, to give insights into the dynamics of the labor market and by extension the drivers of wage inequality. The chapter capitalizes on SIMLAB, an innovative macro-micro labor simulation model capable of simulating a rich array of labor market and other relevant macroeconomic variables, which has been recently piloted by the World Bank's Poverty Global Practice in several countries across regions. The underlying model is a structural job search and matching labor model with a large informal sector and heterogenous workers (a critical element for understanding the sources of wage inequality). Though Honduran workers in urban and rural areas can search for and find job vacancies nationally, they may have different skill levels, and jobs may require different qualifications, making the matchup of suitable jobs to job seekers and suitable workers to firms uncertain. Honduran firms may not know all the workers in the market and more importantly may not know where the workers best-suited to their vacancies are. As a result of these frictions, unemployment emerges. These features characterize a labor market with frictions, which are incorporated into the model as part of the matching process between the unemployed and vacancies. The parameters in the model are estimated using household-level data to replicate the labor market structure of Honduras in 2019.

The model is also valuable for understanding the effect of policies in the supply and demand sides of the market, as well as in intermediation to improve labor market outcomes, poverty, and economic growth. Policies on the supply side of the market include education and training. On the demand side of the market, they include regulations and incentives for employers to create higher-quality jobs in the formal or informal sector or labor market intermediation policies aiming to better match vacancies with unemployed workers.

We use the model to assess the potential impacts of human capital reforms on employment levels, the shares of formal and informal work, wage distributions, poverty, and GDP per capita growth in Honduras. The model helps to assess the potential ex ante medium-term impacts of human capital reforms and facilitates the comparison of the potential effects of alternative structural policies on the labor market

(for example, formalization policies and labor market policies affecting matching efficiency[101]). The model enables quantification of the compositional and distributional impacts of geographically targeted human capital reforms, as well as those of other policy reforms affecting firms' creation or destruction. We then use these counterfactuals to evaluate different policy packages and designs. In addition to policies affecting human capital (education and workers' productivity), we apply the model in Honduras to assess "formalization" policies and matching efficiency policies. SIMLAB can capture both the microdistributional and macroeconomic effects of selected policy reforms. Considering the labor market challenges faced by specific groups in Honduras, a particular focus was placed on understanding the impacts of reforms on labor market outcomes by geography (urban-rural), age (youth versus older workers), and education (low versus high skill).

This chapter answers the following questions:

- What drives the high prevalence of informality in rural areas and the large wage differentials?
- What human capital policies (for example, education or productivity enhancing) reduce wage inequality the most? How do these policies impact different groups across the income distribution? Which policies are most relevant to the reduction of the urban-rural poverty rate gaps?
- How important are policies to promote job creation in the formal sector for reducing wage inequality and poverty in rural and urban areas and what are the distributional impacts?
- What is the expected impact of these policies on GDP per capita growth, poverty, and inequality?

6.2 Applying the Model to Honduras: Ex Ante Distributional Impacts of Human Capital and Labor Policies

Stylized Facts of Urban and Rural Labor Markets and Insights into Labor Market Dynamics

» Core Labor Market Outcomes

Two stylized facts characterized the Honduran aggregate labor market in 2019: high informality rates and relatively low levels of unemployment. In the 2019 Permanent Multipurpose Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples, EPHPM),[102] about 65 percent of the labor force and 70 percent of employed workers were informal.[103] Unemployment was relatively low, with 7.7 percent of the labor force unemployed[104] (table A.1.6 and table A.1.7).

101 Matching efficiency, indicating labor turnover, is one of the most important labor market indicators. It demonstrates how effectively the labor market matches unemployed workers to job vacancies.

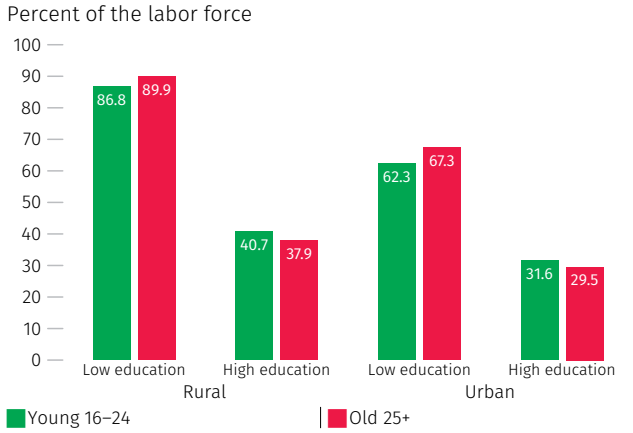
102 We use the 2019 EPHPM for two reasons. First, we are interested in a year that can approximate well the economy in steady state. Second, this is the latest year poverty data comparable with previous years are available.

103 From this point onward, we use the following the social protection definition: A worker is considered informal if all the following criteria hold: (1) does not contribute to pensions; (2) does not contribute to social security (health), and (3) does not have paid leave and do not have "Aguinaldo." All three conditions need to be met.

104 This unemployment rate represents the number of unemployed as a proportion of the adjusted labor force, excluding unpaid family workers. This rate is slightly higher than the official unemployment rate in 2019 (5.7 percent), because the labor force is adjusted. Also, while the official working-age population includes individuals age 10+, we include here those age 15+, following international standards.

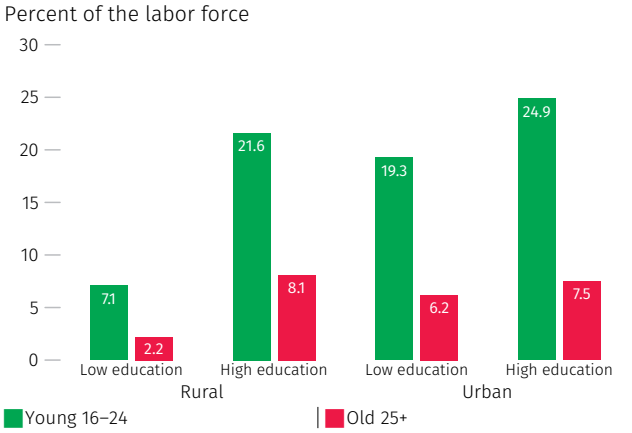
Informality was disproportionately a rural phenomenon that affected the low-educated workers significantly more. Workers with similar characteristics (education and age) were significantly more likely to be informal if they lived in rural areas. Informality was pervasive among low-educated[105] workers in rural areas: in these areas, around 87 and 90 percent of the low educated young and old, respectively, in the labor force were informal. These rates were significantly higher than for their urban counterparts. In both urban and rural areas, informality rates were strongly associated with education, decreasing strongly among highly educated workers. For example, only one-third of older workers with high education in urban areas were in the informal sector (figure 6.5).

Figure 6.5: Informality rates in urban and rural areas, by age and education, 2019



Source: World Bank calculations based on the 2019 EPHPM.
Note: The sample of employed workers includes salaried and self-employed workers and excludes unpaid family workers. Informality follows the social protection definition. Note that the informality rate is presented here as a share of the labor force and not as a share of employment, because it is expressed in these terms in the model. Low-educated workers are defined as those with no more than incomplete secondary education.

Figure 6.6: Unemployment rates in urban and rural areas, by age and education, 2019



Source: World Bank calculations based on the 2019 EPHPM.
Note: Low-educated workers are defined as those with no more than incomplete secondary education.

Unemployment was significantly more prominent in urban areas, particularly among youth. All workers (except the highly educated old) tended to have higher unemployment rates if they lived in urban areas. Some groups experienced significantly higher rates. For example, among youth workers who had completed secondary education or more and were living in urban areas, unemployment rates oscillated around 25 percent, an extremely high level compared with to the country average. This level is also high compared to that for this group's rural counterparts, for whom unemployment rates oscillated between 22 and 23 percent (figure 6.6).

In both urban and rural areas, workers in the formal sector were, on average, more educated than those in the informal sector; a large share of unemployed are workers with low education. Nationally, 57.4 percent of workers in the formal sector had completed secondary education or more, compared to only 13.5 percent of their informal counterparts. In urban areas, the share of highly educated in the formal sector was 60 percent, compared to 22.2 percent in the informal sector. In rural areas, though the differences were smaller, they were still significant, with 45.3 and 5.4 percent of the formally and informally employed having completed secondary education or more, respectively. The unemployed also tended to be less educated in

105 The low-educated workers are defined as those with no more than incomplete secondary education.

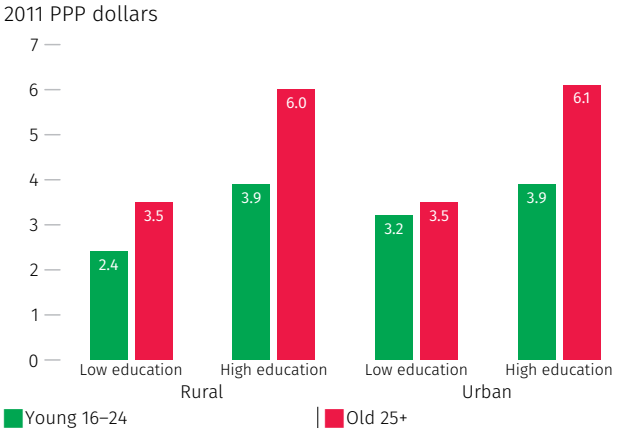
both urban and rural areas, with about 56.1 percent of the unemployed in urban areas and 65.9 percent of those in rural areas having a low level of education (incomplete secondary education or less).

» Wages

The country was also characterized by significant overall wage inequality, which is closely connected to the high degree of income inequality; formal-informal wage differentials in Honduras were large, even when compared with other countries in the region. The variance of log wages and the Gini Index of labor income were high, suggesting highly dispersed earnings and high labor income inequality. There were large formal-informal wage differentials: on average, a formal sector worker earned about 2.6 times per hour what an informal sector worker earned. In El Salvador, for example, this ratio was about 1.5 for the same year. Not only were differences between sectors high, there was also high inequality within each sector, particularly in the informal sector (see table A.1.8).

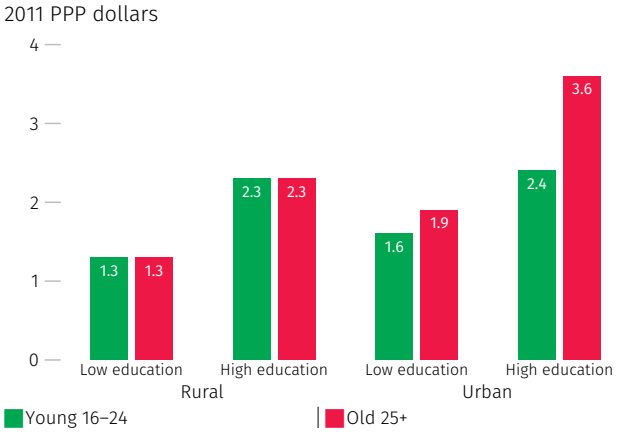
Potentially due to higher productivity levels and other unobserved characteristics, workers in the formal sector earned significantly more than informal-sector workers with similar characteristics (such as education, age, and location). Figures 6.7 and 6.8 show that the average sectoral wages for workers with the same characteristics in the formal sector were higher than in the informal sector, in both urban and rural areas.

Figure 6.7: Formal-sector hourly wage rates in urban and rural areas, by age and education, 2019



Source: World Bank estimates based on the 2019 EPHPM.
Note: The sample of employed workers includes salaried and self-employed workers and excludes unpaid family workers. Low-educated workers are defined as those with no more than incomplete secondary education.

Figure 6.8: Informal-sector hourly wage rates in urban and rural areas, by age and education, 2019



Source: World Bank estimates based on the 2019 EPHPM.
Note: The sample of employed workers includes salaried and self-employed workers and excludes unpaid family workers. Low-educated workers are defined as those with no more than incomplete secondary education.

Regression analysis shows that most wage differentials across sectors are explained by differences in worker characteristics, such as educational attainment and experience; still, unobserved productivity differences appear to play a role. As mentioned above, workers in the formal sector were, on average, more educated than those in the informal sector. The mean years of schooling among formal-sector workers was 11 years, compared to only 5.9 years among their informal-sector counterparts. Still, there were sizable productivity differences in both sectors not explained by educational differences. We found that formal-

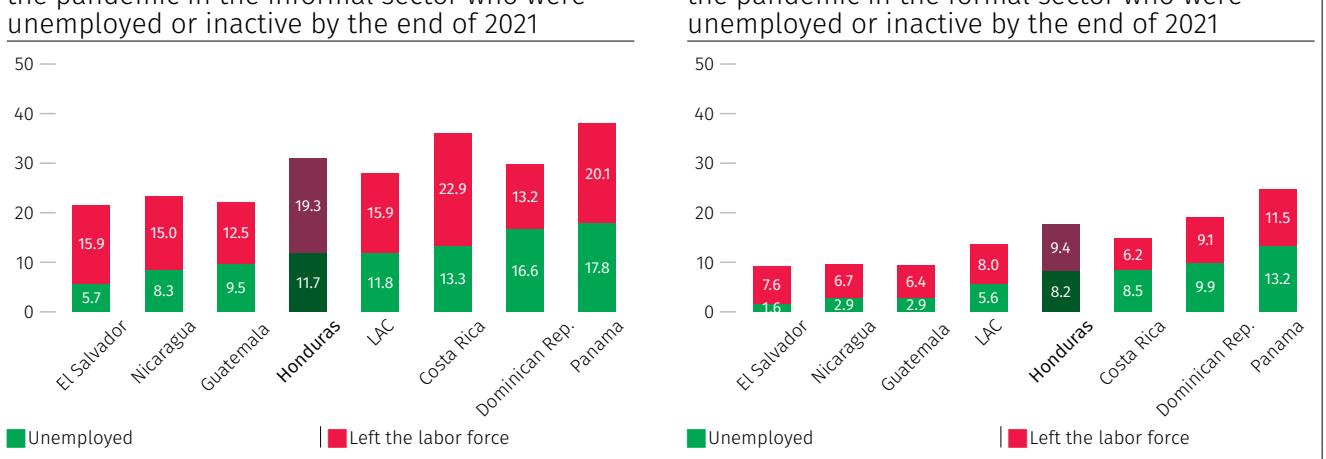
sector workers tended to be much more productive even when conditioned on education, age, and urban-rural status. Thus, experience and other unobserved characteristics associated with productivity may play a role when it comes to explaining why workers with the same characteristics were much more likely to be more productive in the formal sector. A large share of the wage premium is explained by differences in the sectoral distributions of educational attainment and returns to schooling. After controlling for these differences and other observable characteristics, the overall wage gap is reduced, but not eliminated.[106]

Despite the substantial differences in relative earnings across sectors, the high levels of overall wage inequality were driven primarily by high inequality within each sector (formal-informal) rather than differences between sectors. Wages in the informal sector are not only lower on average, but also significantly more dispersed. Our variance decompositions show that most variance in log wages is primarily due to within-sector variability and not between-sector variability, with about 63 percent of the variance explained by within-sector variance (table A.1.9).

» Labor Market Transitions and Employment Durations

Compared with the formal sector, the informal sector in Honduras is characterized by higher transitions to unemployment or inactivity and greater job instability. The UNDP-LAC High-Frequency Phone Surveys (HFPS) collect retrospective labor information data (World Bank and UNDP 2022), which are fundamental for any dynamic analysis of the labor market and were not captured in the 2019 EPHPM. Using Phase II of the HFPS, we estimate that a large share of the informally employed prior to the pandemic moved either to unemployment (11.7 percent) or out of the labor force (19.3 percent) by the end of 2021—a higher share compared to other countries in the Central America region, such as El Salvador, Nicaragua, and Guatemala, and above the LAC average. For formal-sector workers, these shares were significantly lower (8.2 and 9.4 percent, respectively), but still higher than in other countries (figure 6.9, panels a and b).

Figure 6.9: Transitions out of formal and informal employment, Honduras vs. countries in the region, 2021



Sources: World Bank and UNDP 2022.
Note: Data were collected at the end of 2021.

106 The formal-informal sector gap without any control is 1.35 log-wage points. Controlling for education, it is reduced to 1.02, and controlling for education and experience is still significantly large at 1.00.

Given the higher transition rates out of employment in the informal sector,[107] jobs in the informal sector are less stable and last for significantly less time than jobs in the formal sector, on average. Based on these transitions and assuming that employment duration follows an exponential distribution, we estimate that the average employment duration in the informal sector was approximately 4.3 years, while in the formal sector the duration was close to 8.2 years (table A.1.10), within the range of what has been reported for other countries in the region.

Fitting the Model to the Data

The key insight of these dynamic labor models with worker heterogeneity is their ability to match not only aggregate labor market outcomes, but also distributions of wages and workers across sectors observed in the data. Therefore, if the model performance is good, it represents an invaluable tool for quantifying selected policy distributional implications when the main impact channel is the labor market.

We calibrate the model to match key aggregate and distributional features of the Honduran labor market. We use the average sectoral job durations from the HFPS, together with disaggregated labor market statistics from the 2019 EPHPM presented in the previous section, to calibrate the model in a steady state.[108] Once the model is calibrated, we compare the model's predictions with the corresponding sample moments (in-sample fit of the model) to evaluate the model's performance.

The model approximates reasonably well the Honduran labor market prior to the COVID-19 crisis, including aggregate and distributional indicators. When looking at the aggregate labor market indicators, the model matches the distribution of workers across unemployment, formal-sector employment, and informal-sector employment. It also matches well relevant moments of the wage distributions and average durations in both sectors. Table A.1.11 provides a basis for the goodness of fit for these key aggregate labor market statistics. The model can also replicate key distributional facts, namely formal- and informal-sector employment and unemployment rates by age, education, and urban-rural status, and how workers of different age and education profiles in rural and urban areas are allocated across unemployment and informal and formal employment. Finally, the model matches well the characteristics of the wage distributions and the underlying sources of wage inequality. Figures A.1.18 to A.1.23 present the key distributional facts the model replicates closely.

The estimation of the model also provides valuable insights into labor market dynamics not identified in the previous labor evidence produced for the country.

First, our estimates show that Honduran labor markets were relatively tight in 2019 and there were short waits to fill available formal or informal jobs, but the vast majority of vacancies were informal. In 2019, the labor market tightness was estimated at 1.01, meaning there was nearly one vacancy for every unemployed worker. The higher the ratio, the tighter the market from a firm's point of view. Although this cannot be

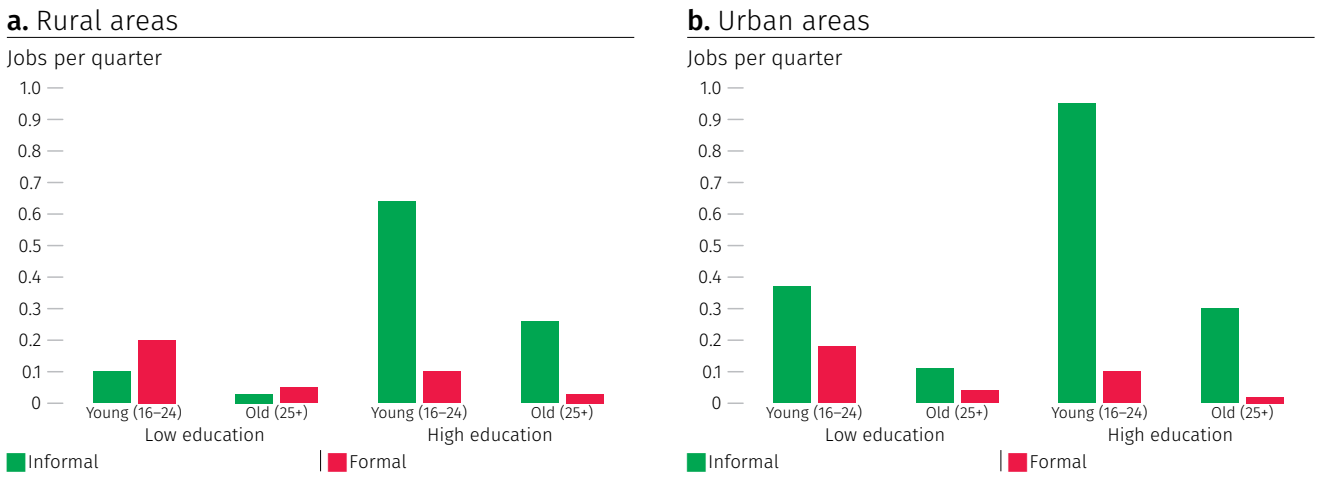
107 These estimates of labor market transitions may suffer from time aggregation bias, given that panel data to record high-frequency changes between employment, unemployment, and inactivity at the individual level is not available. Rather, a cross section with retrospective information on labor market status for the period before the pandemic is used to estimate transitions. This means that labor market flows estimated from this data may understate the true number of transitions, as people loose and find jobs at very short intervals of time.

108 We assume the latest UNDP-LAC HFPS round, because we assume that labor market transitions in the postpandemic period (the end of 2021) are likely closer to the prepandemic period, reflecting the economy's slow return to prepandemic levels. Vacancy data are not available for Honduras.

compared with historical standards, because there are no available estimates for other years, this is within the usual range of estimates for other countries and reflects a tight labor market (as measured by a labor market tightness greater than 1).[109] However, we estimate that only a small fraction of those vacancies was in the formal sector (about 12 percent) (table A.1.11). This level of labor market tightness implies that the probability that an unemployed worker makes contact with a job opening (formal or informal) within a quarter is high: the estimated rate of arrival of jobs (formal and informal) per quarter (job-finding rate) per worker is accordingly high (1.4 jobs per quarter or 6 jobs per year). This means it takes little time, about 0.7 quarters (0.18 years), for an unemployed worker to make a contact that can lead to a formal or informal job. It is easy for job seekers to make contact with job offers, particularly informal offers, and when they do, they tend to accept most job offers that come along. Given this tightness, firms take a long time to locate and fill their formal-sector vacancies (about 0.9 quarters).

Our empirical estimates for average quarterly job destruction rates are in line with those in other countries in LAC; our estimated job destruction rates suggest that less-educated workers find it challenging to retain their formal-sector jobs, while they tend to easily retain their informal-sector jobs. When compared with other LAC countries, Honduras's formal and informal sectors have relatively high quarterly separation or job destruction rates compared to other countries in LAC (Figure A.1.24, panels a and b). The model estimates also provide useful insights into the job destruction rates for different worker types that are consistent with the key empirical labor market statistics.[110] The expected duration of employment increases with education in the formal sector, but decreases with education in the informal sector. In particular, formal-sector jobs are destroyed at significantly higher rates among low-educated workers (with less than complete secondary education) than among their highly educated counterparts in both urban and rural areas. Contrarily, informal-sector jobs tend to have higher job destruction among the highly educated than among their low-educated counterparts (figure 6.10, panels a and b). Finally, our model estimates for job creation suggest that the rates are significantly lower in the formal sector compared to the informal sector at all educational levels.

Figure 6.10: Estimated informal and formal-sector job destruction rates, by age, education, and urban-rural



Source: World Bank calculations based on the 2019 EPHPM.

109 This estimate probably decreased significantly during the COVID-19 crisis and then rebounded in 2021.

110 Job destruction rates by each worker type are calibrated in the model following the same estimation strategy presented in Albrecht, Robayo-Abril, and Vroman (2017).

These patterns of job creation and job destruction rates can explain the extremely high incidence of informality in rural areas, particularly among the low-educated workers, and the high levels of unemployment in urban areas, particularly among the youth.

The high level of informality in rural areas is explained by two factors:

1. The low job destruction rates in the informal sector among the low educated. Once these workers find an informal-sector job, they stay there for a longer period

2. The high job creation rates in the informal sector, compared to the formal sector, at all educational levels. A significantly higher share of unemployed become employed in the informal sector compared to the formal sector, because the vast majority of vacancies are created in this sector.

We conclude that two factors explain the high levels of unemployment in urban areas observed, particularly among the young, given these patterns of job creation and job destruction rates:

1. The high levels of job destruction in the informal sector, particularly among the young (ages 16–24), especially those with higher levels of education. Young workers living in urban settings do not keep their informal-sector jobs for long. These workers prefer to remain unemployed while looking for better formal-sector opportunities, and if they find an informal-sector job, they do not keep it for long, particularly if they are highly educated (figure 6.10, panel b).

2. The low levels of job creation in the formal sector at all educational levels.

Finally, there is a "selection" effect in which highly educated (and therefore highly productive) workers in Honduras sort themselves into the formal sector. This may be explained by two factors: either it is more difficult for less-educated workers to get formal-sector jobs ("rationing" of formal-sector jobs) or less-educated workers find it more challenging to retain their formal-sector jobs. Our results show that, in the case of Honduras, the latter is the primary cause.

6.3 Simulation of Policies and Recommendations

Here we use the model to simulate the ex ante aggregate, compositional, and distributional impacts of human capital, formalization, and matching policies on labor market outcomes, poverty, and GDP per capita growth in Honduras. We analyze the Honduran economy in a steady state, so we are looking at medium-term impacts rather than business cycle fluctuations. The period of consideration is 2019–30.

Simulations of Human Capital Policies

Although changing the distribution of education across a 10-year period is a difficult endeavor, as shown by the limited educational progress indicated by recent household survey data, it is instructive to analyze what-if scenarios in which Honduras manages to make significant changes in schooling and productivity in the next decade. The microeconomic literature documents well the positive relationship between

schooling and higher labor earnings due to schooling's impact on labor productivity. Therefore, human capital policies expanding education coverage have the potential to lift incomes above the low-wage thresholds and in turn have significant impacts on poverty.

The policy evaluation consists of contrasting two human capital policy programs, an "Education-Enhancing" and "Productivity-Enhancing," defined as follows (following Chen et al. 2011):

- *"Education-Enhancing":* These are policies that focus on raising the formal educational attainment of the labor force prior to employment—that is, policies that promote higher initial human capital before working-age Hondurans enter the labor market. These can include reforms at the primary, secondary, or tertiary education level. Examples include compulsory schooling reforms, the expansion of university access (such as open access to vocational high schools and the geographical expansion of universities), and others.

- *"Productivity-Enhancing":* These are policies that enhance workers' productivity, but do not affect formal schooling—for example, human capital accumulation via on-the-job or job training (also called "experience-enhancement policy" in the labor literature[111]). This policy category can capture on-the-job training and postschooling learning that are more sensitive to job-related learning efforts. Because our focus is on human capital accumulation on the job, this type of human capital policy should not be viewed as programs related to formal pre-employment education. Going beyond job training policies, macro policies, such as agricultural policies, can also be designed to raise worker productivity in rural areas. Examples include productivity-enhancing investments in agriculture and farm size growth or policies that improve learning in formal education settings. As different industries and occupations have different skill requirements, workforce training is one way to effectively increase workers' productivity and earnings without reforming the education sector.

We perform four counterfactual policy experiments that can affect the main dimensions of human capital (education and training) differently:

- *Policy Experiment 1:* We simulate a geographically targeted policy that leads to changes in the human capital distribution of educational attainment in rural areas exclusively. More concretely, we simulate an expansion in education coverage that leads to one-fifth of the labor force population in rural areas with incomplete secondary or less attaining complete secondary or more by 2030. We assume the quality of schooling[112] and returns to schooling are unchanged. Therefore, the policy only affects the "quantity" of schooling.

- *Policy Experiment 2:* The same policy is applied, but it is not geographically targeted, so it affects all workers living in urban and rural areas (one-fifth of the labor force population in rural areas and the same proportion in urban areas).

- *Policy Experiments 3 and 4:* We simulate policies that lead to changes in productivity in the informal and formal sectors, respectively, given a particular distribution of education attainment. In the third experiment, we simulate an increase in informal-sector productivity in rural areas by 25 percent

111 See Chen et al. (2011).

112 Quantifying impacts on the quality of schooling is extremely difficult.

over the period 2019–30. In the fourth experiment, we simulate a policy that increases productivity in the formal sector in urban areas by the same amount. These can be job-training programs targeted to the sectors or, more broadly, macroeconomic policies incentivizing competition and promoting productivity growth through increased incentives for innovation and selection.

Under Policy Experiments 1 and 2, Honduras would approach a human capital accumulation distribution among the labor force similar to the level observed in other Central America countries, such as Costa Rica and Panama. Under the baseline year, the share of the labor force with basic education (as a percentage of the total working-age population with basic education[113]) is 63.7, a value similar to those for Bolivia or Uruguay.[114] Under Policy Experiment 1, the share would drop to 61.2 percent, which puts Honduras closer to Costa Rica. Under policy experiment 2, the share would drop further to 58.6 percent, a value similar to that of Panama.

Under Policy Experiment 3, the average informal-sector productivity in the country gets closer to that in El Salvador, but still remains well below, so changes are conservative. Under the baseline scenario, the average informal-sector productivity[115] (measured hourly, in 2011 PPP dollars) is significantly lower in Honduras relative to in El Salvador. On average, workers in the informal sector are 72 percent as productive as their counterparts in El Salvador. Under Policy Experiment 3, their average productivity reaches 79 percent of their Salvadoran counterparts.

» Education-Enhancing

The results of Policy Experiments 1 and 2 show that human capital policies (both geographically targeted or generalized) that significantly increase human capital induce formalization and generate significant productivity and wage growth in the formal and informal sectors while reducing wage inequality. Both policies lead to sizable employment shifts from the informal to the formal sector, increasing the share of the labor force in the latter sector. Formal-sector firms open more vacancies[116] to absorb the more-educated labor force. However, formal-sector vacancy creation adjusts slowly, and more-educated workers have higher reservation wages,[117] so that not all workers transition from the informal sector to the formal, leading to a slight rise in the unemployment rate. Additionally, informal-sector firms react by posting fewer vacancies. The Honduran labor market is less tight under these policy scenarios, because there are fewer vacancies overall relative to job seekers (a smaller labor market tightness) and a larger fraction of

113 Basic education comprises primary education or lower secondary education according to the International Standard Classification of Education 2011: https://data.worldbank.org/indicator/SL.TLF.BASC.ZS.

114 Source: *World Bank World Development Indicators*, https://databank.worldbank.org/source/world-development-indicators.

115 This is a measure of productivity per hour (in 2011 PPP Dollars) estimated using observed data on wages from EPHPM (2019), education, and some parametric assumptions.

116 In the model, we find the number of workers that firms are willing to hire, or equivalently, the number of vacancies they want to open in each sector. Finding a suitable worker is costly and does not occur instantaneously. If there were no search costs, firms would keep hiring workers as long as each new worker's productivity exceeded the market wage. But hiring a worker is neither costless nor instantaneous. The firm needs to post and advertise a vacancy, evaluate candidates, and so forth. As a consequence of these labor market frictions, a firm will want to open a job vacancy only if the sum of profits it makes by hiring a worker compensates it for the various recruiting and searching costs it incurs in finding the worker. In other words, firms only hire workers whose productivity is high enough to compensate for these costs.

117 Having more education means that, on average, workers can find formal-sector jobs more easily, so they become pickier when it comes to accepting prospective matches (more outside job opportunities); as a result, these workers have a lower probability of accepting both informal- and formal-sector jobs.

those vacancies are formal. More education and higher reservation wages lead to rising productivity and wages in both sectors, particularly in the informal sector, which is conducive to lower wage inequality. Not surprisingly, the overall magnitude of the changes is magnified in Policy Experiment 2, given that education increases among the labor force are observed in both rural and urban areas. Table 6.1 presents the expected impacts on core labor market indicators of the education-enhancing policy policies over the period 2019–30.

Table 6.1: Compositional and distributional effects of "education-enhancing" human capital policies, 2019–30

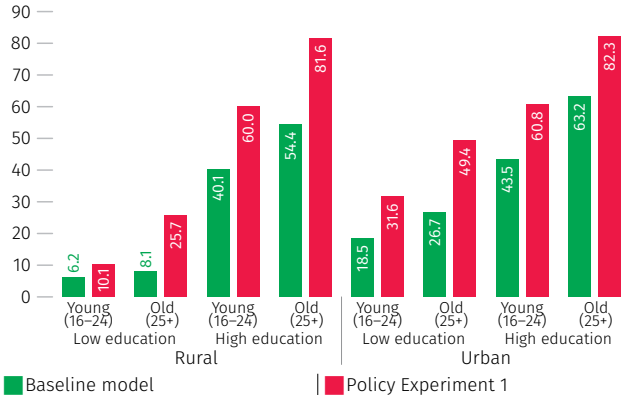
Variable	*Baseline*	*Policy Experiment 1*	*Policy Experiment 2*
		Increase education (one-fifth of low education to high education)	
		Only rural	*All workers (rural and urban)*
Aggregate Employment and Unemployment Rates			
Unemployment rate, percent labor force	7.70	9.18	9.20
Informal-sector employment rate, percent labor force	64.5	40.9	35.1
Formal-sector employment rate, percent labor force	27.9	50.0	55.8
LM Tightness and Formal Sector Size			
Labor market tightness	1.0	0.93	0.94
Fraction of formal-sector vacancies	0.1	0.20	0.21
Measures of Wage Dispersion			
Formal-informal log wage gap (formal-informal)	1.13	0.82	0.86
Relative log wage dispersion (formal-informal)	0.70	0.72	0.67
Log wage dispersion	0.86	0.65	0.65
Mean Employment Duration			
Formal-sector job duration (years)	8.2	7.8	8.1
Informal-sector job duration (years)	4.3	4.3	4.5

Source: World Bank estimates based on counterfactual simulations.

Education is critical in the enabling of the transition from informal to formal employment; more-educated people transition easily, while low-educated youth have difficulties accessing and matching formal jobs. Figures 6.11 and 6.12 show the formal-sector employment and unemployment rates for Policy Experiment 1 compared to the baseline. Despite the greater availability of employment in the formal sector, formality rates increase very little among some disadvantaged groups compared to other groups. For example, formality is only expected to increase by 4 percentage points among the low-educated youth living in rural areas. In comparison, highly educated and older workers in rural areas are expected to experience a sizable increase in formality (figure 6.11). Similar qualitative results are observed under Policy Experiment 2, but the impacts are larger. Formality rises significantly more, particularly in urban areas, given the higher availability of educated workers living in those areas.

Figure 6.11: Formal-sector employment rate, baseline model vs. Policy Experiment 1

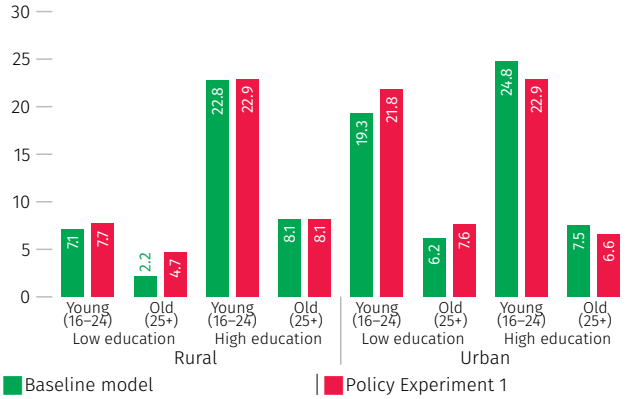
By educational level, age, and urban-rural status, percent of the labor force



Source: World Bank estimates based on counterfactual simulations.

Figure 6.12: Unemployment rate, baseline model vs. Policy Experiment 1

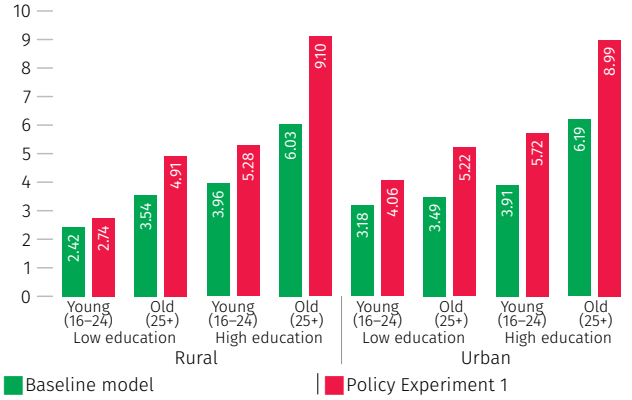
By educational level, age, and urban-rural status, percent of the labor force



Source: World Bank estimates based on counterfactual simulations.

Figure 6.13: Formal-sector hourly wages, baseline model vs. Policy Experiment 1

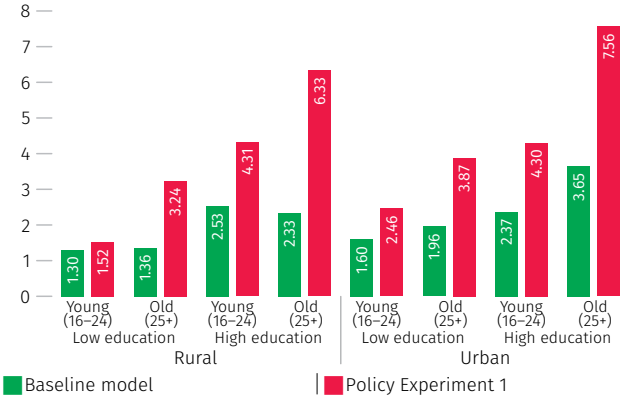
By educational level, age, and urban-rural status, percent of the labor force, 2011 PPP dollars



Source: World Bank estimates based on counterfactual simulations.

Figure 6.14: Informal-sector hourly wages, baseline model vs. Policy Experiment 1

By educational level, age, and urban-rural status, 2011 PPP dollars

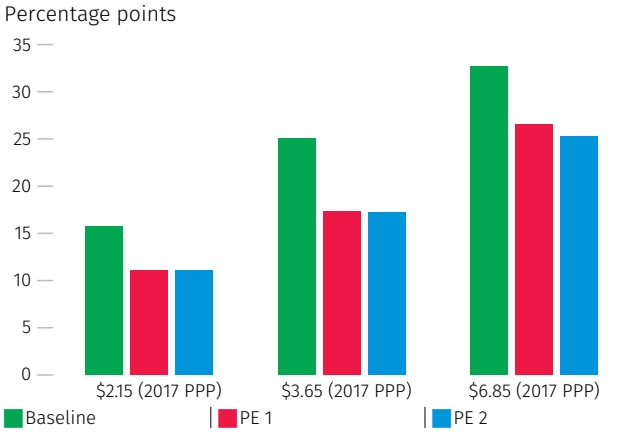


Source: World Bank estimates based on counterfactual simulations.

Not all workers benefit the same: low-educated workers can experience rising unemployment. There are important changes in unemployment among different types of workers. In particular, the unemployment rate is expected to increase among low-educated workers, young and old, in both rural and urban areas, while it is expected to be stable or decrease among the high-educated groups (figure 6.12). Under Policy Experiment 2, the changes in unemployment are similar but of a larger magnitude.

Higher schooling levels lead to rising productivity and wages in both sectors; this positive wage effect, as shown later, is quite important for poverty reduction. The shift in the incidence of unemployment toward low-educated workers results in rising levels of education in both sectors, especially in the informal sector; higher educational attainment and productivity are expected to lead to higher wages in both sectors. Figures 6.13 and 6.14 show the formal-sector wages for Policy Experiment 1 compared to the baseline. However, although wages among the highly educated are expected to grow, the incidence of low wages is significantly reduced in both sectors, one of the key drivers behind poverty reduction.

Figure 6.15: Urban-rural poverty rate gap, baseline model vs. Policy Experiments 1 and 2



Source: World Bank estimates based on counterfactual simulations.
Note: The gap is measured as the difference between the urban and the rural poverty headcount at the different international poverty lines.

These education-enhancing policies are expected to reduce poverty (US$6.85 per day line) significantly in the medium term; the urban-rural differences in poverty are expected to narrow meaningfully when the expansion in education coverage is targeted to rural areas. Improved labor market outcomes, particularly a lower share of workers earning low wages and formalization, are conducive to significant poverty reduction. Counterfactual microsimulations show that this policy to enhance human capital may decrease the poverty rate (US$6.85 per day line) by up to 13.0 percentage points from 2019 to 2030. Smaller changes are observed at the US$2.15 per day PPP and the US$3.65 per day PPP lines, but these are still sizable (up to 3.6 and up to 7.7 percentage points, respectively). As the poverty rate (US$6.85 per day line) in rural areas is expected to decrease more (between 16.9 and 18.7 percentage points in rural compared to 10.8 and 11.2 percentage points in urban areas), these policies are expected to narrow the sizeable urban-rural divide significantly (figure 6.15).

Based on the Shapley decompositions, this policy promotes substantial GDP per capita growth, primarily through the productivity channel. The productivity gains generated from this policy, primarily from higher productivity in both sectors but also from the movement of workers to a more productive sector (the formal sector), are large. Overall employment growth is negative, as there are no expected decreases in the unemployment rate. Even without significant changes in the labor force participation rate[118] and a negative employment rate growth, the large productivity growth and demographics[119] can lead to a moderate average annual growth rate in GDP per capita of 4.7 percent (in real terms), above the target GDP per capita of 2.98 percent per year (table A.1.12).[120]

While these results on poverty and growth are encouraging, the required education effort to achieve this effect is extraordinary. Reforms aimed at gradually expanding access to education should be prioritized, because a tangible expansion in education can still bring about important improvements in productivity and poverty. Larger returns to schooling, as a result of improvement in the quality of education, may imply that a more moderate or realistic education expansion can have similar effects on earnings over the same time period. However, quantifying the impacts of improvements in the quality of schooling is extremely challenging.

118 We assume the labor force participation increases only from 57 percent in 2019 to 60 percent in 2030.

119 The working-age population grows at 1.25 percent annually, reflecting a demographic dividend.

120 This target GDP per capita corresponds to a target GDP growth of 4.5 percent per year.

» Productivity-Enhancing

Productivity-enhancing policies focused on raising sectoral productivity while maintaining the same levels of education are not expected to produce significant changes in unemployment or formal and informal sector employment rates, but can generate moderate wage growth in sectors. These policies do not induce significant formalization or lower unemployment, but do generate productivity gains to stimulate moderate real wage growth. A focus on rising productivity in the informal sector in rural areas can help narrow the formal-informal log wage gaps, contributing to wage inequality reduction. On the other hand, policies stimulating rising productivity in the formal sector in urban areas can contribute to widening wage gaps and rising overall wage inequality (table 6.2).

Table 6.2: Compositional and distributional effects of productivity-enhancing human capital policies

Variable	*Baseline*	*Policy Experiment 3*	*Policy Experiment 4*
		Increase mean productivity	
		Informal in rural (by 25 percent)	*Formal in urban (by 25 percent)*
Aggregate Employment and Unemployment Rates			
Unemployment rate, percent labor force	7.70	7.68	7.70
Informal-sector employment rate, percent labor force	64.5	64.8	64.5
Formal-sector employment rate, percent labor force	27.9	27.6	27.9
LM Tightness and Formal Sector Size			
Labor market tightness	1.0	1.0	1.0
Fraction of formal-sector vacancies	0.12	0.12	0.12
Measures of Wage Dispersion			
Formal-informal log wage gap (formal-informal)	1.13	0.99	1.31
Relative log wage dispersion (formal-informal)	0.70	0.76	0.66
Log wage dispersion	0.86	0.79	0.91
Mean Employment Duration			
Formal-sector job duration (years)	8.2	8.2	8.2
Informal-sector job duration (years)	4.3	8.2	4.3

Source: World Bank estimates based on counterfactual simulations.

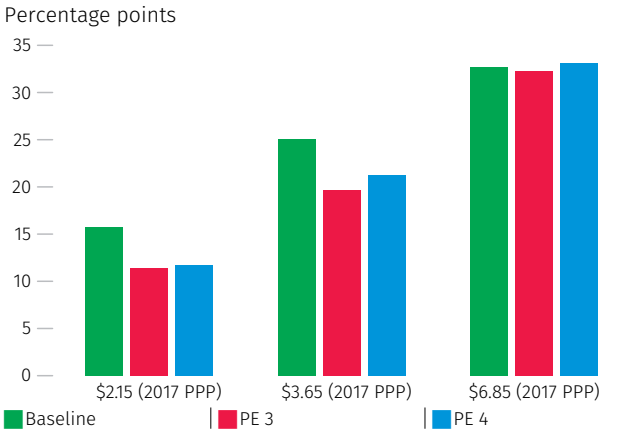
Policies focused on raising informal-sector productivity in rural areas (Policy Experiment 3) can lead to sizable increases in informal-sector wages, particularly among disadvantaged groups. For example, low-educated youth (ages 16–24) in rural areas, who have low wages in the baseline, can experience large increases in wages (similar to productivity increases), which can be positive for poverty reduction in these areas. The low-educated older workers in these areas can also experience relatively large wage increases. These policies can lead to lower wage inequality, as productivity and wages rise more in the less productive sector (the informal).

Contrarily, policies focusing on raising formal-sector productivity in urban areas (Policy Experiment 4) can lead to faster wage increases in the formal sector, contributing to the already significant wage gaps

across sectors and rising wage inequality. Therefore, when comparing the impact on wage inequality of productivity-enhancing versus education-enhancing policies, our results show that the former do not reduce wage inequality by the same magnitude as education-enhancing policies; they can even increase it.

The poverty impacts of productivity-enhancing policies are also smaller; the urban-rural differences in poverty are expected to narrow, but not significantly. Moderate wage increases are expected; but the poverty reduction effects of productivity-enhancing policies are limited by only small improvements in unemployment and limited movements toward the more productive formal sector. Counterfactual microsimulations show that policies that enhance productivity may decrease the poverty rate (US$6.85 per day line) by less than 6 percentage points over the period 2019–30. In this sense, the limited movement toward the more productive formal sector limits the ability of these policies to reduce poverty significantly going forward. The urban-rural gap could decrease by up to 5 percentage points in this period (figure 6.16).

Figure 6.16: Urban-rural poverty rate gap, baseline model vs. Policy Experiments 3 and 4



Source: World Bank estimates based on counterfactual simulations.

Compared to the education-enhancing human capital policies, these policies generate smaller overall productivity growth and positive but small employment rate growth, leading to a small increase in GDP per capita. The productivity growth is more limited, because there is no movement of workers to the highly productive formal sector ("formalization"), as in the case of the education-enhancing policies. Therefore, the only source of productivity growth is generated within sectors; it is not the result of structural movements across sectors. As such, the expected GDP per capita growth is below the target of 2.98 percent in both policy experiments (table A.1.13). Productivity-enhancing policies must thus be combined with human capital policies to achieve significant productivity gains and poverty reduction.

In summary, although productivity-enhancing policies may be an interesting option for some groups of workers who could see their earnings potential increase, the simulation evidence suggests that substantial investments in raising workers' productivity in the formal or the informal sector would have only a limited role in shifting overall labor earnings in the economy and stimulating movements of workers toward more productive sectors. The net result would be limited growth and poverty reduction in the medium term. The evidence on sector-based training is mixed. Some promising new models for more-specific sector-based training, where people are trained for existing jobs in high-demand sectors that pay well for workers without four-year college degrees, are emerging (Hershbein and Holzer 2021).

Simulations of Formalization Policies

Formal businesses in Honduras point to several constraints to expanding jobs. According to the 2015 World Bank Enterprise Survey data, when firms were asked about the main constraints to expanding jobs, they suggested the main problems were getting access to finance (18 percent), followed by competition from

informal firms that do not face the same costs (16 percent), tax rates (11 percent), and problems dealing with licensing authorities (8 percent). Low worker skill levels, corruption, crime, and disorder also ranked high (around 7 percent mentioned each of these), while political instability and labor regulations were cited by around 5 percent of respondents. In the World Economic Forum (WEF) survey in 2017, tax rates, crime, bureaucracy, corruption, tax regulations, and policy instability were the problems most cited by firms (between 10 and 15 percent of respondents) (Michel and Walker 2020).

We simulate three types of formalization policies. These included (broadly speaking) policies that affect firms' profits in the formal or informal sector and that aim to reduce the relative size of the informal sector.

- *Policy Experiment 5:* This experiment simulates policies that increase the cost of being informal. In the model, this is done by reducing vacancies in the informal sector by 15 percent. This can be done by lowering incentives to post vacancies informally and influencing a firm's hiring standards to disfavor informal contracts.

- *Policy Experiment 6:* This experiment simulates policies that reduce the cost of being formal. In the model, this is done by reducing the cost of posting vacancies (or other operating costs) in the sector by 10 percent, which stimulates vacancy creation in the formal sector. This can be done by deregulating, reducing compliance costs, non-wage-labor costs reductions, and other means.

- *Policy Experiment 7:* This experiment simulates policies that reduce job destruction in the formal sector in rural areas by 70 percent. This can include job retention schemes, changes in severance and firing policies, and employment protection legislation. The choice of policies can be made based on political economy considerations.

How significant are these simulated policy changes? Though there are no comparable international data on informal-sector vacancies, the proposed changes in vacancies for Policy Experiment 5 represent reasonable changes compared to vacancy fluctuations observed in other countries.[121] As in Policy Experiment 6, this simulated change puts the cost of posting a vacancy in the formal sector as a proportion of mean wage (vacancy ratio), which is already high in the baseline scenario, closer to estimates observed in neighboring countries, such as El Salvador. The reduction in separation rates proposed in Policy Experiment 7 is also reasonable, changing formal-sector quarterly separation rates in Honduras so that they are closer to the LAC average and similar to those observed in Ecuador (see figure A.1.25).

As expected, all three formalization policies shift employment from the informal to the formal sector; however, as with the human capital policies, all workers cannot be absorbed by the formal sector and some will join the pool of unemployed. All three policies lead to formal-sector firms' opening more vacancies relative to the informal sector. Consistent with the previous evidence from the 2020 Jobs Diagnostic (Michel and Walker 2020), decreasing the high burden of regulatory charges in order to decrease labor costs in the formal sector can significantly incentivize firms and workers to operate in that sector. For example, in Policy Experiment 6, decreasing the cost of operating formally can have a large impact on the size of the formal sector. However, there is a crowding-out effect: informal-sector firms react by opening fewer vacancies and some workers are not able to transition successfully to formality. Overall, there are more formal- and informal-sector vacancies relative to job seekers and a larger fraction of these vacancies is

121 See, for example, changes in job openings from JOLTs for the US (https://www.bls.gov/news.release/jolts.a.htm), and Morales and Lobo (2021) for Colombia.

formal, so the Honduran labor market is tighter under the three policies. However, the crowding-out effect is sufficiently large and, given the structural features of the Honduran labor market described in section 6.2, all three policy experiments are expected to lead to a small rise in the unemployment rate ranging between 0.9 and 1.2 percentage points over the period 2019–30 (table 6.3).

Table 6.3: Compositional and distributional effects of policies to stimulate job creation or reduce job destruction (formalization policies)

		Experiment 5	*Experiment 6*	*Experiment 7*
		Decrease vacancies exogenously in the informal sector by 15 percent	*Decrease the cost of regulations by decreasing the cost of posting a vacancy (or compliance cost) in the formal sector by 10 percent*	*Reduce job destruction by 70 percent in the formal sector in rural areas for all education levels*
Variable	*Baseline*	*All*		
Aggregate Employment and Unemployment Rates				
Unemployment rate, percent labor force	7.70	8.62	8.95	8.62
Informal-sector employment rate, percent labor force	64.50	45.83	30.52	40.53
Formal-sector employment rate, percent labor force	27.91	45.55	60.53	50.86
LM Tightness and Formal Sector Size				
Labor market tightness	1.01	1.03	1.18	1.14
Fraction of formal-sector vacancies	0.12	0.19	0.25	0.19
Measures of Wage Dispersion				
Formal-informal log wage gap (formal-informal)	1.13	0.83	0.83	0.71
Relative log wage dispersion (formal-informal)	0.70	0.72	0.61	0.79
Log wage dispersion	0.86	0.67	0.62	0.57
Mean Employment Duration				
Formal-sector job duration (years)	8.19	7.60	7.15	8.13
Informal-sector job duration (years)	4.32	4.59	4.62	4.13

Source: World Bank estimates based on counterfactual simulations.

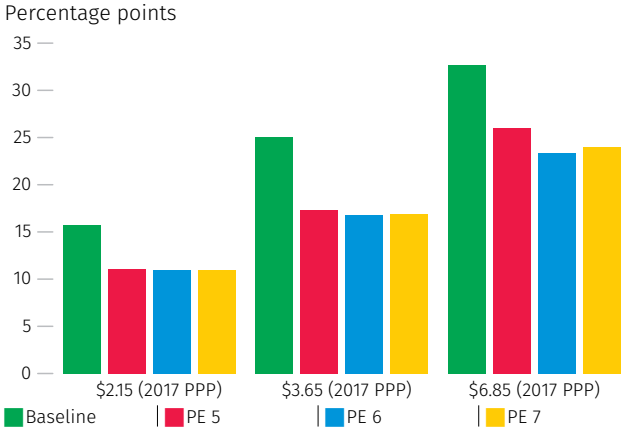
These formalization policies are also expected to lead to rising real wages in both sectors, a narrow log-wage sectoral gap,[122] and lower wage inequality. Wages are expected to rise in both sectors as a result of more-educated and productive workers filling new vacancies. However, they are expected to increase disproportionately more in the informal sector, narrowing the earning differences between sectors. Table 6.3 shows how under the three policies, the differences in mean log wages are significantly reduced, as well as the standard deviation of log wages, our main measure of overall wage inequality. The larger reduction is observed under Policy Experiment 7.

122 This is measured as the differences in log wages between the formal and the informal sector. Specifically, it measures wage differentials across sectors.

Some disadvantaged groups are more likely to experience a rise in unemployment under formalization policies. Low-educated youth in urban areas are projected to experience unemployment increases ranging between 1.9 percentage points (Policy Experiment 7) and 4.5 percentage points (Policy Experiment 6). They are followed by the low-educated older workers in rural areas, who would experience a rise in unemployment ranging from 1.9 percentage points (Policy Experiment 5) to 3.7 percentage points (Policy Experiment 6).

When looking at poverty reduction, these formalization policies can make a significant contribution and also have the potential to reduce the urban-rural poverty gap. When looking at extreme poverty, the effect on the poverty rate (US$2.15 per day line) are of similar magnitude to that of the education-enhancing human capital policies, with poverty reduction ranging between 3.6 and 3.7 percentage points over the whole period, driven mostly by productivity and wage increases among those at the bottom (despite rising unemployment among some groups). Larger impacts are observed with the lower-middle-income (LMI) poverty line, with poverty reduction ranging from 7.7 to 8.0 percentage points (US$3.65 per day line) and even higher impacts under the upper-middle-income (UMI) poverty line, ranging from 12.8 to 14.6 percentage points (US$6.85 per day line) (figure 6.17). Therefore, formalization policies do seem critical to achieving high and sustainable growth and poverty reduction, particularly those focused on reducing the regulatory costs in the formal sector. Because the three policies are expected to lead to significantly larger poverty reduction in rural areas, the difference in poverty between urban and rural areas is expected to narrow, with larger impacts observed in Policy Experiment 6.

Figure 6.17: Urban-rural poverty rate gap, baseline model vs. Policy Experiments 5, 6, and 7



Source: World Bank estimates based on counterfactual simulations.

These formalization policies can lead to substantial GDP per capita growth, as the productivity gains from formalizing are high. In these three experiments, despite negligible employment rate growth, moderate productivity growth can lead to moderate GDP per capita growth that is above the target. The productivity gains generated by these policies (primarily from the movement of workers to a more productive sector) are similar in size to those generated by the education-enhancing human capital policies: movements toward the more productive formal sector are similar or even larger under Policy Experiment 6 (table A.1.14).

Simulation of Policies to Facilitate Labor Market Matching

Matching efficiency is a key concept in understanding turnover in the labor market. Matching efficiency represents factors that can increase (or decrease) job hires without a change in labor market tightness. If the workers searching for jobs are well suited to the jobs that are available in the Honduran labor market, matching efficiency will be high; on the other hand, if many searching workers are not well suited to the

available jobs, matching efficiency will be low. Our measure of matching efficiency in the baseline indicates a relatively high matching efficiency—about 1.4 job matches per quarter per worker (job-finding rate).[123]

Matching efficiency demonstrates how effectively the labor market matches unemployed workers to job vacancies and is a crucial indicator of labor market frictions. Improving the efficiency of labor market matching requires policies beyond those aimed at stimulating aggregate demand (such as formalization policies). Frictional unemployment can emerge from institutional inefficiencies, skill gaps between demand and supply (skill mismatches), limited labor mobility, information frictions, and any factor that dissuades job seekers from accepting a job or makes employers choosier in their employee selection process.

Active labor market policies, such as incentives for start-ups and job-sharing programs, aim to facilitate labor market matching, as well as policies improving the effectiveness of either public or private employment services. Matching efficiency policies are those that can stimulate people to obtain occupations, skills, and abilities that are more in demand. For example, intermediation policies increase the efficiency of public employment services and private providers or implement better job-matching technologies to help human resource departments in private-sector companies fill job vacancies. Other policies tackle information asymmetries (for example, through labor market platforms and observatories) and incentivize geographic labor mobility. In Honduras, the Technical and Vocational Education and Training (TVET) system is ripe for reform in order to strengthen its effectiveness in helping young people get better jobs (Michel and Walker 2020).

In Policy Experiment 8, we simulate policies that improve matching efficiency significantly (by 20 percent). In other words, for every job vacancy posted in the Honduran labor market, there is a 20 percent increase in the number of job matches or job finding rates. This represents a significant improvement in the matching efficiency of the labor market that could potentially lead to lower frictions and unemployment (particularly for some groups who in general experience problems matching in the labor market) and can illustrate the benefits of intermediation policies.

To get a sense of the magnitudes, the job finding rates in this policy scenario are closer to those observed in other countries in the region and within reasonable estimates of the literature. Under this policy, the quarterly job creation rate in Honduras rises to 31 percent in the formal sector and 51 percent in the informal sector. This means that, on average, in the Honduran labor market an unemployed worker will find a formal-sector and an informal-sector job in a particular quarter with a 31 and 51 percent probability, respectively. These estimates are below those estimated in a similar exercise conducted for El Salvador (47 and 96 percent, respectively) (Robayo-Abril, forthcoming). Though in general there is limited evidence for these estimates for the formal and informal sectors, these values fall within the range of reasonable values in the literature. For example, the rate in the formal sector is slightly below that estimated for Colombia, a country with an average job finding rate of 35.1 percent (Alfonso 2015). Cross-country comparable estimates of job-finding rates (in quarterly terms) for over 20 OECD countries vary widely, from 8 percent in Italy to 92 percent in Norway (Hobijn and Sahin 2007).

Overall, these policies lead to a slight increase in unemployment, growth in the formal sector, and rising productivity and wages. A small fraction of unemployed workers and a large share of informal workers move to the formal sector and unemployment is slightly increased. Higher job-finding rates mean that

123 This parameter is calibrated in the model.

Honduran workers can find jobs easier and have more options in the labor market, which leads to higher reservation wages when they receive prospective job offers. More-educated workers easily move to formal-sector jobs, leading to higher productivity as well as higher wages on average. Formal-sector firms offer more vacancies to attract more workers, given that increasing productivity compensates for higher wages. Labor markets are tighter, because there are more formal and informal sector vacancies overall relative to job seekers. Table 6.4 presents the aggregate results. The lack of positive impacts on unemployment is consistent with findings in the literature on the effectiveness of active labor market programs (ALMP) in LAC, which show that training program evaluations tend to have impacts that are small in size and often not significantly different from 0 (Kluve 2016).

Table 6.4: Compositional and distributional effects of policies to increase matching efficiency

Variable	*Baseline*	*Experiment 8* *Increase matching efficiency by 20 percent*
Aggregate Employment and Unemployment Rates		
Unemployment rate, % labor force	0.077	0.0832
Informal-sector employment rate, % labor force	0.645	0.382
Formal-sector employment rate, % labor force	0.279	0.535
LM Tightness and Formal Sector Size		
Labor market tightness	1.01	1.18
Fraction of formal-sector vacancies	0.12	0.19
Measures of Wage Dispersion		
Formal-informal log wage gap (formal-informal)	1.13	0.75
Relative log wage dispersion (formal-informal)	0.70	0.67
Log wage dispersion	0.86	0.60
Mean Employment Duration		
Formal-sector job duration (years)	8.19	7.34
Informal-sector job duration (years)	4.32	4.56

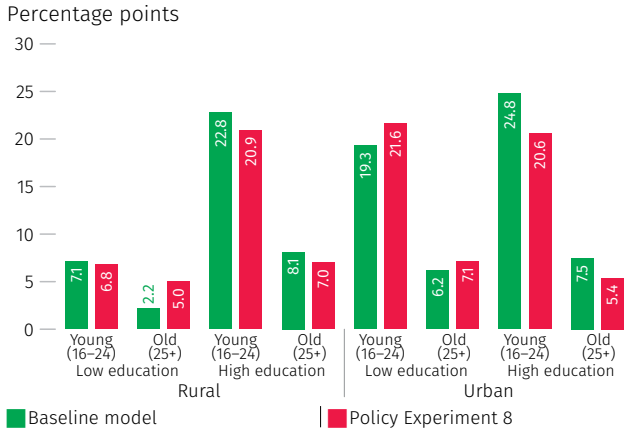
Source: World Bank estimates based on counterfactual simulations.

Compared to other policies, reducing friction and mismatches has the potential to reduce unemployment, but this happens mostly among the highly educated, who likely suffer more from friction and skill mismatches. Unemployment is expected to decrease among the highly educated living in both urban and rural areas. At the same time, more-educated workers are now more likely to be formal. Highly educated youth in urban areas is the group who experiences the larger decrease in unemployment, close to 4.2 percentage points (figure 6.18). The low-educated are expected to experience stable or slightly higher unemployment rates.

These policies are expected to lead to sizable poverty reduction and significant economic growth, with larger reductions in rural areas. Higher formal- and informal-sector wages are expected, on average, due to more-educated and productive workers transitioning to both sectors; therefore, the incidence of low wages is significantly reduced in both sectors, which is conducive to a sizable reduction in the poverty rate. The poverty rate (US$6.85 per day line) is reduced significantly in urban and rural areas, by up to 11.9 and 21.0 percentage points, respectively. As a result, the urban-rural poverty gap is significantly reduced (figure 6.19). Finally, the Shapley decomposition shows that the productivity gains generated from these

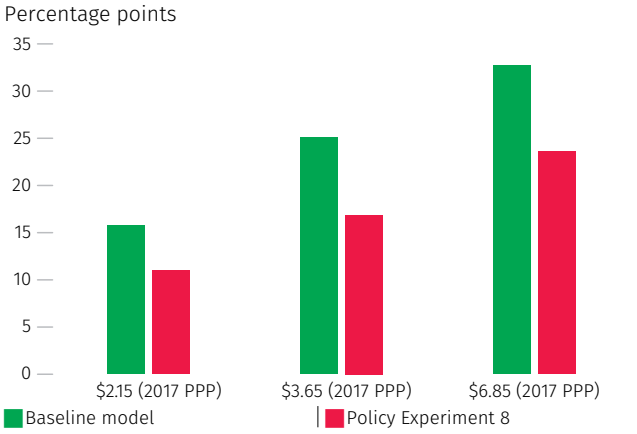
policies are significant, leading to an annualized growth rate of 3.8 percent over the 11-year period. A small reduction in employment rates, sizable productivity growth, and the assumed projected population (with a rising working-age population reflecting a demographic dividend) and labor force growth lead to substantial GDP per capita growth (5.9 percent versus a target of 2.0 percent) (table A.1.15).

Figure 6.18: Unemployment rate by educational level, age, and urban-rural status, baseline model vs. Policy Experiment 8



Source: World Bank estimates based on counterfactual simulations.

Figure 6.19: Urban-rural poverty rate gap, baseline model vs. Policy Experiment 8



Source: World Bank estimates based on counterfactual simulations.

In summary, this evidence shows that one of the pathways to poverty reduction, particularly in rural areas, is improving access to better-paying jobs, which strongly depends on efforts to raise skill levels and labor productivity. As shown in the asset-based framework, understanding the role of the major asset the poor have (labor), as well as their intensity of use and their returns, is critical to identifying which policies could raise household welfare. Our results show that policies to improve human capital, formalization, and matching have potentially significant effects on employment, unemployment, and the size of the informal sector. Such policies also have potentially positive impacts on the distribution of productivity and wages, which in turn can significantly reduce poverty and inequality in the medium and long terms.

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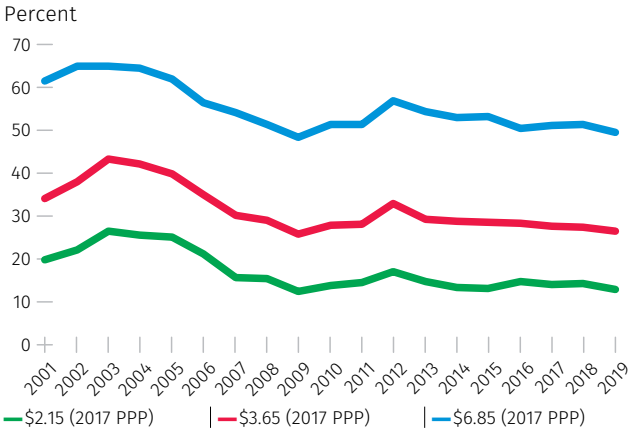
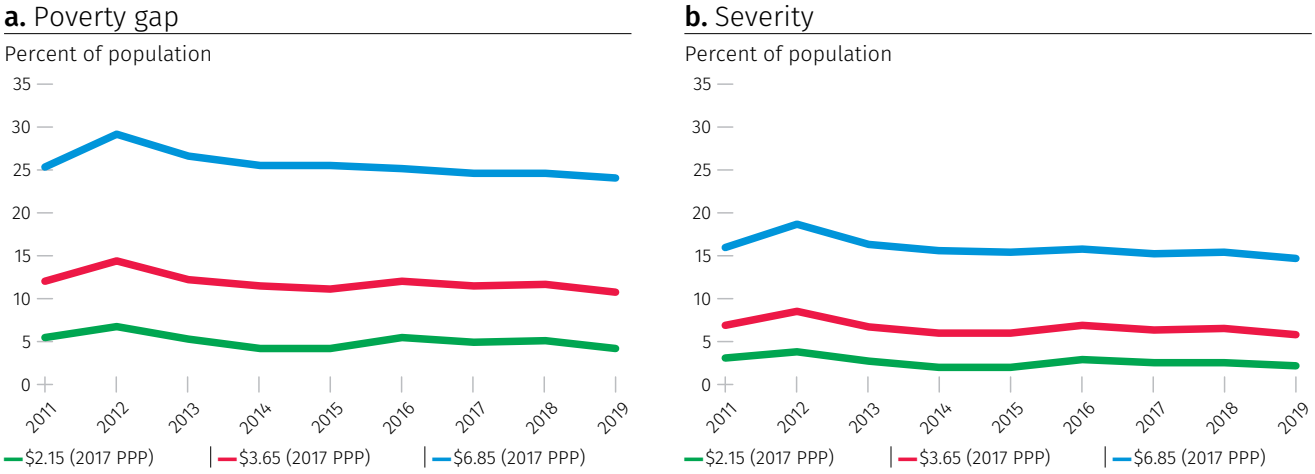
Figure A.1.1: Trends in international poverty headcount, 2001–19



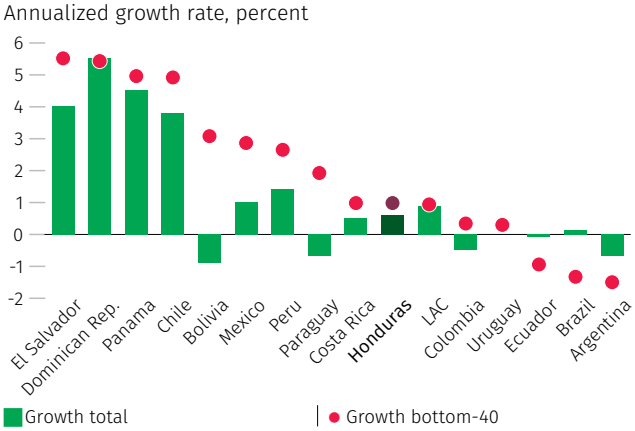
Source: World Bank estimates based on the 2001–19 EPHPM.

Figure A.1.2: Evolution of the depth and severity of poverty, international lines, 2011–19



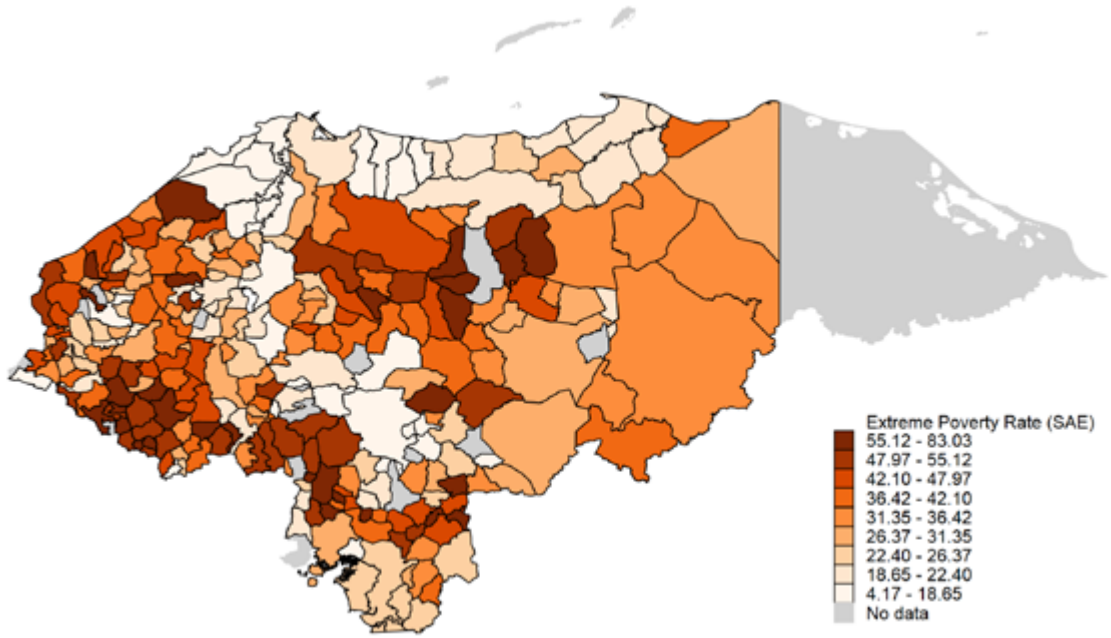
Source: World Bank estimates based on the 2011–19 EPHPM.

Figure A.1.3: Shared prosperity, 2014–19



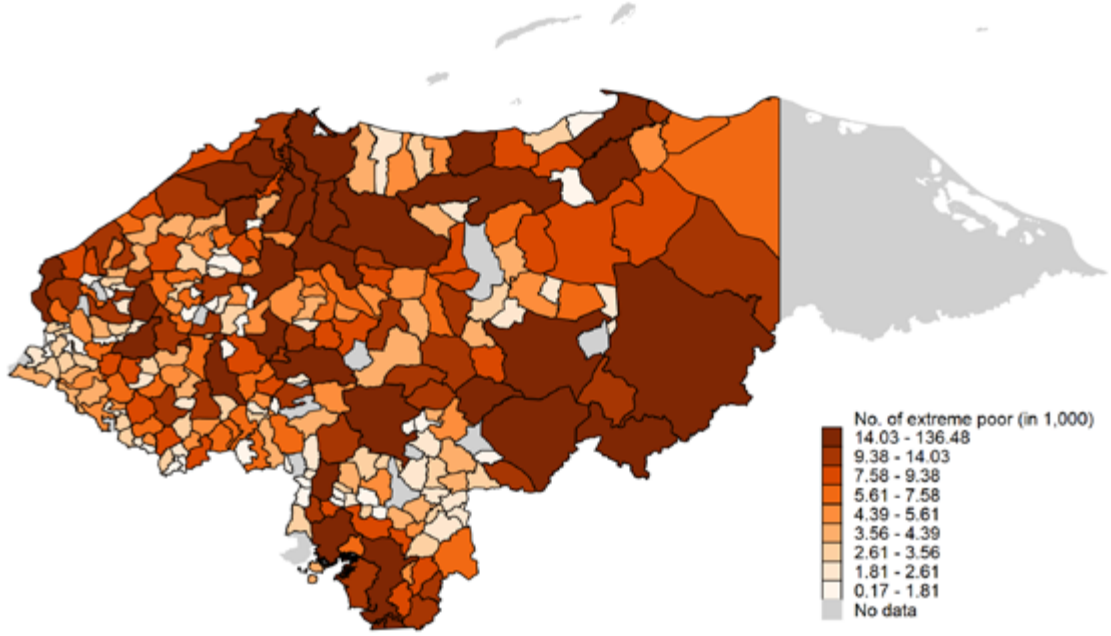
Source: World Bank 2022c.
Note: The data cover the 2014–19 period except for the Dominican Republic (2017–19), Chile (2013–17), Mexico (2016–18), and the LAC aggregate (2015–19). The LAC aggregate is based on 18 countries in the region for which microdata are available at the national level.

Figure A.1.4: Small-area poverty estimates of the extreme poverty headcount ratio (national definition, 2019)



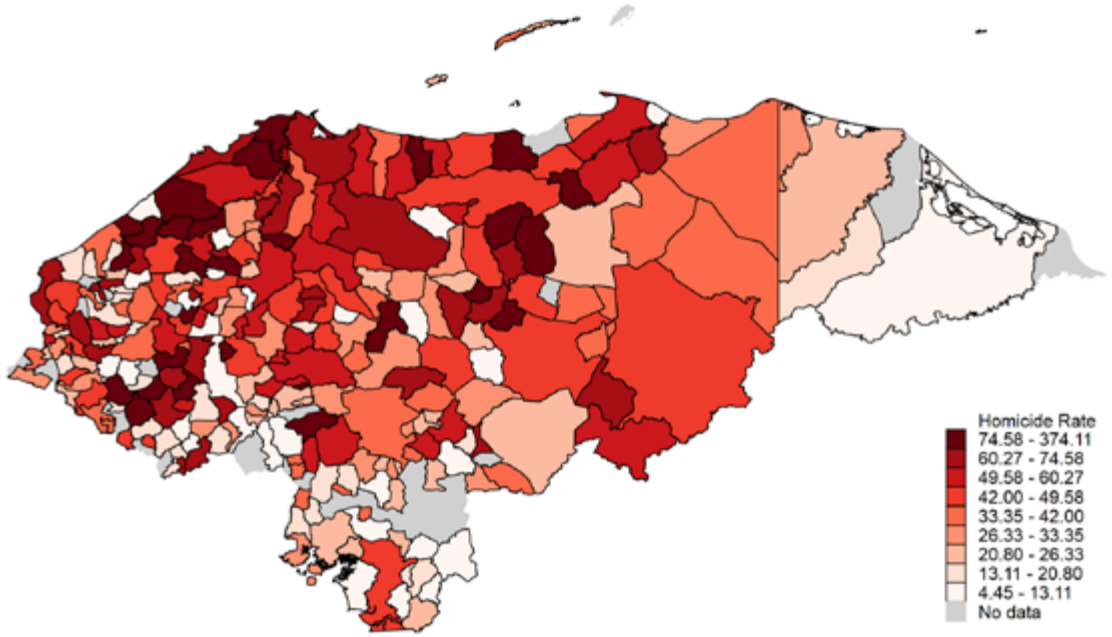
Source: World Bank estimates based on the consolidated 2019 EPHPM and the 2013 Population Census. In addition, nightlight data provided by the National Geophysical Data Center of the US National Oceanic and Atmospheric Administration (NOAA) and data on population estimates provided by INE are leveraged.
Note: The data for the departments of Islas de la Bahía and Gracias a Dios are not reported because the EPHPM does not capture information in those geographic areas.

Figure A.1.5: Small-area poverty estimates of number of extreme poor (national definition, 2019)



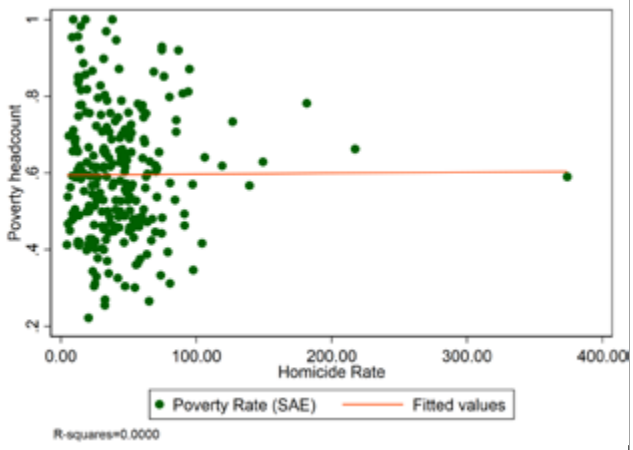
Source: World Bank estimates based on the consolidated 2019 EPHPM and the 2013 Population Census. In addition, nightlight data provided by the National Geophysical Data Center of the US National Oceanic and Atmospheric Administration (NOAA) and data on population estimates provided by INE are leveraged.
Note: The data for the departments of Islas de la Bahía and Gracias a Dios are not reported because the EPHPM does not capture information in those geographic areas.

Figure A.1.6: Homicide rates at the municipality level (per 100,000 inhabitants, 2019)



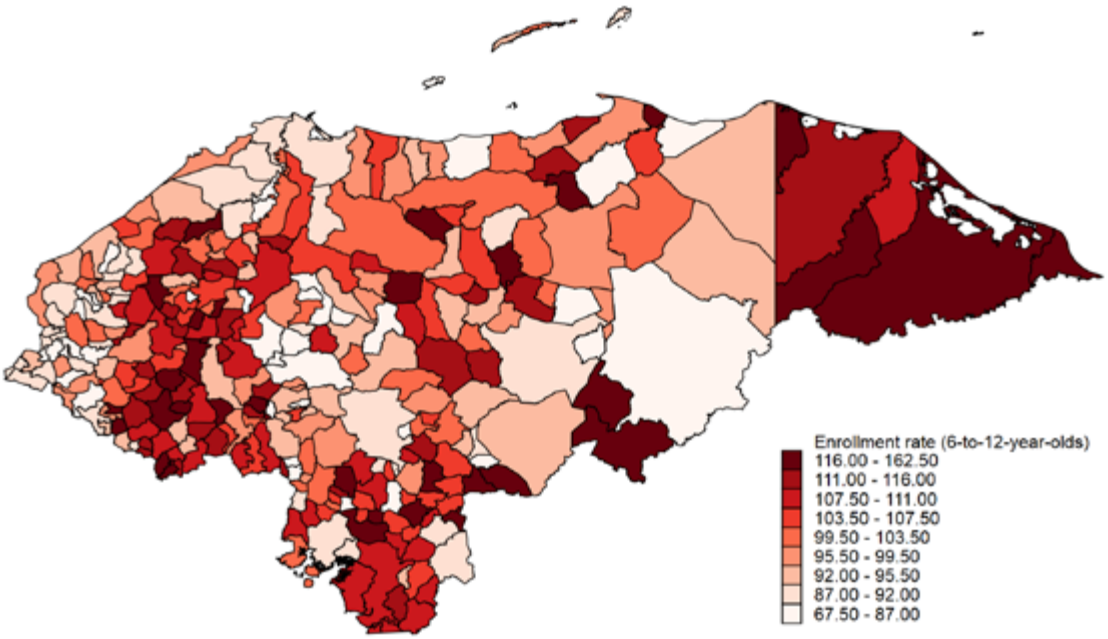
Source: Police Statistics System of Honduras (SEPOL). https://www.sepol.hn/sepol-estadisticas-incidencia-municipio.php.

Figure A.1.7: Scatter plot: Poverty headcount ratios and homicide rates at the municipality level, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM and SEPOL.

Figure A.1.8: Gross enrollment rates (aged 6–12 years) at the municipality level, 2018

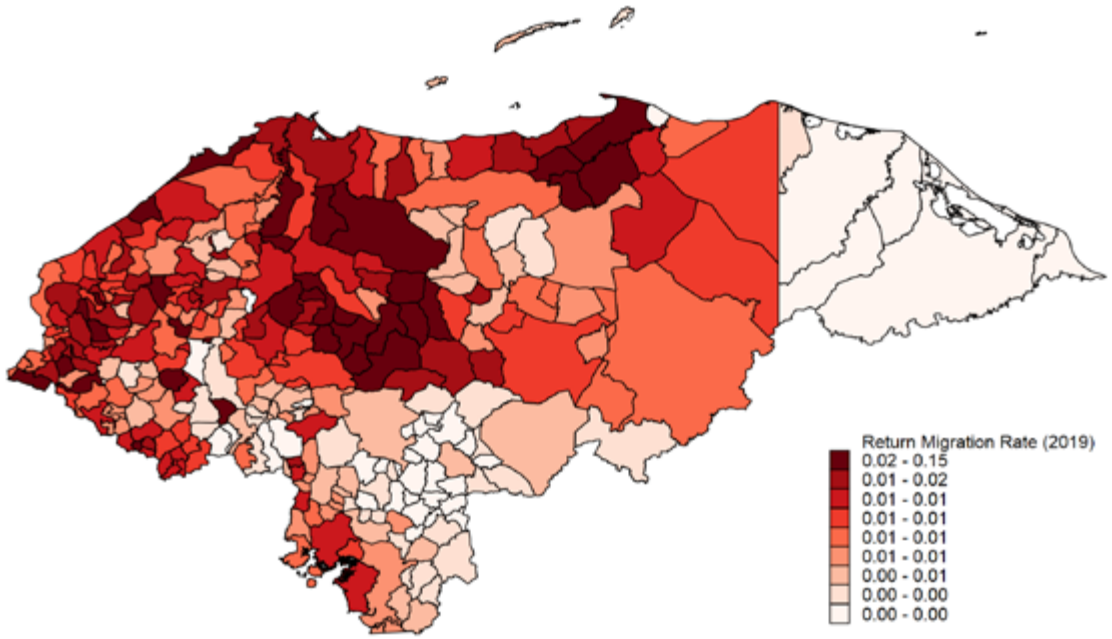


Source: World Bank elaboration based on data from the Subnational Inform Risk Index 2018. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Subnational-Risk/Honduras.

Figure A.1.9: Scatter plot: Moderate poverty headcount ratios (2019) and gross enrollment rates (ages 6–12 years)

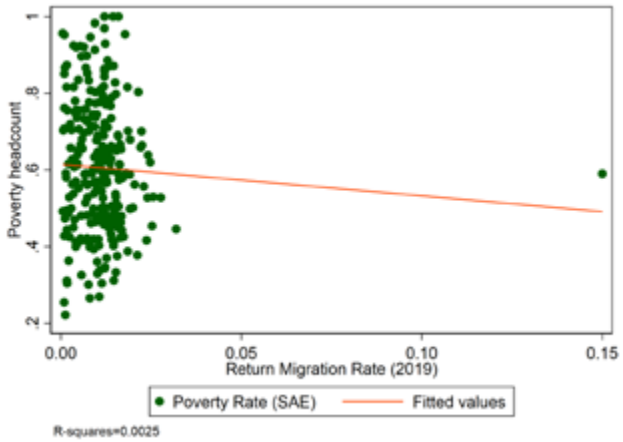
Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and Subnational Inform Risk Index 2018. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Subnational-Risk/Honduras.

Figure A.1.10: Return migration rates at the municipality level



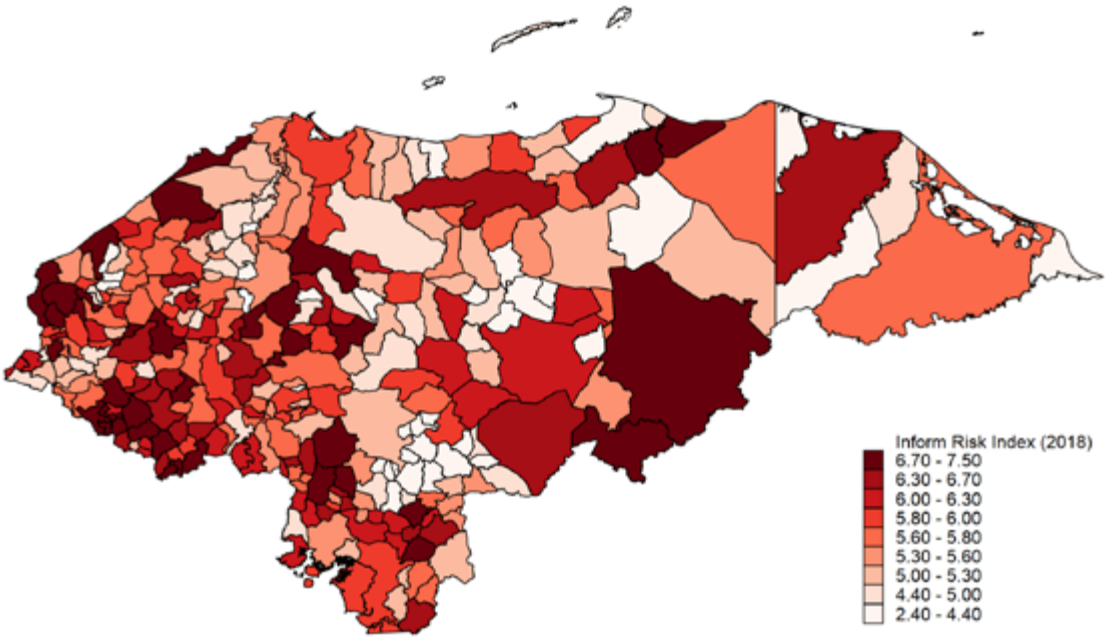
Source: World Bank elaboration based on Sistema Integral de Atención del Migrante Retornado 2022. https://conmigho.hn/retornados-2019/.

Figure A.1.11: Scatter plot: Return migration rates and moderate poverty headcount ratio at the municipality level, 2019



Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and Sistema Integral de Atención del Migrante Retornado 2022.

Figure A.1.12: Subnational Inform Risk Index

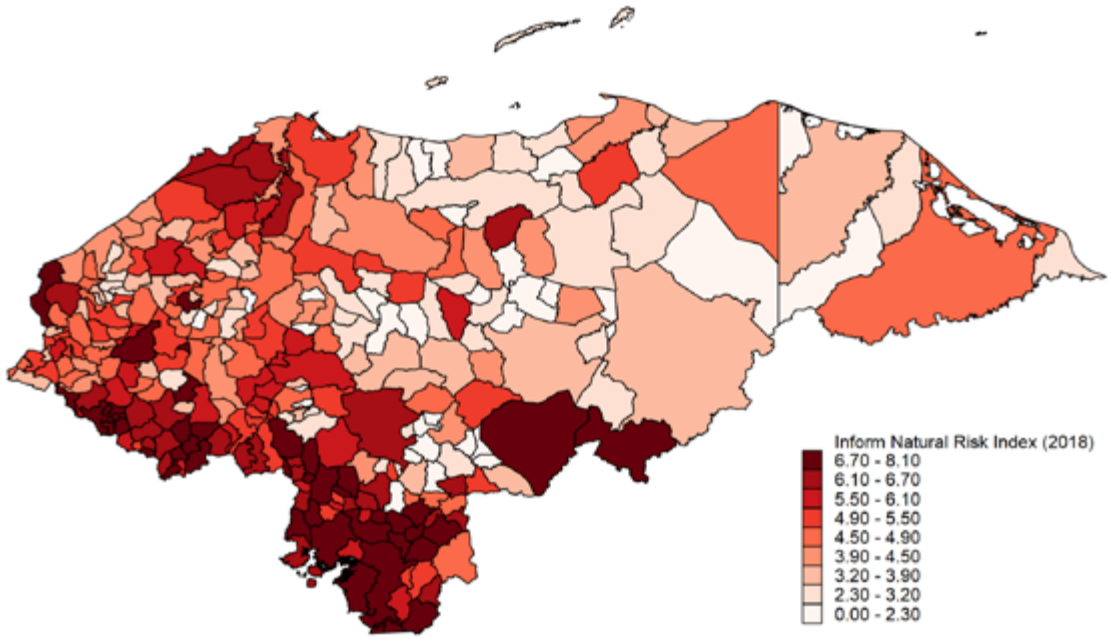


Source: World Bank elaboration based on Subnational Inform Risk Index 2018. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Subnational-Risk/Honduras.

Figure A.1.13: Scatter plot: Poverty headcount ratio (2019) and Subnational Inform Risk Index (2018) at the municipality level

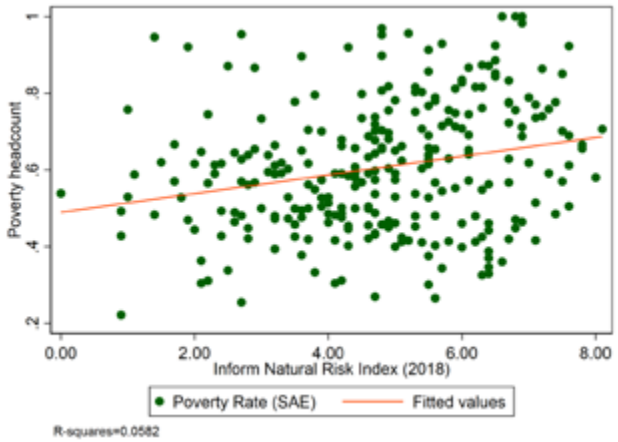
Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and the Subnational Inform Risk Index 2018.

Figure A.1.14: Subnational Inform Natural Risk Index, 2018



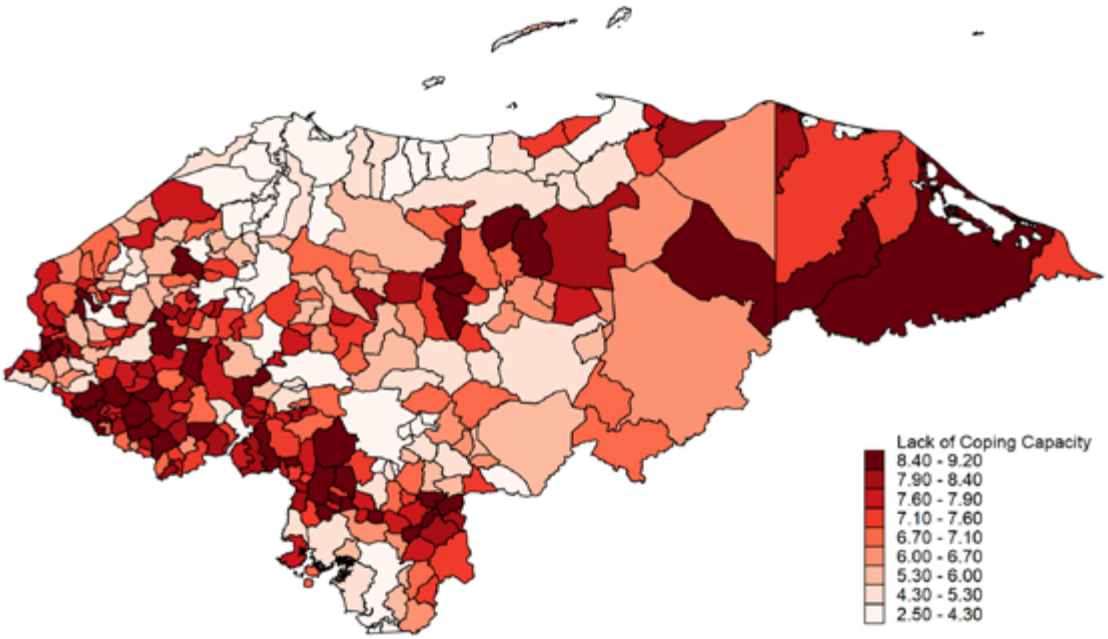
Sources: World Bank elaboration based on Subnational Inform Natural Risk Index 2018. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Subnational-Risk/Honduras.

Figure A.1.15: Scatter plot: Poverty headcount ratios (2019) and Inform Natural Risk Index (2018) at the municipality level



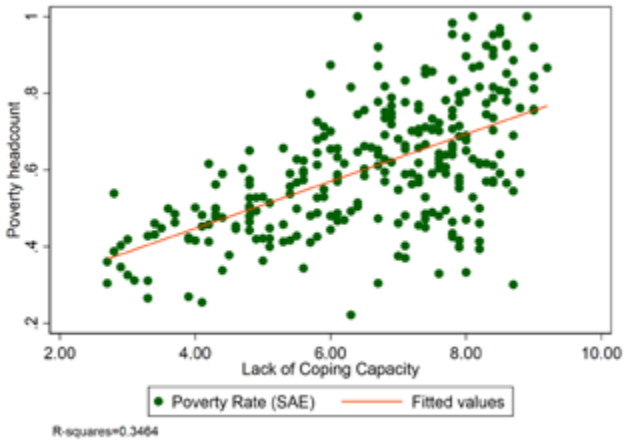
Sources: World Bank estimates based on the consolidated 2019 EPHPM and Subnational Inform Risk Index 2018.

Figure A.1.16: Lack of coping capacity (2018) at the municipality level



Source: World Bank elaboration based on Inform Risk Index 2019. https://drmkc.jrc.ec.europa.eu/inform-index/INFORM-Subnational-Risk/Honduras.

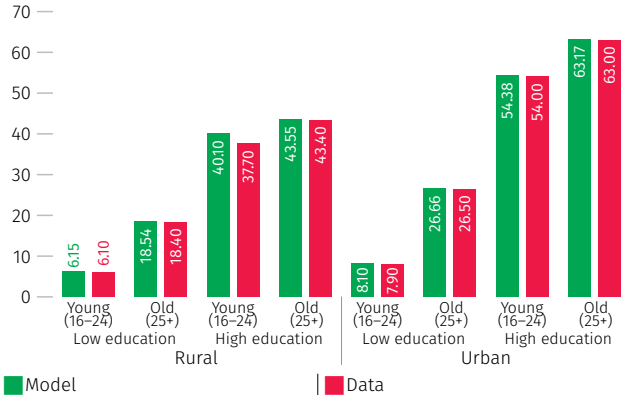
Figure A.1.17: Scatter plot: Moderate poverty headcount ratios (2019) and lack of coping capacity (2018)



Sources: World Bank estimates based on the consolidated 2019 EPHPM, the 2013 Population Census, and Subnational Inform Risk Index 2018.

Figure A.1.18: Formal-sector employment rates: Model vs. data

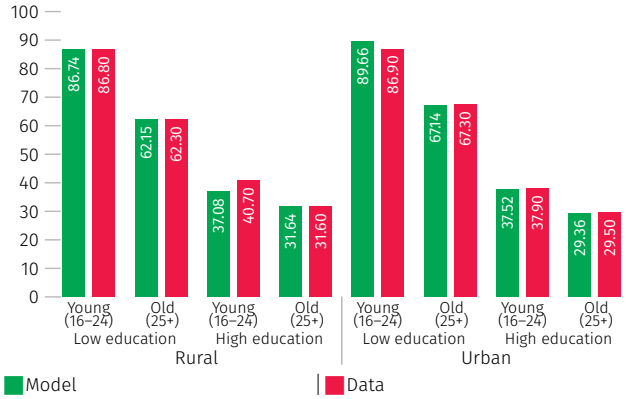
By educational level, age and urban-rural, percent of labor force



Source: Observed vs. simulated aggregate labor market outcomes. Observed based on the 2019 EPHPM.
Note: Informality definition based on social protection contributions.

Figure A.1.19: Informal-sector employment rates: Model vs. data

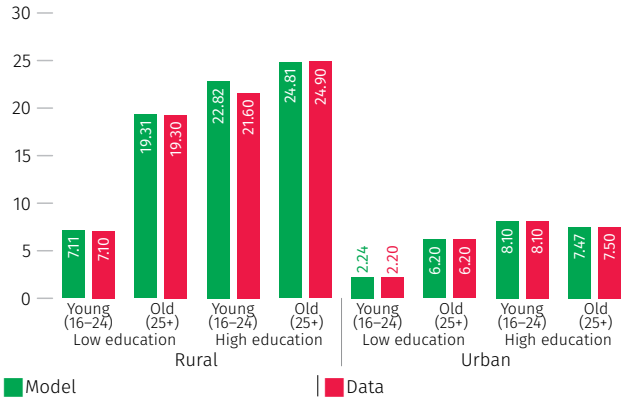
By educational level, age and urban-rural, percent of labor force



Source: Observed vs. simulated aggregate labor market outcomes. Observed based on the 2019 EPHPM.
Note: Informality definition based on social protection contributions.

Figure A.1.20: Unemployment rates: Model vs. data

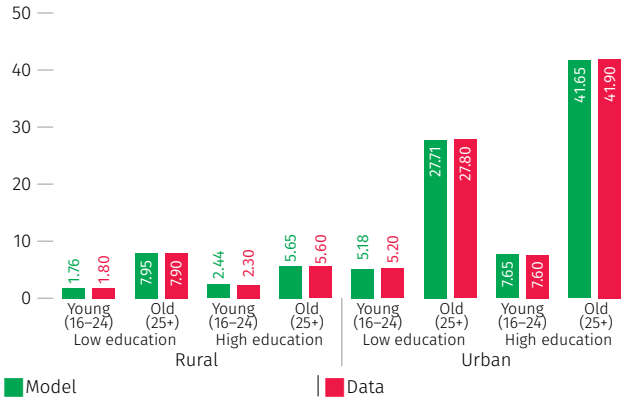
By educational level, age and urban-rural, percent of labor force



Source: Observed vs. simulated aggregate labor market outcomes. Observed based on the 2019 EPHPM.
Note: Informality definition based on social protection contributions.

Figure A.1.21: Distributions of formal-sector workers

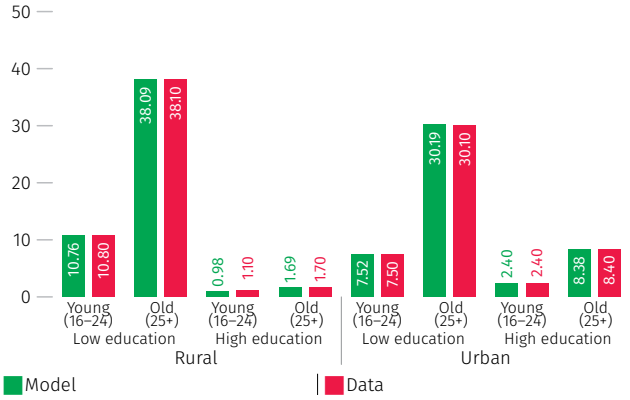
By educational level, age and urban-rural, percent



Source: Observed vs. simulated aggregate labor market outcomes. Observed based on the 2019 EPHPM.
Note: Percentages add up to 1.

Figure A.1.22: Distribution of informal-sector workers

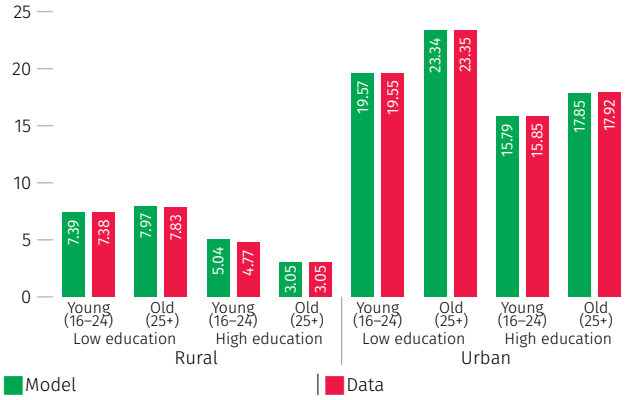
By educational level, age and urban-rural, percentage



Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Percentages add up to 1.

Figure A.1.23: Distributions of unemployed workers

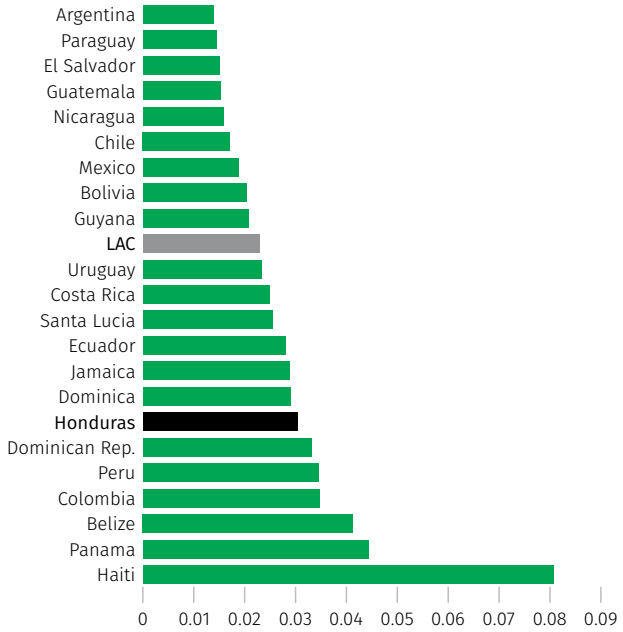
By educational level, age and urban-rural, percentage



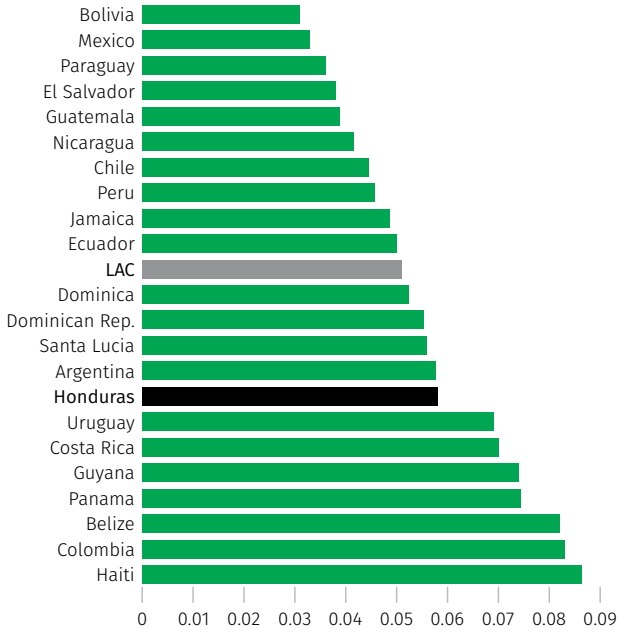
Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Percentages add up to 1.

Figure A.1.24: Quarterly job destruction rates by sector, Honduras vs. selected countries

Panel a. Formal sector

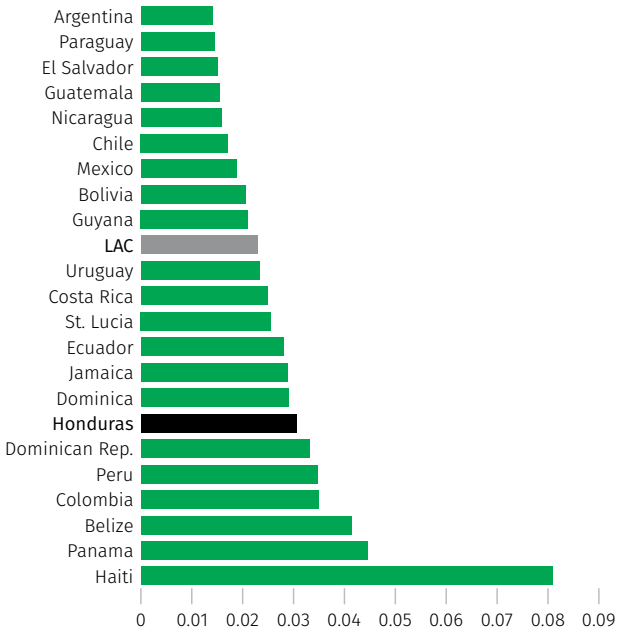


Panel b. Informal sector



Sources: World Bank estimates based on 2021 LAC High-Frequency Phone Surveys.

Figure A.1.25: Quarterly job destruction rates, Honduras (baseline model vs Policy Experiment 7) vs. selected countries



Sources: World Bank estimates based on 2021 LAC High-Frequency Phone Surveys and SIMLAB.

Table A.1.1. Percentage of total population and number of poor and extreme poor, by area/department

Area/department	*Poor*		*Extreme poor*	
	Percentage	*Number of poor*	*Percentage*	*Number of poor*
Rural	57.7	2,386,510	36.53	1,511,976
Urban	39.9	2,002,699	15.90	797,098
Atlántida	44.9	225,007	18.54	92,941
Colon	39.4	147,708	12.83	48,061
Comayagua	64.4	358,967	32.78	182,862
Copan	56.3	231,644	36.02	148,154
Cortes	34.1	596,810	11.21	195,964
Choluteca	49.8	264,376	26.64	141,309
El Paraiso	58.6	281,328	36.49	175,141
Francisco Morazán	35.1	561,149	16.22	259,216
Intibuca	60.8	211,041	42.01	145,920
La Paz	67.0	167,392	46.73	116,837
Lempira	71.4	242,429	54.10	183,726
Ocotepeque	43.4	65,585	28.31	42,779
Olancho	60.1	331,609	35.82	197,686
Santa Barba	54.2	257,450	24.74	117,443
Valle	50.8	94,210	29.71	55,095
Yoro	51.9	304,806	30.69	180,386

Source: World Bank estimates based on the consolidated 2019 EPHPM.

Table A.1.2: Poverty impacts of rising food prices

Baseline 2019		*Simulation (levels, percent)*			*Changes (percentage points)*		
		Scenario 1	*Scenario 2*	*Scenario 3*	*Scenario 1*	*Scenario 2*	*Scenario 3*
Poverty							
National	48.3	49.2	50.6	52.2	0.9	2.4	3.9
Rural	56.3	57.0	58.3	59.7	0.7	2.0	3.4
Urban	41.8	42.8	44.5	46.2	1.0	2.7	4.4
Extreme poverty							
National	24.0	24.8	26.8	28.9	0.8	2.8	4.9
Rural	33.6	34.6	36.7	39.1	1.1	3.2	5.6
Urban	16.3	16.9	18.8	20.6	0.6	2.6	4.4

Source: World Bank estimates based on the consolidated 2019 EPHPM.
Note: Simulation results for three scenarios of different food inflation.

Table A.1.3: Profiles of the poor and non-poor in Honduras, 2014–19

	2014				2019			
	Extreme poor	*Poor*	*Non-poor*	*All*	*Extreme poor*	*Poor*	*Non-poor*	*All*
Household								
Percentage in each category	24.9	49.7	50.3	100.0	25.2	48.0	52.0	100.0
Daily per capita income 2011 US$ PPP	1.7	2.8	12.8	7.8	1.6	2.8	12.8	8.0
Average household size	6.1	5.8	4.8	5.3	5.9	5.7	4.6	5.1
Average age of household head	45.5	45.6	47.6	46.7	49.1	49.2	50.5	50.0
Households with female head (percent)	30.9	32.4	34.9	33.8	29.8	33.1	33.8	33.5
Living in urban area (percent)	41.1	48.5	57.6	53.1	34.5	45.6	63.2	54.8
Average years of education of household head	3.7	4.1	7.0	5.7	4.0	4.4	7.4	6.1
School enrollment (percent ages 6–12)	92.7	94.1	93.7	93.9	90.8	92.2	96.4	93.8
School enrollment (percent ages 12–18)	44.8	51.4	61.4	56.0	47.8	51.3	68.8	59.3
Proportion of members 0–12 years old (percent)	36.7	34.3	22.5	28.4	34.6	31.9	19.9	25.6
Proportion of members 13–18 years old (percent)	16.6	16.3	14.0	15.1	14.5	14.5	11.6	13.0
Proportion of members 19–70 years old (percent)	43.7	46.4	59.6	53.1	46.6	49.4	63.6	56.8
Proportion of members 70+ years old (percent)	2.9	3.0	3.9	3.4	4.3	4.3	5.0	4.6
Access to Services								
Internet at home (percent)	2.7	4.7	23.3	15.2	8.4	11.5	38.0	26.6
Internet use (percent)	17.7	23.7	50.3	38.6	37.1	45.8	76.2	63.1
HH with access to electricity (percent)	72.8	79.5	92.3	86.7	84.5	88.5	97.1	93.4
HH without access to water (percent)	17.0	13.7	6.6	10.1	14.4	10.5	2.7	6.5
HH without access to sanitation (percent)	20.8	16.0	6.5	11.2	11.5	9.0	3.7	6.2
Labor force (ages 15–65)								
Labor force participation (percent)	59.8	60.9	69.1	65.4	57.7	59.8	71.1	66.2
Female labor force participation (percent)	35.6	38.5	54.1	47.0	32.1	36.7	57.3	48.3
Male labor force participation (percent)	88.2	87.0	85.8	86.3	87.0	86.9	86.5	86.7
Unemployment rate (percent)	7.5	6.6	4.4	5.3	7.0	7.5	5.3	6.2
Female unemployment rate (percent)	3.6	3.3	2.1	2.6	4.1	4.3	2.8	3.4
Male unemployment rate (percent)	3.9	3.4	2.2	2.7	2.9	3.3	2.5	2.8
Informality (percent)	98.3	94.6	69.3	79.8	99.2	96.0	72.8	81.7

Source: World Bank estimates based on the 2014–19 EPHPM.

Table A.1.4: Profiles of the vulnerable and nonvulnerable in Honduras, 2014–19

Variable	*2014*		*2019*	
	Vulnerable	*Nonvulnerable*	*Vulnerable*	*Nonvulnerable*
Household				
Percentage in each category	30.8	15.9	31.7	17.3
Average household size	5.1	4.1	4.9	4.1
Average age of household head	46.6	48.3	50.6	50.8
Households with female head (percent)	35.9	35.7	35.9	32.1
Living in urban area (percent)	66.8	81.6	69.7	82.5
Average years of education of household head	5.9	9.8	6.3	10.0
School enrollment (percent ages 6–12)	94.8	92.0	97.6	95.1
School enrollment (percent ages 12–18)	62.8	76.7	68.8	78.2
Proportion of members 0–12 years old (percent)	26.1	15.0	22.6	14.5
Proportion of members 13–18 years old (percent)	14.8	11.5	12.8	8.7
Proportion of members 19–70 years old (percent)	55.6	69.5	59.8	71.8
Proportion of members 70+ years old (percent)	3.6	4.0	4.7	5.1
Access to Services				
Internet at home (percent)	13.7	44.3	30.5	56.7
Internet use (percent)	45.2	71.3	73.7	87.2
HH with access to electricity (percent)	93.6	98.9	97.5	99.4
HH without access to water (percent)	5.3	1.8	2.2	0.6
HH without access to sanitation (percent)	5.9	1.6	3.1	0.9
Labor force (ages 15–65)				
Labor force participation (percent)	66.4	72.6	68.1	76.6
Female labor force participation (percent)	49.1	64.7	52.6	68.3
Male labor force participation (percent)	86.2	81.7	86.0	85.7
Unemployment rate (percent)	6.4	3.6	7.3	3.7
Female unemployment rate (percent)	3.2	1.8	4.1	1.5
Male unemployment rate (percent)	3.2	1.8	3.2	2.2
Informality (percent)	75.4	51.2	80.4	57.1

Source: World Bank estimates based on the 2014–19 EPHPM.

Table A.1.5: Profiles of the poor in rural and urban areas in Honduras, 2014–19

Variable	*2014*				*2019*			
	Poor (urban)	*Poor (rural)*	*Extreme poor (urban)*	*Extreme poor (rural)*	*Poor (urban)*	*Poor (rural)*	*Extreme poor (urban)*	*Extreme poor (rural)*
Household								
Average household size	5.7	6.2	5.9	6.8	5.6	5.9	6.1	6.1
Average age of household head	45.3	46.6	46.7	46.2	49.1	49.6	49.6	49.8
Households with female head (percent)	41.5	22.0	48.6	18.1	43.7	22.9	40.9	22.8
Average years of education of household head	5.0	3.1	4.5	2.9	5.6	3.3	5.1	3.5
School enrollment (percent ages 6–12)	94.9	93.4	91.5	92.1	94.1	89.5	90.5	87.6
School enrollment (percent ages 12–18)	64.5	37.1	59.4	32.0	68.1	39.4	68.6	39.7
Proportion of members 0–12 years old (percent)	33.0	34.6	32.7	39.3	31.5	32.7	36.5	36.3
Proportion of members 13–18 years old (percent)	16.0	17.1	18.5	15.8	13.5	14.9	10.7	14.1
Proportion of members 19–70 years old (percent)	47.9	45.3	45.8	42.9	51.1	48.1	49.5	45.0
Proportion of members 70+ years old (percent)	3.1	3.0	3.0	2.0	3.9	4.3	3.3	4.5
Access to services								
Internet at home (percent)	7.8	0.4	3.5	0.0	18.5	3.3	18.2	3.5
Internet use (percent)	35.8	7.0	29.9	5.4	61.0	31.2	57.3	28.4
HH with access to electricity (percent)	97.4	61.9	96.4	50.3	97.9	79.6	95.8	80.0
HH without access to water (percent)	3.5	23.2	2.8	24.1	1.2	18.2	3.3	18.0
HH without access to sanitation (percent)	8.3	24.3	13.4	28.6	1.3	14.4	0.2	19.2
Labor force (ages 15–65)								
Labor force participation (percent)	59.8	60.9	56.1	59.4	58.1	59.9	56.7	58.9
Female labor force participation (percent)	44.1	28.9	37.7	26.3	41.7	27.6	37.1	26.1
Male labor force participation (percent)	81.3	93.4	79.6	93.0	79.4	93.3	82.2	93.3
Unemployment rate (percent)	9.7	1.2	15.6	0.9	12.8	2.8	10.2	2.6
Female unemployment rate (percent)	4.6	0.6	9.1	0.5	5.8	1.8	6.4	1.4
Male unemployment rate (percent)	5.1	0.6	6.5	0.4	7.0	1.1	3.8	1.2
Informality (percent)	92.0	99.2	98.9	99.6	89.9	99.8	97.3	99.7

Source: World Bank estimates based on the 2014–19 EPHPM.

Table A.1.6: Labor market states

Employment status	*Labor force (percent)*
Unemployed	7.7
	(0.0029)
Employed formal sector	27.7
	(0.0049)
Employed informal sector	64.7
	(0.0052)

Source: World Bank calculations based on a sample size of 8,312 drawn from the consolidated 2019 EPHPM.
Note: Sample includes salaried workers and self-employed and excludes unpaid family workers. Informality is per social protection definition. Standard errors in parentheses.

Table A.1.7: Employment rates

Sector	*Employment Rate (percent)*
Formal sector	30.0
Informal sector	70.0

Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Sample includes salaried workers and self-employed and excludes unpaid family workers. Informality is per social protection definition. Standard errors in parentheses.

Table A.1.8: Descriptive statistics for the employed population

	Employed	*Formal*	*Informal*
Sample size	7,690	2,344	5,346
Population	2,889,528	865,457	2,024,071
Average of hourly wages, E(lnWs)	0.6	1.4	0.2
Average hourly wages E(Ws)	2.7	4.7	1.8
Variance of log hourly wages durations	0.919	0.322	0.768

Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Earnings in hourly rates, 2011 PPP dollars, constructed using observed wages for salaried workers and labor income for self-employed. The lower and upper tails of the hourly wage distribution per each worker group are excluded to minimize the effects of measurement error.

Table A.1.9: Decomposition of variance in log hourly wages

Within-sector variance	0.635
Between-sector variance	0.284
Overall variance	0.919

Source: Original calculations for this publication based on the 2019 EPHPM.
Note: Sample includes salaried workers and self-employed and excludes unpaid family workers. The lower and upper tails of the hourly wage distribution for each worker group are excluded to minimize the effects of measurement error.

Table A.1.10: Descriptive statistics for employed population

	Employed	*Formal*	*Informal*
Average job duration	5.5	8.21	4.31

Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Employment duration is in years and estimated using the UNDP-WB LAC HFPS. Informality definition is based on social protection contributions.

Table A.1.11: Calibration: Data-based versus simulated statistics

Variable	*Model*	*Data*
Aggregate Employment and Unemployment Rates		
Unemployment rate, % labor force	7.70	7.65
Informal-sector employment rate, % labor force	64.50	64.69
Formal-sector employment rate, % labor force	27.91	27.66
LM Tightness and Formal Sector Vacancies		
Labor market tightness	1.01	
Fraction of formal-sector vacancies	0.12	
Measures of Wage Dispersion		
Formal-informal log wage gap (formal-informal)	1.13	1.16
Relative log wage dispersion (formal-informal)	0.70	0.65
Log wage dispersion	0.86	0.96
Mean Employment Duration		
Informal-sector job duration (years)	4.32	4.31
Formal-sector job duration (years)	8.19	8.21

Source: World Bank calculations based on the consolidated 2019 EPHPM.
Note: Employment duration is in years and estimated using the UNDP-WB LAC HFPS. Informality definition is based on social protection contributions.

Table A.1.12: Shapley decomposition of GDP per capita growth

Compound Annual Growth	*Policy Experiment 1*	*Policy Experiment 2*
Productivity	3.68	4.64
Employment rate (Employment/Labor force)	-0.15	-0.15
Labor force/Working-age	0.42	0.42
Working-age/Total population	1.25	1.25
Simulated GDP per capita	4.74	5.62
Target GDP per capita	2.98	2.98
Difference	-1.76	-2.64

Note: GDP growth simulated outcomes are based on Shapley decompositions using productivity and employment growth from the labor model. In 2030, labor force participation is assumed to be 0.62 and the working-age population consistent with UN Populations (medium variant). Target annual GDP projected growth rate is 4.5 percent.

Table A.1.13: Shapley decomposition of GDP per capita growth, 2019–30

Compound Annual Growth	*Policy Experiment 3*	*Policy Experiment 4*
Productivity	0.17	1.15
Employment rate (Employment /Labor force)	0.00	0.00
Labor force/Working-age	0.42	0.42
Working-age/Total population	1.25	1.25
Simulated GDP per capita	1.77	2.61
Target GDP per capita	2.98	2.98
Difference	1.21	0.37

Note: GDP growth simulated outcomes are based on Shapley decompositions using productivity and employment growth from the labor model. In 2030, labor force participation is assumed to be 0.62 and the working-age population consistent with UN Populations (medium variant). Target annual GDP projected growth rate is 4.5 percent.

Table A.1.14: Shapley decomposition of GDP per capita growth

	Policy Experiment 5	*Policy Experiment 6*	*Policy Experiment 7*
Compound Annual Growth			
Productivity	3.29	4.36	3.41
Employment rate (Employment /Labor force)	-0.14	-0.14	-0.11
Labor force/Working-age	0.42	0.42	0.42
Working-age/Total population	1.25	1.25	1.25
Simulated GDP per capita	3.71	4.52	3.82
Target GDP per capita	2.98	2.98	2.98
Difference	-0.73	-1.54	-0.84

Note: GDP growth simulated outcomes are based on Shapley decompositions using productivity and employment growth from the labor model. Labor force participation is assumed to be 0.62 in 2030 and the working-age population consistent with UN Populations (medium variant). Target annual GDP projected growth rate is 4.5 percent.

Table A.1.15: Shapley decomposition of GDP per capita growth

	Policy Experiment 8
Compound Annual Growth	
Productivity	3.80
Employment rate (Employment/Labor force)	-0.07
Labor force/Working-age	1.84
Working-age/Total population	1.25
Simulated GDP per capita	5.85
Target GDP per capita	2.00
Difference	-3.85

Note: GDP growth simulated outcomes are based on Shapley decompositions using productivity and employment growth from the labor model. Labor force participation is assumed to be 0.62 in 2030 and the working-age population consistent with UN Populations (medium variant). Target annual GDP projected growth rate is 4.5 percent.

Annex 2. Monetary Poverty Measurement in Honduras

National poverty estimates in Honduras are produced by the National Statistics Office (Instituto Nacional de Estadística, INE) based on data from the National Household Survey (Encuesta Permanente de Hogares de Propósitos Múltiples, EPHPM). Honduras uses a monetary poverty line to measure extreme and total poverty using per capita income as the welfare measure. The Technical Poverty Commission, which includes INE, the Ministry of Government Coordination (Secretaría de Coordinación General de Gobierno, SCGG), the Central Bank, and the Labor Secretariat, as well as the World Bank and Inter-American Development Bank (IDB), among others, was established in October 2018 to update the official poverty measurement methodology. Revised official poverty estimates are available for 2014–19 that are based on updated poverty lines for rural and urban areas (including separate poverty indicators for the two largest cities), estimated using baskets of goods and services from the 1998 National Income and Expenditure Household Survey. For the time being, official poverty estimates before 2014 continue to use the 1978 National Income and Expenditure Household Survey. The new official poverty series is reported as the share of individuals living in poverty (as with the international estimates), while the official series before 2014 continues to be based on the share of households living in poverty.

To extend the comparable series in Honduras, the World Bank applied the new poverty measurement methodology to 2011–13 data and thus harmonized SEDLAC microdata are available for 2011–19. While the national poverty headcount is used in Honduras for program and policy targeting, international poverty estimates enable comparisons between countries. In particular, for country comparisons, the international poverty line of US$6.85 per person per day (2017 PPP) is preferred, which is also closer to the value of Honduras's official poverty basket. Unlike in many Latin American countries, the International Poverty Line (IPL) of US$2.15 per day in 2017 PPP remains an important indicator in Honduras, because a sizeable share of the population continues to live in extreme poverty. Household data from 2020 are not fully comparable with previous years, due to the methodological changes (change from phone survey mode. Harmonized data for 2021 are comparable with previous years, but were not available at the time of this publication.

A new Income and Expenditure Household Survey is expected to initiate fieldwork in 2023. With this new survey, the poverty methodology, in particular the poverty lines, will warrant revision, because more-up-to-date information on expenditure patterns will be available.

In August 2016, the Government of Honduras introduced an official multidimensional poverty index (MPI) for policy design and monitoring. The MPI was estimated for the first time using data from the 2013 household survey (EPHPM) and was used as a baseline to evaluate the achievements of the current government in 2017. The design of the MPI was the result of technical collaboration under the leadership of the SCGG of INE, the Oxford Poverty and Human Development Initiative (OPHI), the World Bank, UNDP, and members of academia and civil society. This type of collaboration was an important step forward for poverty measurement in Honduras, which, unlike many other countries in the region, was not benefiting from the existence of a poverty technical committee.

Honduras's MPI considers deprivations in four dimensions: health, education, labor, and dwelling. Each of these dimensions is considered equally important and thus the same weight is allocated to each. Within each dimension, every indicator has the same relative weight. When a particular household or one or more of its members falls below the cutoff, then the household is considered deprived in this respective indicator. A household is considered multidimensionally poor if it is deprived in two or more dimensions.

Table A.3.1: Dimensions of the multidimensional poverty indicators

Dimension	*Indicator*	*Deprivation threshold*
Health (1/4)	Access to an adequate water system	› In urban areas the water system is NOT provided by pipes inside the dwelling or property. › In rural areas the water system is NOT provided by pipes, or a water well protected by a community key is not located less than 100 meters from the dwelling.
	Access to basic sanitation	› In urban areas the sanitation system is NOT a toilet connected to a sewer or septic tank. › In rural areas the sanitation system is NOT a toilet connected to a sewer, septic tank, latrine with water seal, or latrine with septic tank.
	Type of cooking fuel	Firewood.
Education (1/4)	Years of education	At least one household member between 15 and 49 years old has 6 years or less of education.
	School attendance	At least one household member between 3 and 14 years old is not attending school.
	Illiteracy	At least one member of the household over 15 years cannot read or write.

Table A.3.1: Dimensions of the multidimensional poverty indicators (continued)

Dimension	*Indicator*	*Deprivation threshold*
Labor (1/4)	Social security	At least one occupied member of working age (18–65 years old) DOES NOT contribute to the social security system (INJUPEMP or INPREMA or IPM or IHSS or a private pension fund or private health insurance).
	Underemployment	Households with at least one working-age member working more than 40 hours per week and earning less than one minimum wage OR all households in which all members of working age are unemployed are deprived. Households whose working-age members are inactive are not deprived.
	Child labor	› At least one child ages 5–13 works. › At least one child ages 14–15 works more than 20 hours per week and does not attend school. › At least one child ages 16–17 works more than 30 hours per week and does not attend school.
Dwelling (1/4)	Access to electricity	DOES NOT have electricity via public, private, collective service or through own plant or solar power.
	Floor material	Dwelling has floors of dirt or of similar materials.
	Roof material	Dwelling has a roof of hay, waste material, or other similar material.
	Wall material	Dwelling has walls made of bahareque, vara, cane, or waste materials.
	Overcrowding	Dwelling has 3 or more persons per room, excluding kitchen, bathroom, and garage.
	Assets	DOES NOT have at least 2 items of the following: radio, TV, 4-burner stove, bicycle, motorcycle, refrigerator, or does not own a car or truck.

Note: The governmental bodies that administer social security programs in Honduras are the National Institute of Retirement and Pensions for Employees and Officials of the Executive Power (Instituto Nacional de Jubilaciones y Pensiones de los Empleados y Funcionarios del Poder Ejecutivo, INJUPEMP), the National Institute for Teacher Training (Instituto Nacional de Previsión del Magisterio, INPREMA), the Social Security Institute (Instituto Hondureño de Seguridad Social, IHSS), and the Military Pension Institute (Instituto de Previsión Militar, IPM).

Monitoring and evaluation based on clearly defined indicators are integral to the development of sound policies. They support policy makers in evaluating the extent to which policy objectives have been met and provide a solid basis for identifying strengths and weaknesses. Monitoring can ensure better coordination and consistency between policies. When carried out on a comparative basis with peer countries it can provide further support for reform. Quantitative indicators have proven highly effective in drawing attention to the challenges for inclusive growth and poverty reduction, identifying priorities for reform, and communicating success and progress. The use of a standard 'scorecard' also facilitates public-private consultations.

In this context, we develop an Index to perform a benchmarking exercise that compares Honduras's performance with those of other economies across a broad set of dimensions and time. Comprehending Honduras's data availability and the country's most recent performance across several development areas is essential, because it enables us to track progress or lack of progress on key indicators and broader development areas to determine critical areas in which the country is lagging. This quantitative exercise can also inform the prioritization of policy reforms in the country, should a transition materialize.

Methodology

We construct an Index to identify, assess, and monitor several dimensions of development outcomes for Honduras in comparison with countries in three main reference groups: the World, Lower-Middle-Income (LMI) countries, and Latin America and the Caribbean (LAC) countries. Because the Index does not include policy indicators, it provides an objective basis for discussing the underlying contextual drivers. However, we recognize that some of the indicators may be affected by previous policies and therefore can reflect positive or negative outcomes of past developments.

The Index includes 19 dimensions and 278 indicators and ranks countries according to their performance in each dimension. The indicators have been selected based on the data available for several countries and their social and economic relevance. We relied upon global databases, including the *World Development Indicators*, TCdata360, International Financial Statistics, ASPIRE, ILO, and other data sets covering most countries in the world.[124] This provides a snapshot of where each country stands regarding some fundamental outcome indicators in these priority areas. The Index is constructed using a five-step process outlined below.

Step 1: Compute the average of variables over time

First, we compute averages for each variable for the periods circa 2008–14 and 2015–22, respectively. The use of averages responds to the need to avoid distortions caused by outlier values and overcome the lack of information for a particular data point.

124 For a full description of the data sources, contact the authors.

Step 2: Homogenize variables

The variables require modification, given that the scales and direction of the variables can differ considerably. The direction of all indicators included in a composite index need to be homogenous (i.e., all variables should have a positive sign and a higher value should indicate being closer to a 'desirable situation' or better performance on the same scale).

Step 3: Standardize variables

The magnitude of the difference between Honduras and the best achiever in each domain is assessed using the normalized distance to the best-performing country. Accordingly, we standardized the variables according to the following formula for country i in period t:

$$SVar_{Country\ i,t}=(var_{BPt,t} - var_{Country\ i,t}) / (var_{BP,t} - var_{WP,t})$$

The standardization follows the methodology used for North Macedonia, Colombia, Chile, and El Salvador SCDs (World Bank 2018, 2015, 2017, 2022). This way, Honduras obtains a score of 0 when it is the best performer in one specific variable and 1 when it is the worst performer.

Step 4: Calculate distance to the best performer

After the variables are standardized, we calculate the distance to the best performer for each variable by assigning countries to one specific decile. We create deciles (1 for the best performers, 10 for the worst). When Honduras gets a score of 1, it is among the best performers in the relevant group and when it receives a score of 10 it is among the worst performers.

Step 5: Use the Index to inform prioritization

Based on the results of the benchmarking exercise, we apply criteria for identifying emerging priority areas. A priority level is assigned to each indicator according to the criteria described in table A.4.1. Priority areas of importance are those in which Honduras lags compared to the best performer within the LAC region, LMI countries, and the World. Moreover, the average performance across all comparison groups is calculated to determine the ranking of each. The results of this exercise are presented in table A.4.2.

Table A.4.1: Criteria for selecting priority levels

	Normalized gap to top performer in the group
1 (lowest priority)	Less than 10%
2	10–20%
3	20–30%
4	30–40%
5	40–50%
6	50–60%
7	60–70%
8	70–80%
9	80–90%
10 (highest priority)	90% or more

Summary results

The benchmarking exercise enables us to assess the availability of statistics for Honduras. It also supports the identification of emerging constraints to inclusive growth and vulnerability and poverty reduction in the country. We use the results of the benchmarking analysis to build an inventory of key statistics and identify a preliminary set of important areas in which Honduras's performance is lagging. This method for identifying emerging constraints has advantages as well as drawbacks. Benchmarking offers a simple, intuitive, and consistent method for establishing Honduras's performance in certain areas. However, it does not explain why Honduras outperforms or underperforms. Also, deeper gaps (relative to the best performer) do not necessarily imply a more significant impact on inclusive growth and the twin goals. Therefore, this exercise needs to be complemented by a diagnostic that digs deeper into the hypotheses around the constraints. The benchmarking exercise relies on a careful decision concerning which of the types of comparators to include (for example, structural peers, aspirational peers, income group peers, regional peers), the criteria to select such comparators, the indicators to benchmark, and how to measure the distance or gaps. Despite its potential shortcomings, the benchmarking exercise yields critical insights into Honduras's growth and inclusion challenges. Table A.4.2 below summarizes the full results of the benchmarking exercise for Honduras. The lagging areas are "red," indicating a large distance to the best performer.

Table A.4.2. Benchmarking exercise—Honduras

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Agriculture	Agricultural land (percent of land area)	7	7	7	7	7	7
Agriculture	Agriculture, forestry, and fishing, value added (percent of GDP)	8	8	6	5	7	7
Agriculture	Agriculture, forestry, and fishing, value added (constant 2015 US$)	10	10	10	10	10	10

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Agriculture	Agriculture, forestry, and fishing, value added per worker (constant 2015 US$)	10	10	10	10	9	9
Agriculture	Cereal yield (kg per hectare)	10	10	10	10	8	8
Agriculture	Employment in agriculture (percent of total employment) (modeled ILO estimate)	7	7	1	1	7	7
Agriculture	Employment to population ratio, 15+, total (percent) (modeled ILO estimate)	5	5	5	4	5	5
Climate	CO2 emissions (kg per 2015 US$ of GDP)	2	3	5	5	2	2
Climate	CO2 emissions from other sectors, excluding residential buildings and commercial and public services (percent of total fuel combustion)	1	—	3		3	
Climate	CO2 emissions from residential buildings and commercial and public services (percent of total fuel combustion)	2	—	2		2	
Climate	Droughts, floods, extreme temperatures (percent of population, average 1990–2009)	2	—	2		2	
Climate	Forest area (percent of land area)	5	5	5	5	4	4
Climate	Forest area (sq. km)	10	10	10	10	10	10
Climate	Forest rents (percent of GDP)	10	10	8	8	10	10
Climate	Marine protected areas (percent of territorial waters)	—	10	—	10	—	7
Climate	PM2.5 air pollution, population exposed to levels exceeding WHO guideline value (percent of total)	10	10	10	10	10	10

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Climate	Terrestrial and marine protected areas (percent of total territorial area)	—	9	—	9	—	8
Demographics	Age dependency ratio, old (percent of working-age population)	2	2	1	1	2	2
Demographics	Age dependency ratio, young (percent of working-age population)	6	4	9	8	6	5
Demographics	Fertility rate, total (births per woman)	3	3	8	8	4	3
Demographics	Life expectancy at birth, female (years)	3	4	5	4	2	2
Demographics	Life expectancy at birth, male (years)	3	3	5	4	1	2
Demographics	Life expectancy at birth, total (years)	3	4	5	4	1	1
Demographics	Population growth (annual percent)	3	6	9	10	6	7
Demographics	Population in the largest city (percent of urban population)	8	8	9	9	8	8
Demographics	Population living in slums (percent of urban population)	3	5	4	6	3	5
Demographics	Urban population (percent of total population)	6	5	6	6	4	4
Demographics	Urban population growth (annual percent)	6	5	1	1	4	4
Energy	Access to clean fuels and technologies for cooking (percent of population)	6	6	6	6	6	6
Energy	Access to electricity, rural (percent of rural population)	4	3	4	3	4	3
Energy	Access to electricity, urban (percent of urban population)	1	1	1	1	1	1
Energy	Alternative and nuclear energy (percent of total energy use)	10	—	8		9	

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Energy	CO2 intensity (kg per kg of oil equivalent energy use)	5	—	6		5	
Energy	Electricity production from renewable sources, excluding hydroelectric (percent of total)	8	8	8	7	8	7
Energy	Electricity production from renewable sources, excluding hydroelectric (kWh)	10	10	10	10	10	10
Energy	Energy imports, net (percent of energy use)	1	—	2		1	
Energy	Energy intensity level of primary energy (MJ/US$ 2017 PPP GDP)	3	3	3	3	4	4
Energy	Energy use (kg of oil equivalent per capita)	10	—	10		9	
Financial	Account ownership at a financial institution or with a mobile-money-service provider, older adults (percent of population ages 25+)	8	6	9	7	8	7
Financial	Account ownership at a financial institution or with a mobile-money-service provider, poorest 40percent (percent of population ages 15+)	9	7	9	8	9	8
Financial	Account ownership at a financial institution or with a mobile-money-service provider, young adults (percent of population ages 15–24)	8	8	9	8	8	7
Financial	Borrowers from commercial banks (per 1,000 adults)	9	10	8	9	4	6
Financial	Commercial bank branches (per 100,000 adults)	10	10	7	7	7	8
Financial	Depth of credit information index (0=low to 8=high)	1	1	1	1	1	1

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Financial	Domestic credit provided by financial sector (percent of GDP)	9	9	7	8	7	7
Financial	Domestic credit to private sector (percent of GDP)	8	8	6	6	6	6
Financial	Domestic credit to private sector by banks (percent of GDP)	8	8	5	4	6	7
Financial	Private credit bureau coverage (percent of adults)	5	6	5	6	4	2
Governance	BTI Q1 Stateness	4	4	6	7	4	4
Governance	BTI Q3 Rule of Law	5	7	6	8	3	6
Governance	BTI Q4 Stability of Democratic Institutions	4	7	4	7	3	6
Governance	Control of Corruption: Estimate	9	8	9	8	8	8
Governance	Government Effectiveness: Estimate	7	7	7	6	6	6
Governance	IPI Administrative Burden	—	4	—	3	—	6
Governance	IPI E-Citizenship	—	8	—	10	—	6
Governance	IPI Freedom of the Press	—	7	—	9	—	7
Governance	Political Stability and Absence of Violence/ Terrorism: Estimate	5	6	7	8	5	5
Governance	Regulatory Quality: Estimate	6	6	6	6	3	4
Governance	Rule of Law: Estimate	7	8	8	7	7	9
Governance	Voice and Accountability: Estimate	6	6	6	7	5	6
Governance	WBL: Assets Indicator Score	1	1	1	1	1	1
Governance	WBL: Entrepreneurship Indicator Score	1	1	1	1	1	1
Governance	WBL: Marriage Indicator Score	5	3	5	3	5	3
Governance	WBL: Mobility Indicator Score	2	1	2	1	3	1
Governance	WBL: Parenthood Indicator Score	9	9	8	9	8	8

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Governance	WBL: Pay Indicator Score	5	5	5	5	5	5
Governance	WBL: Pension Indicator Score	5	5	5	5	7	5
Governance	WBL: Workplace Indicator Score	1	1	1	1	1	1
Governance	WJP Rule of Law Index	—	8	—	8	—	7
Governance	Women Business and the Law Index Score (scale 1–100)	5	4	7	6	3	3
Health	Cause of death, by communicable diseases and maternal, prenatal, and nutrition conditions (percent of total)	3	2	4	3	2	2
Health	Cause of death, by injury (percent of total)	3	5	3	9	10	10
Health	Cause of death, by noncommunicable diseases (percent of total)	6	7	7	4	6	7
Health	Domestic general government health expenditure (percent of GDP)	8	9	7	8	7	7
Health	Domestic general government health expenditure (percent of general government expenditure)	7	7	7	8	3	5
Health	Low-birthweight babies (percent of births)	3	4	6	6	3	3
Health	Out-of-pocket expenditure (percent of current health expenditure)	7	7	8	9	7	7
Health	Prevalence of anemia among children (percent of children ages 6–59 months)	4	3	4	4	3	3
Health	Prevalence of obesity, female (percent of female population ages 18+)	4	4	2	3	5	5

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Health	Prevalence of obesity, male (percent of male population ages 18+)	3	3	3	3	4	4
Health	Prevalence of overweight, weight for height (percent of children under 5)	2	—	2		3	
Human Capital	Adolescents out of school (percent of lower secondary school age)	5	6	10	10	6	6
Human Capital	Children out of school (percent of primary school age)	3	3	5	7	4	5
Human Capital	Current education expenditure, primary (percent of total expenditure on primary public institutions)	1	—	1		1	
Human Capital	Current education expenditure, secondary (percent of total expenditure on secondary public institutions)	1	—	1		1	
Human Capital	Current education expenditure, tertiary (percent of total expenditure on tertiary public institutions)	3	2	4	2	4	2
Human Capital	Current education expenditure, total (percent of total expenditure on public institutions)	2	—	3		2	
Human Capital	Expected Years of School	—	5	—	10	—	6
Human Capital	Fraction of Children under 5 Not Stunted	5	4	6	5	5	4
Human Capital	Government expenditure on education, total (percent of GDP)	6	7	6	4	6	7
Human Capital	Government expenditure on education, total (percent of government expenditure)	2	2	2	2	2	2

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Human Capital	Harmonized Test Scores	—	7	—	6	—	6
Human Capital	Human Capital Index (HCI) (scale 0–1)	—	7	—	9	—	7
Human Capital	Intentional homicides (per 100,000 people)	10	7	10	7	10	7
Human Capital	Learning-Adjusted Years of School	—	7	—	10	—	7
Human Capital	Primary education, teachers	10	10	10	10	10	10
Human Capital	Probability of Survival to Age 5	2	2	1	2	1	1
Human Capital	Pupil-teacher ratio, primary	7	8	1	1	6	6
Human Capital	Pupil-teacher ratio, secondary	—	8	—	7	—	7
Human Capital	School enrollment, preprimary (percent gross)	8	8	10	10	7	8
Human Capital	School enrollment, primary (percent gross)	7	7	10	8	6	8
Human Capital	School enrollment, primary (percent net)	3	4	9	9	4	6
Human Capital	School enrollment, primary, female (percent net)	3	3	9	9	4	5
Human Capital	School enrollment, primary, male (percent net)	3	4	9	9	4	6
Human Capital	School enrollment, secondary (percent gross)	7	7	9	10	6	7
Human Capital	School enrollment, secondary (percent net)	7	7	10	10	6	8
Human Capital	School enrollment, secondary, female (percent net)	6	6	10	10	6	7
Human Capital	School enrollment, secondary, male (percent net)	7	7	10	10	7	8
Human Capital	School enrollment, tertiary (percent gross)	9	9	9	9	9	7
Human Capital	Secondary education, teachers	—	10	—	10	—	10

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Human Capital	Survival Rate from Age 15–60	2	3	4	4	2	2
Human Capital	Trained teachers in preprimary education (percent of total teachers)	6	—	6		7	
Human Capital	Trained teachers in primary education (percent of total teachers)	—	—	—	—	—	—
Human Capital	Trained teachers in secondary education (percent of total teachers)	—	—	—	—	—	—
Infrastructure	DAI Government Sub-index	5	6	6	7	4	5
Infrastructure	DAI People Sub-index	8	8	8	8	6	6
Infrastructure	Dec Cable Subscribers	10	10	10	10	10	9
Infrastructure	Dec DSL Subscribers	10	10	10	10	10	10
Infrastructure	Dec Household Penetration	10	10	10	9	9	8
Infrastructure	Individuals using the Internet (percent of population)	9	7	10	9	8	6
Infrastructure	Logistics performance index: Ability to track and trace consignments (1=low to 5=high)	6	7	6	5	6	6
Infrastructure	Logistics performance index: Competence and quality of logistics services (1=low to 5=high)	7	7	7	6	6	6
Infrastructure	Logistics performance index: Ease of arranging competitively priced shipments (1=low to 5=high)	5	7	6	6	5	6
Infrastructure	Logistics performance index: Efficiency of customs clearance process (1=low to 5=high)	7	8	6	8	3	7

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Infrastructure	Logistics performance index: Frequency with which shipments reach consignee within scheduled or expected time (1=low to 5=high)	5	8	4	6	4	6
Infrastructure	Logistics performance index: Overall (1=low to 5=high)	6	8	6	6	5	7
Infrastructure	Logistics performance index: Quality of trade and transport-related infrastructure (1=low to 5=high)	8	8	7	7	6	8
Infrastructure	Rail lines (total route-km)	—	—	—	—	—	—
Infrastructure	Railways, goods transported (million tons-km)	—	—	—	—	—	—
Infrastructure	Railways, passengers carried (million passengers-km)	—	—	—	—	—	—
Infrastructure	Secure internet servers (per million people)	10	10	10	10	9	10
Labor	Employment to population ratio, 15+, total (percent) (modeled ILO estimate)	5	5	5	4	5	5
Labor	Female-15+ Time-related underemployment	4	6	3	7	4	6
Labor	Female-Aggregate bands: Total-Discouraged job-seekers (thousands) annual	1	1	1	2	2	2
Labor	Firms competing against unregistered firms (percent of firms)	7	9	8	8	7	9
Labor	Informal Employment rate (percent)-Agriculture	10	10	10	10	9	10
Labor	Informal Employment rate (percent)-Non-Agriculture	8	8	8	10	7	7
Labor	Informal Employment rate (percent)-Total	8	9	9	10	7	7

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Labor	Labor force participation rate for ages 15-24, total (percent) (modeled ILO estimate)	5	4	4	2	5	4
Labor	Labor force participation rate, female (percent of female population ages 15+) (modeled ILO estimate)	6	5	8	7	7	6
Labor	Labor force participation rate, total (percent of total population ages 15+) (modeled ILO estimate)	5	5	5	4	5	5
Labor	Labor force with basic education, female (percent of female working-age population with basic education)	7	6	6	5	7	5
Labor	Labor force with basic education, male (percent of male working-age population with basic education)	3	2	2	1	3	1
Labor	Male-15+Time related underemployment	3	4	3	4	3	4
Labor	Male-Aggregate bands: Total-Discouraged job-seekers (thousands) annual	1	1	1	1	1	1
Labor	Share of youth not in education, employment or training, female (percent of female youth population)	6	6	7	9	8	8
Labor	Share of youth not in education, employment or training, male (percent of male youth population)	2	2	2	3	3	2
Labor	Share of youth not in education, employment or training, total (percent of youth population)	5	4	4	7	7	5
Labor	Total-15+Time related underemployment	3	5	3	5	3	5

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Labor	Total-Aggregate bands: Total-Discouraged job-seekers (thousands) annual	1	1	1	2	1	2
Labor	Unemployment with basic education (percent of total labor force with basic education)	2	2	2	2	2	2
Labor	Unemployment with intermediate education (percent of total labor force with intermediate education)	3	4	5	5	3	4
Labor	Unemployment, female (percent of female labor force) (modeled ILO estimate)	2	3	2	4	2	3
Labor	Unemployment, total (percent of total labor force) (modeled ILO estimate)	2	3	2	3	2	3
Labor	Unemployment, youth total (percent of total labor force ages 15–24) (modeled ILO estimate)	2	2	1	2	2	2
Macroeconomics	Central government debt, total (percent of GDP)	—	—	—	—	—	—
Macroeconomics	Current account balance (percent of GDP)	9	6	6	5	9	6
Macroeconomics	Expense (percent of GDP)	8	8	5	6	8	9
Macroeconomics	Final consumption expenditure (percent of GDP)	5	6	2	3	6	7
Macroeconomics	Foreign direct investment, net inflows (percent of GDP)	10	10	10	10	7	8
Macroeconomics	GDP per capita growth (annual percent)	7	5	5	7	9	5
Macroeconomics	GDP per person employed (constant 2017 US$ PPP)	10	10	10	10	8	8

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Macroeconomics	Gross fixed capital formation (percent of GDP)	7	6	6	6	7	7
Macroeconomics	Gross savings (percent of GDP)	9	7	8	4	9	8
Macroeconomics	Inflation, consumer prices (annual percent)	2	1	2	1	4	1
Macroeconomics	Net lending (+) / net borrowing (-) (percent of GDP)	10	8	7	5	10	8
Macroeconomics	Personal remittances, received (percent of GDP)	6	5	1	1	4	4
Macroeconomics	Revenue, excluding grants (percent of GDP)	10	8	6	5	10	9
Macroeconomics	Short-term debt (percent of total external debt)	2	2	2	2	3	2
Macroeconomics	Total debt service (percent of GNI)	2	2	4	4	3	2
Manufacture	CO2 emissions from manufacturing industries and construction (percent of total fuel combustion)	4	—	6		4	
Manufacture	Chemicals (percent of value added in manufacturing)	—	—	—	—	—	—
Manufacture	Child employment in manufacturing (percent of economically active children ages 7–14)	4	—	5		4	
Manufacture	Child employment in manufacturing, female (percent of female economically active children ages 7–14)	8	—	10		8	
Manufacture	Child employment in manufacturing, male (percent of male economically active children ages 7–14)	2	—	3		2	
Manufacture	Food, beverages and tobacco (percent of value added in manufacturing)	—	—	—	—	—	—

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Manufacture	High-technology exports (percent of manufactured exports)	10	10	10	10	9	10
Manufacture	Machinery and transport equipment (percent of value added in manufacturing)	—	—	—	—	—	—
Manufacture	Manufactures exports (percent of merchandise exports)	8	7	7	7	8	7
Manufacture	Manufactures imports (percent of merchandise imports)	5	5	7	5	7	4
Manufacture	Manufacturing, value added (percent of GDP)	7	7	7	7	6	5
Manufacture	Manufacturing, value added (annual percent growth)	8	4	5	2	9	7
Manufacture	Manufacturing, value added (constant 2015 US$)	10	10	10	10	10	10
Manufacture	Manufacturing, value added (constant LCU)	10	10	10	10	10	10
Manufacture	Manufacturing, value added (current LCU)	10	10	10	10	10	10
Manufacture	Manufacturing, value added (current US$)	10	10	10	10	10	10
Manufacture	Medium- and high-tech exports (percent manufactured exports)	7	6	6	6	7	6
Manufacture	Medium- and high-tech manufacturing value added (percent manufacturing value added)	10	10	10	10	9	9
Manufacture	Other manufacturing (percent of value added in manufacturing)	—	—	—	—	—	—
Manufacture	Services, value added (percent of GDP)	5	5	6	7	4	5
Manufacture	Services, value added (constant 2015 US$)	10	10	10	10	10	10

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Manufacture	Tariff rate, applied, simple mean, manufactured products (percent)	2	2	1	1	3	2
Manufacture	Tariff rate, applied, weighted mean, manufactured products (percent)	2	2	2	1	1	2
Manufacture	Tariff rate, most favored nation, simple mean, manufactured products (percent)	2	2	1	1	2	2
Manufacture	Tariff rate, most favored nation, weighted mean, manufactured products (percent)	2	3	1	2	2	3
Manufacture	Textiles and clothing (percent of value added in manufacturing)	—	—	—	—	—	—
Pandemic	1) Prevention of the emergence or release of pathogens	—	9	—	8	—	7
Pandemic	2) Early detection & reporting for epidemics of potential int'l concern	—	9	—	9	—	9
Pandemic	3) Rapid response to and mitigation of the spread of an epidemic	—	7	—	9	—	7
Pandemic	4) Sufficient & robust health sector to treat the sick & protect health workers	—	8	—	9	—	8
Pandemic	5) Commitments to improving national capacity, financing and adherence to norms	—	7	—	8	—	7
Pandemic	6) Overall risk environment and country vulnerability to biological threats	—	8	—	9	—	9
Pandemic	GHS overall score	—	9	—	9	—	9

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Poverty	Annualized average growth rate in per capita real survey mean consumption or income, bottom 40percent of population (percent)	—	7	—	4	—	6
Poverty	Gini index	8	8	9	6	9	8
Poverty	Multidimensional poverty headcount ratio (percent of total population)	10	—	10		10	
Poverty	Multidimensional poverty headcount ratio, children (percent of population ages 0–17)	—	—	—	—	—	—
Poverty	Multidimensional poverty headcount ratio, female (percent of female population)	—	—	—	—	—	—
Poverty	Multidimensional poverty headcount ratio, household (percent of total households)	10	—	10		10	
Poverty	Multidimensional poverty headcount ratio, male (percent of male population)	—	—	—	—	—	—
Poverty	Multidimensional poverty intensity (average share of deprivations experienced by the poor)	8	—	9		5	
Poverty	Poverty gap at US$5.50 per day (2011 PPP) (percent)	4	4	7	4	4	4
Poverty	Poverty headcount ratio at US$1.90 per day (2011 PPP) (percent of population)	3	3	7	3	3	3
Poverty	Poverty headcount ratio at US$3.20 per day (2011 PPP) (percent of population)	4	4	7	4	4	4

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Poverty	Poverty headcount ratio at US$5.50 per day (2011 PPP) (percent of population)	6	6	7	6	6	6
Poverty	Ratio Income share of top 10/Income share of bottom 10 decile	7	7	10	7	10	7
Poverty	Survey mean consumption or income per capita, bottom 40percent of population (2011 PPP US$ per day)	10	10	10	9	7	8
Poverty	World Bank, Multidimensional Poverty Measure, adult school attainment deprivation rate	—	2	—	5	—	3
Poverty	World Bank, Multidimensional Poverty Measure, child school enrollment deprivation rate	—	3	—	5	—	5
Poverty	World Bank, Multidimensional Poverty Measure, electricity deprivation rate	—	2	—	10	—	2
Poverty	World Bank, Multidimensional Poverty Measure, sanitation deprivation rate	—	1	—	3	—	1
Poverty	World Bank, Multidimensional Poverty Measure, drinking water deprivation rate	—	2	—	9	—	2
Poverty	World Bank, Multidimensional Poverty Measure, poverty headcount ratio (percent total population)	—	2	—	10	—	2

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	Indicator	World as comparator group		LAC as comparator		LMI as comparator	
		Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22	Ranking indicator (Baseline) circa 2008–14	Ranking indicator (Recent) circa 2015–22
Private	Bribery incidence (percent of firms experiencing at least one bribe payment request)	2	2	3	5	1	2
Private	Capacity for innovation, 1–7 (best)	8	6	7	4	6	4
Private	Firms competing against unregistered firms (percent of firms)	7	9	8	8	7	9
Private	Firms expected to give gifts in meetings with tax officials (percent of firms)	1	1	2	3	1	1
Private	Firms experiencing electrical outages (percent of firms)	6	8	6	7	7	7
Private	Firms experiencing losses due to theft and vandalism (percent of firms)	6	5	7	6	5	5
Private	Firms formally registered when operations started (percent of firms)	3	4	7	7	5	5
Private	Firms offering formal training (percent of firms)	6	4	5	6	6	4
Private	Firms that do not report all sales for tax purposes (percent of firms)	—	—	—	—	—	—
Private	Firms that spend on R&D (percent of firms)	6	9	5	10	6	7
Private	Firms using banks to finance investment (percent of firms)	8	4	8	7	8	3
Private	Firms using banks to finance working capital (percent of firms)	7	5	8	8	6	2
Private	Firms visited or required meetings with tax officials (percent of firms)	4	6	3	5	5	6

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Private	Firms with female participation in ownership (percent of firms)	6	3	6	5	6	3
Private	Firms with female top manager (percent of firms)	2	6	3	1	1	6
Private	Fixed broadband subscriptions (per 100 people)	10	10	10	10	10	8
Private	HH Market concentration index	5	5	6	6	5	5
Private	Informal payments to public officials (percent of firms)	1	2	3	4	1	2
Private	Losses due to theft and vandalism (percent of annual sales of affected firms)	4	4	10	9	4	4
Private	Number of visits or required meetings with tax officials (average for affected firms)	2	3	6	1	4	2
Private	Power outages in firms in a typical month (number)	1	1	2	3	1	1
Private	Public credit registry coverage (percent of adults)	8	8	7	8	5	6
Private	Regulatory Quality: Estimate	—	—	—	—	—	—
Private	Value lost due to electrical outages (percent of sales for affected firms)	3	2	6	10	3	2
Social	Adolescent fertility rate (births per 1,000 women ages 15–19)	5	4	8	8	5	5
Social	Beneficiary incidence in 1st quintile (poorest) (percent) – All Social Assistance (preT)	7	6	8	8	7	4

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Social	Beneficiary incidence in 1st quintile (poorest) (percent) – All Social Protection and Labor (preT)	5	4	3	1	5	4
Social	Benefits incidence in 5th quintile (richest) (percent) – All Social Insurance	9	10	8	10	9	10
Social	Coverage (percent) – All Social Assistance (preT)	5	6	5	8	5	6
Social	Coverage (percent) – All Social Protection and Labor (preT)	5	6	6	9	5	6
Social	Coverage in 1st quintile (poorest) (percent) – All Social Assistance (preT)	3	4	4	8	3	4
Social	Coverage in 1st quintile (poorest) (percent) – Contributory Pensions (preT)	10	10	10	10	10	10
Social	Coverage in 1st quintile (poorest) (percent) – School Feeding (preT)	5	4	4	5	4	4
Social	Coverage in 1st quintile (poorest) (percent) – Social Pensions (preT)	10	10	10	10	10	10
Social	Coverage in 1st quintile (poorest) (percent) – All Social Protection and Labor (preT)	4	4	4	8	4	4
Social	Gender Inequality Index	6	5	5	4	5	5
Tax	Domestic general government health expenditure (percent of GDP)	8	9	7	8	7	7
Tax	General government final consumption expenditure (percent of GDP)	2	2	4	4	2	2
Tax	Gross national expenditure (percent of GDP)	6	6	1	2	8	8

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Tax	Research and development expenditure (percent of GDP)	—	10	—	10	—	10
Tax	Tax revenue (percent of GDP)	9	5	7	6	10	6
Tax	Time to prepare and pay taxes (hours)	1	1	1	1	2	2
Trade	Agricultural raw materials exports (percent of merchandise exports)	10	10	9	10	10	10
Trade	Cost to export, border compliance (US$)	3	3	5	5	3	3
Trade	Exports of goods and services (percent of GDP)	9	8	9	6	8	8
Trade	Exports of goods and services (annual percent growth)	9	9	3	4	8	10
Trade	Imports of goods and services (percent of GDP)	8	7	8	5	7	7
Trade	International tourism, expenditures (percent of total imports)	9	9	7	9	7	8
Trade	International tourism, number of arrivals	10	10	10	10	10	9
Trade	International tourism, number of departures	10	10	10	10	10	10
Trade	International tourism, receipts (percent of total exports)	9	10	9	10	9	9
Trade	Manufactures exports (percent of merchandise exports)	8	7	7	7	8	7
Water	Annual freshwater withdrawals per capita (billion cubic meters per 1000 inhabitants)	10	10	10	10	9	10
Water	Annual freshwater withdrawals, total (percent of internal resources)	10	10	10	10	10	10

Table A.4.2. Benchmarking exercise—Honduras (continued)

Sector	*Indicator*	*World as comparator group*		*LAC as comparator*		*LMI as comparator*	
		Ranking indicator (Baseline) circa 2008–14	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*	*Ranking indicator (Baseline) circa 2008–14*	*Ranking indicator (Recent) circa 2015–22*
Water	People using at least basic drinking water services, rural (percent of rural population)	3	2	3	2	2	2
Water	People using at least basic drinking water services, urban (percent of urban population)	1	1	2	1	1	1
Water	People using at least basic sanitation services, rural (percent of rural population)	4	3	4	4	4	3
Water	People using at least basic sanitation services, urban (percent of urban population)	3	2	3	3	3	2
Water	Water productivity, total (constant 2015 US$ GDP per cubic meter of total freshwater withdrawal)	10	10	10	10	10	10

Source: World Bank estimates based on a benchmarking exercise.

Annex 5.1 Fay-Herriot Model of Small-Area Poverty Estimation

Data Sources

We use several data sets to estimate poverty at the municipality level, starting with the consolidated household survey from 2019. Official poverty and employment statistics are usually based on the June version of the national household survey (EPHPM) every year (with some exceptions). The June EPHPM, however, is only representative at the "dominio" level, which includes the five categories of Distrito Central, San Pedro Sula, Medium Cities, Rest of Urban, and Rural. The consolidated database, on the other hand, combines the quarterly EPHPM surveys collected throughout the year and provides statistically representative data at the level of the 16 departments in Honduras. The only two currently available consolidated EPHPMs are for 2014 and 2019. Therefore, for the poverty maps, these consolidated EPHPMs were used.

Moreover, we make use of the national census from 2013. The last official census in Honduras took place in 2013. We do not have access to the microdata of the census, but to a version aggregated to the household level. Because our poverty estimations take place at the municipality level, we later aggregate these variables to the municipality level. We use the following variables from the census for our small-area poverty estimations:

- *Household characteristics:* the average number of household members, the share of female household members, the share of households with a female household head, the share of household members under the age of 6, and the share of children between ages 6 and 11.

- *Human capital characteristics:* the population share attending school, the literacy rate, the literacy rate of household heads, the average years of schooling, the average years of schooling of household heads, the population share with no schooling, the population share who have only a primary school or lower level of education, and the population share who have a higher level of education.

- *Housing conditions:* the share of housing characterized by poor conditions (walls, roofs, and floors considered separately); the share of housing with lack of water, electricity, sanitation, and/or waste management; the share of households owning a kitchen, car, TV, air conditioner, computer, and/or land; and the share of households in overcrowding conditions.

- *Labor market conditions:* the share of family workers, the labor force participation rate, the share of domestic servants, the share working in the public and private sectors, the NEET rate, the share of retired, and the internal migration rate.

Table A.5.1.1 below details the summary statistics of these variables at the national level. Note that the data shown below are at the household level, not at the population level.

We use several additional data sources. To merge the household survey data with the census survey data at the municipality level, we rely on municipality identifiers provided by the National Statistical Institute. We merge these data to the household data, and then use the respective municipality identifiers to merge the

household data to the census data in a second step. Next, we take advantage of nightlight data provided by the National Geophysical Data Center of the National Oceanic and Atmospheric Administration (NOAA).

Table A.5.1.1: Summary statistic of variables at use for small-area poverty estimations (household level)

Variables	*(1)*	*(2)*	*(3)*	*(4)*
	Mean	*SD*	*Min*	*Max*
Poor conditions (wall)	0.0367	0.188	0	1
Poor conditions (roof)	0.00299	0.0546	0	1
Poor conditions (floor)	0.115	0.319	0	1
Lack of water access	0.135	0.342	0	1
Lack of electricity	0.0557	0.229	0	1
Lack of waste management	0.0548	0.228	0	1
Ownership (kitchen)	0.691	0.462	0	1
Lack of sanitation	0.208	0.406	0	1
Ownership (car)	0.207	0.405	0	1
Ownership (TV)	0.753	0.431	0	1
Ownership (air conditioner)	0.0703	0.256	0	1
Ownership (computer)	0.149	0.356	0	1
Ownership (land)	0.767	0.423	0	1
Share of children under 5	0.0952	0.140	0	0.750
Share of children (6–11 years)	0.105	0.148	0	0.750
Literacy rate	0.870	0.253	0	1
Literacy rate (household head)	0.832	0.374	0	1
Average years of schooling (adults)	6.640	3.937	0	22
Average years of schooling (household head)	5.788	4.599	0	23
Share with no schooling (adults)	0.130	0.257	0	1
Share with primary schooling (adults)	0.233	0.317	0	1
Share with higher education (adults)	0.210	0.328	0	1
Labor force participation	0.615	0.340	0	1
Private sector (share)	0.379	0.432	0	1
Public sector (share)	0.0584	0.206	0	1
Share of domestic servants	0.0203	0.116	0	1
Share of family workers	0.0398	0.136	0	1
Overcrowding	0.0960	0.295	0	1
Internal migration rate	0.455	0.356	0	1
Share going to school	0.0475	0.181	0	1
Retired (share)	0.0171	0.113	0	1
NEET rate	0.170	0.339	0	1
Share of female household head	0.341	0.474	0	1
Household members	4.185	2.026	1	18
Female share	0.520	0.233	0	1

Source: The 2019 EPHPM.

We first follow the INE's measure of poverty. To estimate national poverty, we use the following poverty lines:

- Rural moderate poverty line: 1,477.01 lempiras
- Urban moderate poverty line: 2,805.62 lempiras
- Rural extreme poverty line: 873.25 lempiras
- Urban extreme poverty line: 1,429.93 lempiras

These are the newly revised poverty lines from 2019.

Empirical Methodology

We start by aggregating the underlying census data to the municipality level. This is necessary, because the small-area poverty estimation takes place at the municipality level. Table A.5.1.2 reports the resulting summary statistics at the municipality level.

Table A.5.1.2: Summary statistics of variables used for small-area poverty estimations (municipality level)

Variables	*(1)*	*(2)*	*(3)*	*(4)*
	Mean	*SD*	*Min*	*Max*
Household members	4.266	0.784	1	12
Female share	0.511	0.0714	0	1
Share of children under 5	0.0988	0.0337	0	0.212
Share of children (6–11 years)	0.113	0.0422	0	0.267
Share of female household head	0.303	0.125	0	1
Share going to school	0.0534	0.0598	0	0.500
Literacy rate	0.806	0.104	0.267	1
Literacy rate (household head)	0.750	0.145	0.167	1
Average years of schooling (adults)	5.047	1.416	1.208	9.093
Average years of schooling (household head)	4.127	1.426	0.500	8.153
Share with no schooling (adults)	0.185	0.103	0	0.708
Share with primary schooling (adults)	0.313	0.131	0	0.917
Share with higher education (adults)	0.101	0.0890	0	0.429
Share of family workers	0.0573	0.0422	0	0.200
Labor force participation	0.600	0.0868	0.361	1
Share of domestic servants	0.0142	0.0188	0	0.114
Public sector (share)	0.0446	0.0517	0	0.500
Private sector (share)	0.295	0.135	0	0.889
NEET rate	0.173	0.0863	0	0.778
Retired (share)	0.00464	0.0107	0	0.0714
Internal migration rate	0.444	0.141	0	1
Poor conditions (wall)	0.0537	0.0993	0	0.833
Poor conditions (roof)	0.00220	0.00886	0	0.0769

Table A.5.1.2: Summary statistics of variables used for small-area poverty estimations (municipality level) (continued)

Variables	*(1)*	*(2)*	*(3)*	*(4)*
	Mean	*SD*	*Min*	*Max*
Poor conditions (floor)	0.192	0.184	0	1
Lack of water access	0.170	0.187	0	1
Lack of electricity	0.0864	0.120	0	0.667
Lack of waste management	0.0870	0.0837	0	0.500
Ownership (kitchen)	0.783	0.140	0.333	1
Lack of sanitation	0.233	0.188	0	1
Ownership (car)	0.129	0.105	0	0.667
Ownership (TV)	0.590	0.231	0	1
Ownership (air conditioner)	0.0257	0.0497	0	0.333
Ownership (computer)	0.0581	0.0672	0	0.333
Ownership (land)	0.851	0.113	0	1
Overcrowding	0.0990	0.0864	0	0.500

Source: The consolidated 2019 EPHPM.

We next aggregate the poverty estimators from the household survey to the municipality level. The tables below show the respective summary statistics at the municipality level. Table A.5.1.3 shows the international poverty rate, poverty gap, and poverty severity at the municipality level. Table A.5.1.4 presents the respective indicators after applying the national methodology to measure poverty. Importantly, all indicators are measured at the population level. The international poverty rate ranges from 0.00 to 1. This means that there are municipalities in the sample in which none of the inhabitants are poor, while in others all inhabitants are poor. Table A.5.1.4 shows that the same applies to the national poverty estimate. When comparing the average municipal poverty rates to each other, the average international municipal poverty rate is higher than the national one.

Table A.5.1.3: Summary of poverty indicators and their standard deviations by municipality

	N	*Mean*	*Min*	*Max*	*SD*
Int. Poverty Rate (direct estimator)	278	.72	0.00	1	.2
Poverty Gap (direct estimator)	278	.4	0.00	.72	.16
Poverty Severity (direct estimator)	278	.26	0.00	.59	.13

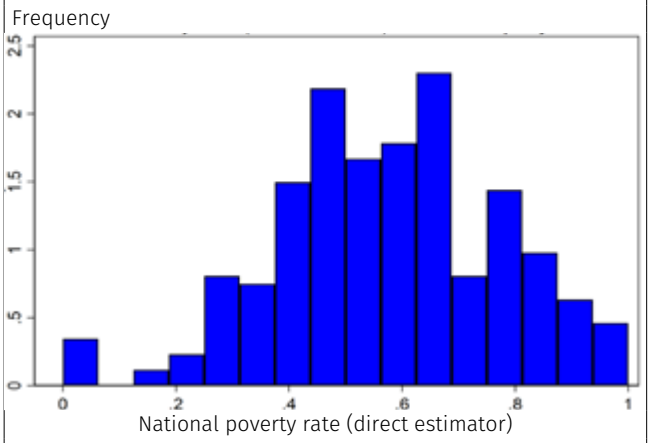
Source: The consolidated 2019 EPHPM.

Table A.5.1.4: Summary of poverty indicators and their standard deviation by municipality

	N	*Mean*	*Min*	*Max*	*SD*
Nat. Poverty Rate (direct estimator)	278	.58	0.00	1	.2
Nat. Poverty Gap (direct estimator)	278	.27	0.00	.6	.13
Nat. Poverty Severity (direct estimator)	278	.16	0.00	.47	.09
Nat. Extreme Poverty Rate (direct estimator)	278	.34	0.00	.83	.19

Source: The 2019 consolidated EPHPM.

Figure A.5.1.1: Histogram of national municipal poverty rate, 2019



Source: The consolidated 2019 EPHPM.

Household surveys are often not representative at lower geographic levels. Through the Fay-Herriot model it is possible to estimate poverty at a more disaggregated level. The methodology draws from additional data sources that are available at the geographic level of interest. Using this information, the resulting poverty estimates report a lower variance than the poverty rates drawn from the survey directly. This is because the model draws from more precise data sources as well as spatial areas.

The Fay-Herriot model is a spatial and random effect model. The Fay-Herriot model is estimated at the geographic level of interest, in our case the municipality level. This means that one line of data is one municipality. This is an advantage, because data are often not available at a more disaggregated level. The model is a linear mixed model.

The Fay-Herriot model generates the best linear unbiased predictor (BLUP). When σ2u is known, the Fay-Herriot model generates the BLUP of the true mean at the domain level of interest by applying a shrinkage factor, which gives higher weight to domains measured with higher precision.[125]

The mean squared error (MSE) of the BLUP is then always at least as efficient as the direct estimator and gains in efficiency for areas with larger sampling variance. If the variance σ2u is unknown, it can be approximated by different methods, such as the maximum likelihood (ML) or restricted maximum likelihood (REML). This then leads to the EBLUP, the empirical best linear unbiased predictor of the domain mean (for example, income at the municipality level). While the BLUP estimator requires normality, the EBLUP does not. This is highly beneficial in a context like Honduras, with a high concentration of municipalities marked by elevated levels of poverty.

The Fay-Herriot estimation is the appropriate small-area estimation method for the Honduras setting. The government conducted its last official population census in 2013. Since then, the country has been marked by significant structural changes, such as an outflow of emigrants. Small-area estimation methods borrowing information from the census might therefore not be accurate, because they will not present a true mirror of the country's current status quo. The Fay-Herriot model corrects this shortcoming through the empirical approach described above.

125 The shrinkage factor γd=σ2u/(σ2u+σ2d) is the proportion of variance due to *ud* (accounting for between-area variation).

We apply four selection criteria to choose the best performing model specification among all model specifications:

- the coefficient of variation,
- the mean squared error,
- the number of outliers exceeding the scale of the main outcome variable of interest, and
- scatter plots of the direct estimates obtained from the survey and the Fay-Herriot estimates.

Results

Table A.5.1.5 below shows the results from the different model specifications. When relying on the coefficient of variation, the baseline model specification would be the best choice. Still, many of the EBLUPs are outside the logical range of the poverty estimator, which ranges from 0 to 1. Therefore, it is best to discard this model and choose the model with the second-lowest coefficient of variation, namely the log-transformed model specification without out-of-sample predictions.

The scatterplots below show the direct estimates of poverty versus the Fay-Herriot estimates (figure A.5.1.2). Under the ideal situation, the points would be symmetrically distributed around an imaginary horizontal line. With this criterion in mind, panel f of figure A.5.1.2 represents the best model specification. This confirms that the log-transformed model is the best model specification in this setup.

Table A.5.1.5: Results of Fay-Herriot model specifications—direct estimator, 2019

Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
CV (Direct estimator)	278	7.99	4.99	0	31.43
EBLUP estimator	278	1.82	.35	1	2.72
CV (FH Model)	278	5.94	2.75	0	11.42
MSE EBLUP	278	.01	.01	0	.06
FH Model with adjusted maximum profile likelihood (ampl) estimation - Direct estimator - 2019					
Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
CV (Direct estimator)	272	15.75	11.49	0	71.78
EBLUP estimator	278	.58	.19	0	1
CV (FH Model)	272	11.47	6.5	0	38.18
MSE EBLUP	278	0	0	0	.01
FH Model with adjusted maximum residual likelihood (aryl) estimation - Direct estimator - 2019					
Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
CV (Direct estimator)	272	15.75	11.49	0	71.78
EBLUP estimator	278	.58	.19	0	1
CV (FH Model)	272	11.42	6.46	0	36.69
MSE EBLUP	278	0	0	0	.01

Table A.5.1.5: Results of Fay-Herriot model specifications—direct estimator, 2019 (comtimued)

FH Model with arcsine transformation

Variable	*Obs*	*Mean*	*SS*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
EBLUP estimator	278	.58	.18	.01	.96

FH Model with arcsine transformation and ampl estimation - Direct estimator - 2019

Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
EBLUP estimator	278	.58	.17	.01	.96

FH Log-transformed model - Direct estimator - 2019

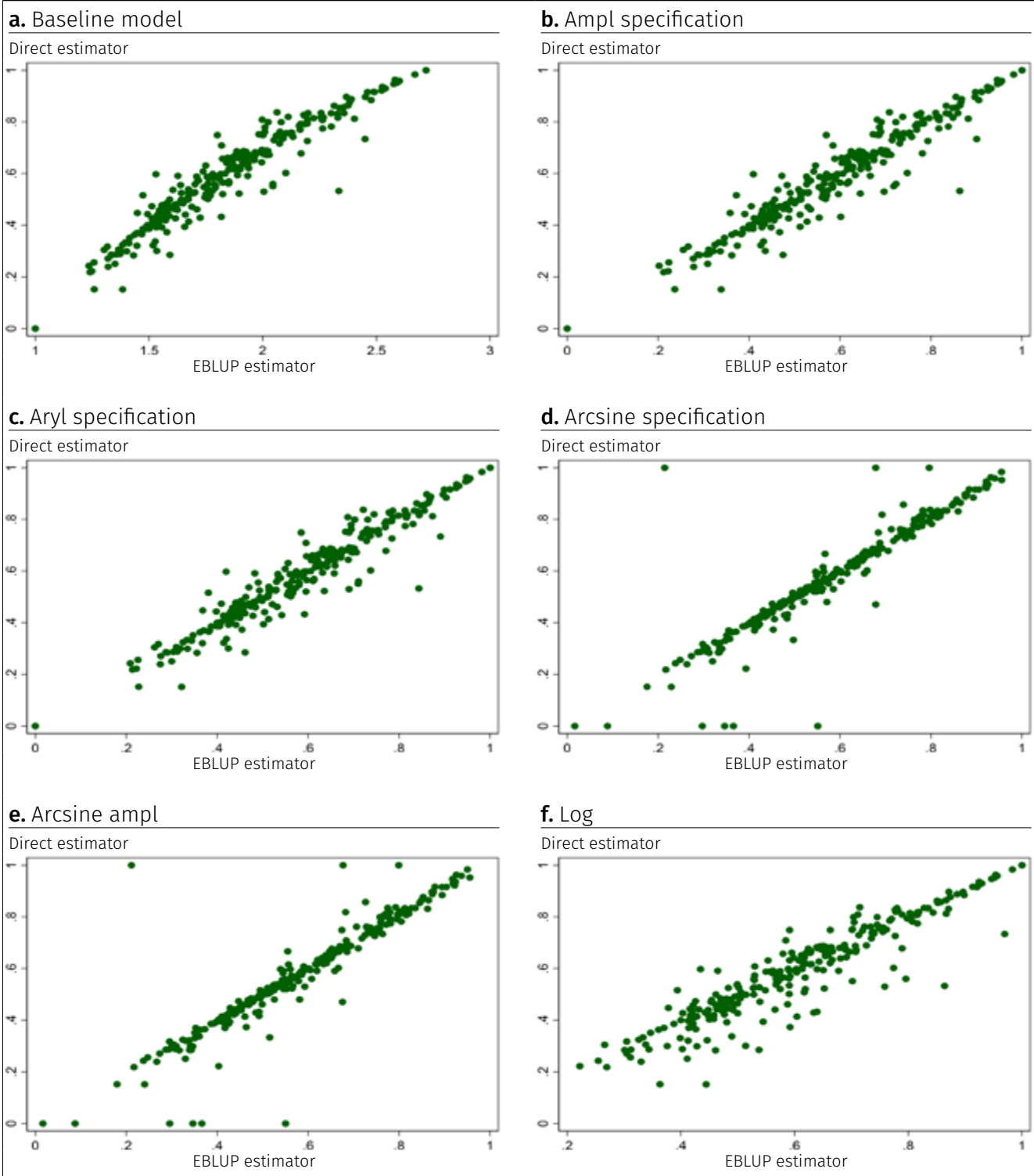
Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
CV (Direct estimator)	272	15.75	11.49	0	71.78
EBLUP estimator	272	.61	.17	.22	1
CV (FH Model)	272	11.31	5.48	0	21.95
MSE EBLUP	272	.01	0	0	.03

FH Log-transformed model with crude back-transformation - Direct estimator - 2019

Variable	*Obs*	*Mean*	*SD*	*Min*	*Max*
Direct estimator	278	.58	.2	0	1
CV (Direct estimator)	272	15.75	11.49	0	71.78
EBLUP estimator	278	.6	.17	.19	1
CV (FH Model)	278	12.16	15.62	0	217.38
MSE EBLUP	278	0	0	0	.03

Figure A.5.1.2: EBLUPs and direct estimators—Fay-Herriot model specifications

Small-area estimates vs. direct estimates of direct estimator



Source: Original calculations for this publication.

Annex 5.2 Spatial Regressions and Subnational Correlations between Poverty and Risks

A couple of additional data sources were used in this report in order to analyze human and natural hazards in the country. We use the Subnational INFORM Index published by the European Commission (INFORM 2022). This index measures the subnational exposure to risks, threats, and vulnerabilities, as well as response capacities. The index consists of 3 dimensions (hazard and exposure, vulnerability, and lack of coping capacity) and 35 indicators.

We use three additional data sets for our explanatory variables of interest. We also use data on educational indicators at the municipality level published by the Ministry of Education. We rely on the indicator measuring the share of students who successfully completed primary school grades 1–3 in 2019. We also use the information on homicide rates at the municipality level from the Academic Institute of Democracy, Crime, and Security (Instituto Universitario en Democracia, Paz y Seguridad), as well as administrative data on returnees from the Integrated System of Return Migrants (Sistema Integral de Atención del Migrante Retornado). In the case of return migrants, we divide the number of returnees by the respective population estimate for the specific municipality.

To account for spatial relationships between the different municipalities, we fit a spatial autoregressive regression model. The spatial autoregressive regression (SAR) model can potentially account for spatial lags in the independent and dependent variables. This is necessary because outcomes in a particular municipality can be affected by outcomes, covariates, and errors in neighboring municipalities. The rationale behind these models is similar to that for time-series models; SAT models are applied to the spatial dimension instead of the time dimension.

We start by investigating whether assuming ordinary least squares is adequate in our example. To do so, we conduct a Moran test. This test determines whether the residuals fit by a simple regression model are correlated with neighboring residuals. We define neighbors as those municipalities that share a common border. Our results show that we reject the null hypotheses of spatial independence for all variables under consideration. Therefore, conducting spatial regressions is recommended.

We next estimate a SAR model, using the poverty headcount ratio as our outcome variable of interest and our different risk exposure variables as the main explanatory variables; we account for spatial lags in the dependent variable. This model specification allows for spillover effects resulting from neighboring municipalities' exposure to risk factors. This makes sense, because a natural disaster might have important implications for neighboring regions in terms of regional labor markets or economic trading regions. We start by estimating the following SAR model:

$$(1)\ Ym = \beta_0 + \beta_1 X_m + \beta_2 W Y_m + \epsilon,$$

where Ym is the poverty headcount ratio at the municipality level, Xm is the risk exposure under consideration (for example, the municipal homicide rate), and W is the spatial contingency matrix. This SAR model specification allows for spatial lags in the dependent variable. The respective results, reported in Table A.5.2.1, confirm our previous findings. The overall effects go in the same direction. In the case of earthquakes, floods, and droughts, the indirect effects (that is, the spillover effect from neighboring municipalities) go in the same direction and therefore increase the direct effects (meaning the effects in

the same municipality). In all other cases, these effects go into the opposite direction and decrease the magnitude of the direct effects.

We then estimate a SAR model allowing for spatial lags in the independent variable. This model specification allows for spillover effects resulting from neighboring municipalities' exposure to risk factors. This makes sense, because the occurrence of a natural disaster might have important implications for neighboring regions in terms of regional labor markets or economic trading regions. We start by estimating the following SAR model:

$$(1)\ Ym = \beta_0 + \beta_1 X_m + \beta_2 W X_m + \epsilon,$$

where Ym is the poverty headcount ratio at the municipality level, Xm the risk exposure under consideration (for example, the municipal homicide rate), and W is the spatial contingency matrix. This SAR model specification allows for spatial lags in the independent variable. The results are reported in table A.5.2.2 and confirm our previous findings.

Table A.5.2.1 below shows the results of running spatial regressions, considering a spatial lag of the dependent variable. For each variable, we show the direct, indirect, and total effects in different columns. The direct effect is the effect of the homicide rate on poverty in the same municipality, the indirect effect adds the impact of poverty in surrounding areas, and the total effect considers both effects. We first show the results for homicide rates and then intrafamily violence, natural hazards, earthquakes, floods, cyclones, landslides, droughts, educational attainment, and lastly, return migration. The results make clear that while in some cases the indirect effects go in the opposite direction, the coefficient describing the overall impact remains similar.

Table A.5.2.1: Spatial lags of dependent variable

	Coefficient	*Variance*
Direct		
Homicide rate	.0000352	8.86e-08
Indirect		
Homicide rate	-4.99e-07	-1.29e-09
Total		
Homicide rate	.0000347	8.73e-08
Observations	238	
	Coefficient	*Variance*
Direct		
Intrafamily violence	-.0009997	1.39e-07
Indirect		
Intrafamily violence	.0000386	-2.99e-09
Total		
Intrafamily violence	-.0009611	1.36e-07
Observations	189	

Table A.5.2.1: Spatial lags of dependent variable (continued)

	Coefficient	*Variance*
Direct		
Natural hazards	.0250588	.0000381
Indirect		
Natural hazards	-.0004731	-2.29e-06
Total		
Natural hazards	.0245857	.0000358
Observations	272	
	Coefficient	*Variance*
Direct		
Earthquakes	-.0002105	9.66e-06
Indirect		
Earthquakes	-1.13e-06	5.50e-08
Total		
Earthquakes	-.0002116	9.72e-06
Observations	272	
	Coefficient	*Variance*
Direct		
Floods	-.0108993	9.63e-06
Indirect		
Floods	-.0004078	2.10e-07
Total		
Floods	-.0113071	9.84e-06
Observations	252	
	Coefficient	*Variance*
Direct		
Typhoons	-.0179943	.0000621
Indirect		
Typhoons	.0002227	-1.98e-06
Total		
Typhoons	-.0177716	.0000601
Observations	272	
	Coefficient	*Variance*
Direct		
Landslides	.0222623	.0000178
Indirect		
Landslides	-.0005674	-2.06e-06
Total		
Landslides	.0216948	.0000158
Observations	272	

Table A.5.2.1: Spatial lags of dependent variable (continued)

	Coefficient	*Variance*
Direct		
Droughts	.0168509	6.25e-06
Indirect		
Droughts	.000055	-3.14e-07
Total		
Droughts	.0169059	5.93e-06
Observations	272	
	Coefficient	*Variance*
Direct		
Gross enrollment rates	.0026709	0.00000
Indirect		
Gross enrollment rates	.0000255	0.00000
Total		
Gross enrollment rates	.0026965	0.00000
Observations	272	
	Coefficient	*Variance*
Direct		
Return migration rate (2019)	-.8211202	.9921461
Indirect		
Return migration rate (2019)	-.0010316	.0007003
Total		
Return migration rate (2019)	-.8221518	.9928464
Observations	272	

Sources: Consolidated data from the 2019 EPHPM, INFORM Risk Index, and others.
Note: The table shows the regression coefficients of running spatial regressions using small-area poverty estimates of the poverty headcount ratio as outcome variables and different risk factors as explanatory variables. In this case, we additionally consider spatial lags of the dependent variable, namely the poverty headcount ratio.

We additionally consider spatial lags of the independent variable. Table A.5.2.2 shows the results. Like the previous table, the overall coefficients mainly go in the same direction as the coefficient on the direct impact. Only in the case of homicide rates does the overall coefficient turn negative.

Table A.5.2.2. Spatial lag of independent variable

	Coefficient	*Variance*
Direct		
Homicide rate	.0000567	9.15e-08
Indirect		
Homicide rate	-.0001661	-2.41e-08
Total		
Homicide rate	-.0001095	6.74e-08
Observations	238	

Table A.5.2.2. Spatial lag of independent variable (continued)

	Coefficient	*Variance*
Direct		
Intrafamily violence	-.001027	1.59e-07
Indirect		
Intrafamily violence	-.0000797	-7.57e-08
Total		
Intrafamily violence	-.0011066	8.34e-08
Observations	189	
	Coefficient	*Variance*
Direct		
Natural hazards	.0239044	.0000453
Indirect		
Natural hazards	.0007387	-.0000164
Total		
Natural hazards	.0246432	.0000288
Observations	272	
	Coefficient	*Variance*
Direct		
Earthquakes	-.0025671	.0000274
Indirect		
Earthquakes	.0025569	-.000019
Total		
Earthquakes	-.0000101	8.40e-06
Observations	272	
	Coefficient	*Variance*
Direct		
Floods	-.0073687	.000011
Indirect		
Floods	-.0137671	-5.78e-06
Total		
Floods	-.0211358	5.24e-06
Observations	252	
	Coefficient	*Variance*
Direct		
Typhoons	-.014695	.0000819
Indirect		
Typhoons	-.0118607	-.0000962
Total		
Typhoons	-.0265556	-.0000143
Observations	272	

Table A.5.2.2. Spatial lag of independent variable (continued)

	Coefficient	*Variance*
Direct		
Landslides	.0203585	.0000184
Indirect		
Landslides	.0014562	-6.89e-06
Total		
Landslides	.0218146	.0000115
Observations	272	
	Coefficient	*Variance*
Direct		
Droughts	.0153557	.000014
Indirect		
Droughts	.0022755	-.0000118
Total		
Droughts	.0176312	2.16e-06
Observations	272	
	Coefficient	*Variance*
Direct		
Gross enrollment rates	.002673	0.00000
Indirect		
Gross enrollment rates	.0000625	0.00000
Total		
Gross enrollment rates	.0027355	0.00000
Observations	272	
	Coefficient	*Variance*
Direct		
Return migration rate (2019)	-.7844444	1.06553
Indirect		
Return migration rate (2019)	-.1954773	-.3835514
Total		
Return migration rate (2019)	-.9799217	.6819789
Observations	272	

Sources: Consolidated data from the 2019 EPHPM, INFORM Risk Index, and others.
Note: The table shows the regression coefficients of running spatial regressions using small-area poverty estimates of the poverty headcount ratio as outcome variables and different risk factors as explanatory variables. In this case, we additionally consider spatial lags of the explanatory variables.

Annex 5.3 Commitment to Equity Methodology

The Commitment to Equity (CEQ) approach is a standard diagnostic tool that uses fiscal incidence analysis to determine the extent to which fiscal policy reduces inequality and poverty in a particular country. The fiscal incidence approach aims to help improve the equity of fiscal policy through a comprehensive assessment of a country's tax/benefit system by using a diagnostic tool called the CEQ Assessment. The World Bank Poverty and Equity group has partnered with the Department of Economics at Tulane University to implement the CEQ for a set of countries across different regions. This approach has several advantages. First, it is among the first efforts to comprehensively assess the tax/benefit system in developing countries (including indirect subsidies and taxes and in-kind benefits in the form of free education and health care) and to make such an assessment comparable across countries and over time. This analysis sheds light on the main constraints that prevent further poverty and inequality reduction via tax and benefit policies. Second, it enables a detailed analysis of the distributional impact of each tax and spending component and the impact of the combination of policies. Finally, a full CEQ analysis provides a comprehensive analysis of both government spending and taxation (direct taxes and transfers), as well as of indirect taxes (VAT and excise) and indirect subsidies.

For Honduras, this exercise requires (1) a detailed understanding of the taxes and benefits system in the country, (2) the collection of relevant macro and fiscal data, and (3) a careful microsimulation analysis using administrative data and data from the latest available household survey.

The analysis captures the majority of social spending and less on the revenue side. On the spending side, the analysis captures around 95 percent of the social benefits (social spending and contributory pensions), accounting for 8.5 percent of GDP. On the revenue side, the analysis captures around 46 percent of income from taxes and social contributions, accounting for 9 percent of GDP.

Household Survey Data

The main source of information for this analysis is the 2019 Encuesta Permanente de Hogares de Propósitos Múltiples (EPHPM), the household survey conducted by the National Institute of Statistics (INE) to estimate official monetary poverty. The survey was implemented over four months, beginning in March 2019. The survey is representative of the Honduras population at the national level for both rural and urban areas.[126] In general terms, the survey questionnaire collects demographic and socioeconomic information about the respondents. The original sample contains information from 88,632 individuals from 21,275 households. While the survey represents a rich source of household information, several limitations apply.

First, as mentioned in chapter 1, it is widely recognized that household surveys do not fully capture the incomes of the very richest individuals and households, possibly underestimating the extent of inequality. An ongoing assessment (Del Carmen et al. forthcoming) aims to understand the inequality trend at the top of the distribution, by combining individual-level data from household surveys and administrative tax records to get a complete income distribution of the country between 2001 and 2019.

126 The EPHPM was conducted in 16 out of 18 departments (the departments of Gracias a Dios and Islas de la Bahía were excluded from the survey).

Second, this survey does not contain detailed information on household expenditures, which is needed to estimate the incidence of consumption taxes; the latest consumption survey in Honduras, Encuesta Nacional de Condiciones de Vida (ENCOVI), was conducted in 2004 and thus is outdated. Th ENCOVI provides information on consumption that is crucial for assessing the impact of fiscal policy instruments, such as taxes, subsidies, and transfers. To overcome the lack of up-to-date information on the consumption baskets of poor households,[127] the analysis in this report uses survey-to-survey imputation techniques over time to simulate the most up-to-date consumption patterns while also being upfront about the assumptions and limitations. In this regard, tax evasion is considered for direct taxes. We model tax evasion due to informality (i.e., employees or self-employed workers who are not registered in the administrative system and do not pay taxes or contribute to the social security system); however, in the case of consumption taxes, we do not take into account evasion, because we do not have information on place of purchase in the household surveys, which is commonly used to estimate tax evasion (Bachas, Gadenne, and Jensen 2020). Therefore, we assume no tax evasion for consumption items. In addition, alcohol and tobacco excise taxes are not included in this analysis due to statistical issues related to sample size. Furthermore, we do not estimate the indirect effects of indirect taxes, because of data limitations such as the lack of an input-output matrix for Honduras.[128] A detailed description of the simulation tax methodology is presented below.

Third, this analysis does not consider other taxes on corporations and individuals. These include corporate income taxes, capital gains, property taxes, and the indirect tax Contribution to the Preservation of Road Assets (paid by producers and importers of fuels). There is not enough information to impute these taxes using methods proposed in the literature.

Fourth, indirect subsidies are not included in this analysis. In 2019, the Honduran subsidy system was directed at energy and public transport, but due to data limitations, this study does not undertake the modeling of these indirect subsidies. In particular, the information collected to impute electricity subsidies is incomplete. For this task, it is necessary to obtain the electricity consumption of each household in kilowatt-hours (kWh), which is estimated based on the household's monthly electricity spending, the tariff structure, and the subsidy rules.[129] In 2019, the Honduran government simultaneously applied a cross-subsidy mechanism and a direct cash transfer subsidy, both based on the volume of consumption, as a response to a full tariff increase applied gradually to residential consumers (SEFIN 2019, 41). The direct government subsidy was then applied to households with consumption of up 150 kWh per month (ENEE 2022). Meanwhile, households with consumption between 151 to 300 kWh per month received a "gradual" electricity subsidy from April to December (SEFIN 2019, 41); however, there is no official targeting mechanism for households in this last consumption group. Moreover, the Honduran government can transfer financial resources to ENEE to cover the financial gaps; these transfers can be considered indirect subsidies.

127 The latest national income and expenditure survey, Encuesta Nacional de Ingreso y Gasto (ENIGH), was conducted in 1998–99.

128 The last input-output matrix available is for 2013.

129 The scheme implies that beneficiaries should have access to electricity provided by the National Energy Company (ENEE). The ENEE is the only electricity distribution company in Honduras. This company applies a uniform tariff structure to all households consuming electricity..

Administrative and Macro and Fiscal Data

Administrative and fiscal data covering the majority of the social benefits and taxes and contributions that comprise the Honduran fiscal system were used for this analysis. Social spending includes health and education services. Administrative data were collected from different sources; SEFIN provided data on social spending on pensions, health, education at the tertiary level, and the description of the tax system and its reforms as well. This information was complemented with data tax collections (2019), disaggregated by tax type, from the Economic Commission for Latin America and the Caribbean (ECLAC) (2022).[130] The Directorate of Higher Education (DES) provided data on students enrolled at the tertiary education level.[131] The Secretariat of Education (SE) provided data on the education sector (executed budget and students enrolled) for the preschool, primary, and secondary levels of education. The SE also provided information from the School Feeding Program (number of beneficiaries). Data on the health sector (which included the provision of care services, primary health care, and hospital care) were collected from the Ministry of Health (SESAL). The Ministry of Development and Social Inclusion (Secretaría de Desarrollo e Inclusión Social, SEDESOL) provided information on direct transfers (executed budget and number of beneficiaries). This information was complemented with the information collected by the World Bank (2021) and Tábora (2021). Finally, the ENEE provided data from electricity subsidies (executed budget).

In terms of fiscal revenue, Honduras relies heavily on indirect taxes, as well as direct taxes and social contributions. Table A.5.3.1 shows that the main sources of revenue for the central government are indirect taxes (15.72 percent of GDP), followed by direct taxes (6.17 percent of GDP) and social security contributions (3.43 percent of GDP). On the spending side, direct transfers have been historically part of the social protection agenda in Honduras. Social programs have been implemented since 1990 and some form of conditional cash transfers (CCT) since 2000. Social protection accounts for about 2 percent of GDP. The CCT program is the largest direct transfer in Honduras, amounting to 0.14 percent of GDP.

Some of the key elements of the tax and benefit system are presented below.

On the revenue side, the analysis covers about 48 percent, including that generated by the personal income tax (PIT), social security contributions, and the VAT. Tax revenue includes direct taxes (the PIT) and indirect taxes on consumption (VAT). These sources account for 56 percent of total tax revenue and 56 percent of total fiscal revenue (data from grants are not available). This analysis does not include other taxes that affect households, such as property taxes (0.46 percent of GDP) and other important taxes, such as excise taxes (on beverages, alcohol, cigarettes, and beer). It also does not include corporate income taxes (3.77 percent of GDP) and taxes on services.

On the spending side, the analysis considers social protection spending, as well as health and education spending, which accounted for 88 percent of the overall fiscal spending in 2019. This includes conditional and unconditional direct cash transfers, including noncontributory pension benefits. Indirect subsidies are not included. Electricity subsidies, though highly relevant in the Honduras context, are not included, because the tariff structure applied in 2019 was unknown, as well as the unit costs of production, necessary to estimate the size of the subsidy. Other spending categories excluded (defense, public order, and safety) are likely to be less relevant from a distributional impact perspective.

130 Source: https://www.cepal.org/en/node/56108.

131 Expenditures on tertiary education only goes to the three largest public universities: National Autonomous University of Honduras (UNAH), the Francisco Morazán National Pedagogical University (UPNFM), and the National Agricultural University (UNA).

Consumption Survey-to-Survey Imputation Methodology

Given the outdated consumption data in Honduras, a simulation of consumption distribution is performed following the methodology proposed by Amarante et al. (2011). This enables the estimation of the incidence of indirect taxes (VAT). First, there is a list of goods that are exempt from sales tax, the most important being primary foods. Then, three consumption baskets are generated: beverages, food products not included in the list of exceptions, and other goods. For each basket, a multiple regression is employed with household spending on each basket of goods as the dependent variables and a set of independent variables that are available in both EPHPM and ENCOVI data. Second, data from the 2019 EPHPM survey and data from the 2004 ENCOVI are matched using the univariate imputation sampling (uvis) command of STATA.[132] The model is calculated as follows:

$$C_i^t = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_k X_k + \varepsilon$$

where C is the monthly value of consumption in lempiras of basket t for each household, and X_k represents the household characteristics that affect consumption, such as household size, number of employed household members, years of schooling of household head, deprivation index (assets), residence zone, and household income per capita. The estimated consumption includes indirect taxes. In addition, VAT estimates are based on tax rules, in this case the effective tax rate is applied.[133] Finally, a scaling down is applied using data from the aggregate consumption of households.

Fiscal Accounts

Table A.5.3.1: Size and composition of social spending and fiscal revenue, Honduras (2019)

Government revenue and spending (lempiras, millions)	*Currency amounts in administrative accounts (unless otherwise specified)*	*Total (percent of GDP)*	*Included in analysis (yes/no)*
Total revenue and grants	**155,692.7**	**25.31**	
Revenue	155,692.7	25.31	
Tax revenue	134,625.0	21.89	
Direct taxes	37,960.0	6.17	
Personal Income Tax	11,365.0	1.85	Yes
Corporate Income Tax	23,167.0	3.77	No
Taxes on property	3,428.0	0.56	No
Others (Solidarity tax, capital gains tax, retention, and others)	—		No
Total contributions to social insurance	*21,067.7*	*3.43*	
Total contributions to social security for old-age pensions	—		
Employee			
Employer			

132 Uvis imputes missing values in the single variable *yvar* based on multiple regression on *xvars*.

133 The VAT rate for most goods and products is 15 percent, except for beverages, alcohol and tobacco, which are taxed at a rate of 18 percent (SAR 2021).

Table A.5.3.1: Size and composition of social spending and fiscal revenue, Honduras (2019) (continued)

Government revenue and spending (lempiras, millions)	*Currency amounts in administrative accounts (unless otherwise specified)*	*Total (percent of GDP)*	*Included in analysis (yes/no)*
Total contributions to social security for health	—		
Employee			
Employer			
Total contributions to social security for other programs (such as unemployment insurance)	—		
Employee			
Employer			
Indirect taxes	96,665.0	15.72	
VAT	42,891.0	6.97	Yes
Excise taxes (beverages)	—		No
Excise taxes (alcohol, beer, and cigarettes)	—		No
Other indirect taxes	18,825.0	3.06	No
Customs duties	4,474.0	0.73	No
Taxes on exports	—		No
Tax on services	—		No
Tax on special events (national lottery, electronic lottery)	23,851.0	3.88	No
Others	6,624.0	1.08	No
Other taxes	66,742.0	10.85	
Nontax revenue			
Grants	—		
Total expenditure	**—**		
Defense spending	**—**		
Primary government spending	**—**		
Social spending	62,609	10.18	
Social protection	13,451.6	2.19	
Social assistance	1,464.2	0.24	
Conditional cash transfers (CCT)	849.62	0.14	Yes
Unconditional cash transfers (Disability Bonus)	99.15	0.02	Yes
Noncontributory pensions	—		
Scholarships	159.30	0.03	Yes
Near cash transfers (school materials)	6.78	0.00	Yes
Near cash transfers (SFP)	284.57	0.05	Yes
Near cash transfers (school uniforms)	48.24	0.01	Yes
Near cash transfers (Bag Food Program)	175.88	0.03	Yes
Other	—		

Table A.5.3.1: Size and composition of social spending and fiscal revenue, Honduras (2019) (continued)

Government revenue and spending (lempiras, millions)	*Currency amounts in administrative accounts (unless otherwise specified)*	*Total (percent of GDP)*	*Included in analysis (yes/no)*
Social insurance			
Old-age pensions (IHSS)	11,987.40	1.95	Yes
Other (INJUPEMP and INPREMA)	—		No
Education	35,146.0	5.71	
Preschool	2,041.81	0.33	Yes
Primary	13,939.07	2.27	Yes
Secondary	6,794.39	1.10	Yes
Postsecondary nontertiary	—		No
Level not specified	7,177.21	1.17	No
Tertiary	5,193.50	0.84	Yes
Health	14,011.4	2.28	
Contributory (IHSS)	—		Yes
Noncontributory (SESAL)	14,011.4	2.28	Yes
Housing and urban			
Program of rural housing	—		No
Program of housing living in (vivienda saludable)	—		No
Subsidies	528.0		
Energy	528.0	0.09	
Electricity	528.0	0.09	No
Fuel (urban transport)	—		No
Subsidy for liquefied gas (GLP)	—		No
Inputs for agriculture	—		No
Infrastructure	3,985.7		
Water and sanitation	—		No
Roads	3,985.7	0.65	No
Other			No
Grants	—		
Other government spending	5,048		No

Sources: World Bank calculations based on administrative data provided by ECLAC 2022, SEFIN 2019, Tábora 2021, SE 2022, and SEDESOL 2022.
Note: Fiscal revenue data were provided by ECLAC 2022; — = not available.

Information on Tax and Benefits System

Personal income tax (PIT) is imputed based on information about the tax law. It is assumed that individuals who have contributed to social security are taxpayers, which fits the empirical definition of formality. Estimates are then based on reported labor income and tax rules.

Contributions to social security are imputed based on information about the contribution rate rules. Contributions to social security are imputed based on information about the contribution rate rules.[134] These are paid directly from the salaries of employed workers. The survey collects information on the contributions of individuals who are affiliated with IHSS. With respect to social security contributions, the analysis includes only IHSS contributions, because this institute covers salaried workers in both the public and private sectors.[135] All contributions except the portion toward pensions are then subtracted and it is assumed that contributions to social security are deducted from the salary for the main job.

Pensions are obtained directly from the survey. The contributory pension system in Honduras is stratified and there is no employment insurance. The system specifies two criteria for a person to be qualified to receive an old-age pension: retirement age and period of contribution. The mandatory retirement age is 65 for men and 60 for women with both needing to have made 15 years of contributions.

Direct transfers are underreported by the survey data. However, this study only corrects the underreporting of three programs due to data limitations (table A.5.3.2). The first is the CCT program and the second is the School Uniforms program, both of which are administered by SEDESOL. To correct this, it is assumed that these programs are perfectly targeted. The probability of receiving the benefit was determined through a probit model using a set of control variables representing the eligibility criteria of programs. The eligibility criteria are based on the household census and surveys to identify geographic areas with the highest incidence of poverty, as well as the Unique Registry of Beneficiaries (RUP) through the Unique Socioeconomic Form (FSU). Households (individuals) with the highest scores are selected to receive the benefit; in this analysis the number of households (individuals) who do not report receiving the benefit is subtracted from the total of the beneficiaries reported by the administrative data. Then, the per capita public spending on each program, which is provided by the national accounts, is imputed. The third program is the SFP, which aims to guarantee school meals for all children enrolled in public schools at the prebasic and basic education levels. To correct the underreporting, this analysis assumes that all children who met the eligibility criteria received the benefit. Then, the individuals who did not report receiving the benefit are subtracted from the total of the targeted group and the per capita public spending on the SFP provided by the national accounts is imputed to them.[136] In addition, a scaling down is applied, using data from the disposable income ratio.

In-kind transfers in education and health are estimated based on the use of public services, as reported in the survey. Spending per student by level is obtained from national accounts.[137] Then, spending per capita is imputed to students who report attending public school according to the level they report attending. The survey reports users of public health distributed in primary care and hospitalizations; thus, spending per capita by level obtained from national accounts is imputed to individuals who report using public health by attention level. Copayments are not considered in this study, because there is no official information about them.

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134 There is no noncontributory social security regime or employment insurance in Honduras.

135 There are five contributive pension regimes; Honduran Social Security Institute (Instituto Hondureño de Seguridad Social, IHSS), National Retirement and Pension Institute for Public Officials and Government Employees (Instituto Nacional de Jubilaciones y Pensiones de los Empleados y Funcionarios del Poder Ejecutivo, INJUPEMP), National Pension Institute for Teachers (Instituto Nacional de Previsión del Magisterio, INPREMA), Military Pension Institute (Instituto de Previsión Militar, IPM) and Pension Institute for National Autonomous University of Honduras Employees (Instituto de Previsión de Empleados de la Universidad Nacional Autónoma de Honduras, INPREUNAH).

136 The underreporting for the School Bag program is low compared to that observed for other direct transfers; thus, it is not corrected.

137 The Honduran education system comprises four main levels: prebasic, basic education, secondary (lower and upper), and tertiary.

Table A.5.3.2: Number of beneficiaries by social program, 2019

Program	*Survey data*	*Administrative data*
CCT (urban)	28,148	37,408
CCT (rural)	121,407	213,949
Disability Bonus	2,202	23,193
School Uniforms	7,742	49,000
SFP	370,649	1,306,863
School Bag	29,055	30,187
Scholarships (20-20, Tertiary education)	6,364	—
Bag Food Program (vulnerable persons and senior citizens)	25,519	—

Sources: Original calculations based on the 2019 EPHPM and administrative data provided by Tábora 2021, SE 2022, and SEDIS 2022.
Note: The CCT is at the household level; the transfer is assigned to the household head.

Spending at each level of the education system and health services is scaled down. For this task, the ratio of total spending by level to disposable income in the survey is used as being the same as administrative accounts.

Cross-Country Comparisons

The results for the Honduran fiscal system are in line with the findings from similar studies in the region—particularly for Central American countries such as Guatemala, El Salvador, and Nicaragua. Similar performance is observed in African countries (for example, Ghana, Tanzania, and Uganda). These studies find that fiscal policy reduces inequality slightly but increases poverty. As a result, direct taxes are progressive; the Kakwani index is significantly higher in Honduras than in other Latin American countries (for example, Guatemala, Mexico, and Peru). Thus, these findings reinforce the importance of having an equitable fiscal system.

In-kind transfers in education and health are effective in reducing inequality in most countries. However, transfers are quite less redistributive in Honduras than in other Latin American countries (for example, Argentina, Mexico, and Colombia), including the country's neighbors (El Salvador, Nicaragua, and Costa Rica).

In Honduras, the negative impact on poverty is mainly driven by indirect taxes, as is the case in other countries such as Turkey, Sri Lanka, and Brazil. For each country, the analysis of the fiscal system shows that many direct transfers do not compensate for the impoverishing impact of indirect taxes among the poor. But it is important to clarify that CEQ studies for Sri Lanka and Brazil were produced using data collected in the last 10 years.

Results of Policy Simulations

Table A.5.3.3: Simulated impact of a rural expansion of the CCT program and primary education coverage on national poverty and inequality

a. National

Indicator	*Scenario*	*Market Income*	*Market Income + Pensions*	*Net Market Income*	*Disposable Income*	*Consumable Income*	*Final Income*
		(0)	*(1)+Pensions*	*(2) =(1)-Direct Taxes*	*(3) =(2)+Direct Transfers*	*(4)= (3)-Indirect Taxes*	*(5)= (4)+In-kind transfers*
Gini							
	Baseline	0.493	0.495	0.494	0.491	0.487	0.457
	Simulation-CCT	0.493	0.495	0.494	0.491	0.487	0.457
	Simulation-Primary education	0.493	0.495	0.494	0.491	0.487	0.453
Poverty headcount (percent)							
Extreme	Baseline	24.66	24.45	24.46	24.07	26.25	
Extreme	Simulation-CCT	24.66	24.45	24.46	24.06	26.22	

Source: World Bank estimates based on the consolidated 2019 EPHPM and administrative data following the CEQ Methodology.
Note: The results of the simulation of primary education policy on poverty are not presented, because these are in-kind transfers and therefore affect only final income.

Annex 5.4 Macro-Micro Methodology for Ex Ante Poverty and Inequality Effects of Lost Income due to Climate Shocks

Here we link a microsimulation model to the World Bank's Macro Fiscal Model Framework with climate feature extension (MFMoD-C) to simulate the impact of different hypothetical increases in disaster risk due to climate change. Severe data limitations prevent a comprehensive assessment of the economic cost of disasters caused by natural hazards and climate change. Box A.5.4.1 provides an overview of the data limitations encountered for the modeling work. In light of these shortcomings, the macroeconomic modeling focuses on the current stock of disaster risk (which includes climate change effects to the extent they have already materialized) rather than on climate change modeling and hence does not attempt to quantify the effect of climate change or natural hazards on the economy as a whole. However, modeling techniques are applied to simulate the impact of different hypothetical increases in disaster risk due to climate change and different policy responses to economic outcomes. Using estimates of the stochastic distribution of natural hazards for which relevant data are available (earthquakes, excess rainfall, and tropical cyclones), the MFMoD-C estimates macroeconomic outcomes under different hypothetical scenarios (see World Bank forthcoming for details on methodology, assumptions, and data used). Moreover, the MFMoD-C has been developed to produce yearly projections for 2020 to 2050 of employment levels and real wages by sector to feed the microsimulation exercise.[138]

138 The sectors of employment are based on the aggregation of the Value-Added Output table, which includes: 1) Public administration, 2) Retail, hotels and restaurants, 3) Construction, 4) Utilities (electricity, water and gas), 5) Mining, 6) Agriculture, 7) Manufacture, 8) Financial and business services, 9) Personal and social services, and 10) Transport and communications.

Box A.5.4.1: Data limitations and shortcomings of the macroeconomic model

There is a critical information gap in terms of the quantitative impacts of disasters on the economic sectors and on the livelihoods of populations affected in Honduras. Further modeling of climate risk impacts in Honduras is subject to severe methodological constraints: some large knowledge gaps must be remedied to produce a more accurate assessment. While every effort was made to obtain the most comprehensive and reliable information available for the purposes of this exercise, several critical gaps remain:

Limited data availability on natural hazard risk: Data on natural hazard risk could only be obtained for a subset of natural hazards that Honduras experiences, namely, excess rain (ExR), tropical cyclones (TC), and earthquakes (EQ). There are no robust loss models available to estimate probabilistically future losses in Honduras for other important climate change-related risks, such as excess heat, drought, landslides, and wildfires. This leaves out an assessment of the impacts of droughts on the agriculture sector. Floods might arise from excess rain, but the available model—CCRIF's SPHERA—does not include exposure for the agriculture sector. Exposure from crops is included in the model that simulates losses from EQ and TC, but accounts for only 1.23 percent of total exposure and might not capture the whole impact in the sector.

Linking climate change to natural hazards: There is currently no quantitative information on the likely impact of climate change on the severity and frequency of natural hazards in Honduras. Exceedance curves used in this exercise are estimated based on historically observed patterns and are not linked to specific climate change scenarios.

No information on direct output losses: The available data on natural hazard risk focus on the value of damages, which means the destruction of physical capital. However, in addition to such damages with their long-term detrimental effects on growth, there can also be immediate losses resulting from the foregone output, for instance, when a crop is destroyed or service providers are unable to operate in inclement weather. A holistic impact modeling framework combining information on physical capital damage and output losses that translate into foregone income at the household level is not available for Honduras.

Limited impacts in agriculture: There are no readily available Honduras-specific data on the impact of climate change (such as temperature rise) on agricultural output and yields of major crops to assess the impact on productivity. While such estimates are available at the regional level,[a] they are not suitable for modeling the impact in Honduras for several reasons. First, the estimates are dominated by the economic structure of large agriculture exporters in the region, whose production systems are very different from those of Honduras. The crops covered account for only 22.44 percent of Honduras's value of crop production in 2018 and do not include coffee (53 percent of Honduras's value of crop production) and fruits. Second, the estimates are based on an assumption of increasing planted land surface suitable for agriculture, which is not consistent with Honduras's agriculture sector plans. Third, for the purpose of the macro modeling using MFMoD-C, this report did not employ data on the impacts of climate change on yields that are specific to Central America and Honduras; agriculture production and area planted are based on the International Food Policy Research Institute's IMPACT model,[b] because the estimates of climate change impact on agriculture value added were not available.

Continued

Box A.5.4.1 continued

No behavioral impacts: A more dynamic modeling framework, including country-specific behavioral parameters, would be better suited to the consideration of endogenous adjustment behaviors by firms and households that will likely have an important impact on disaster vulnerability in the medium to long term. This analysis also ignores household reactions to disaster losses with potentially important implications for long-term growth, such as migration and schooling decisions that affect human capital.

No information on public investment needs: There is currently no quantification of public investment needs for implementing Honduras's nationally determined contributions (NDC) under the Paris Agreement.

Country-specific estimates on the efficiency of adaptation investment and reconstruction patterns are not available and were substituted for with global estimates and assumptions. Precise country-specific information is needed to more accurately determine the optimal level of adaptation investment and better assess the economic damages from delayed reconstruction.

See the Honduras CCDR (World Bank forthcoming) for more information on the methodology and assumptions used for modeling the impacts of climate shocks and climate change.

a. See the background paper Havlík et al. 2015.
b. See Morris et al. 2020, Sanders et al. 2019, and Robinson et al. 2015.

Though the future of poverty reduction in Honduras is highly uncertain, the micro model simulated the income losses due to natural hazards in the baseline, as well as the impacts of different adaptation strategies. The MFMoD-C microsimulation is a "top-down" macro-micro simulation framework that uses heterogeneity observed in household surveys to simulate the distributive impact of macroeconomic shocks. The microsimulation model is featured by individual behavioral responses simulated using 2019 household survey data[139] linked to sector-level macro projections. The microsimulations assume that the income distribution changes over time, given the dynamics of sectoral employment and wages; changes in the remittance flows, as projected by the MFMoD-C; and an exogenous shift in age and education distribution.[140] Notably, the MFMoD-C produces projections on employment and wages disaggregated by 10 sectors of economic activity.

The microsimulation model projects the evolution of welfare distribution by following five steps. First, the model projects the age and education distributions.[141] This determines the size of the working-age population over time. Second, for each projected year, workers are reallocated across sectors according to the macroeconomic projected outcomes from the MFMoD-C. For each worker, the sectoral reallocation process estimates the probability of being reallocated into new sectors based on the individual characteristics of the baseline year. Workers are moved from shrinking sectors or out of employment

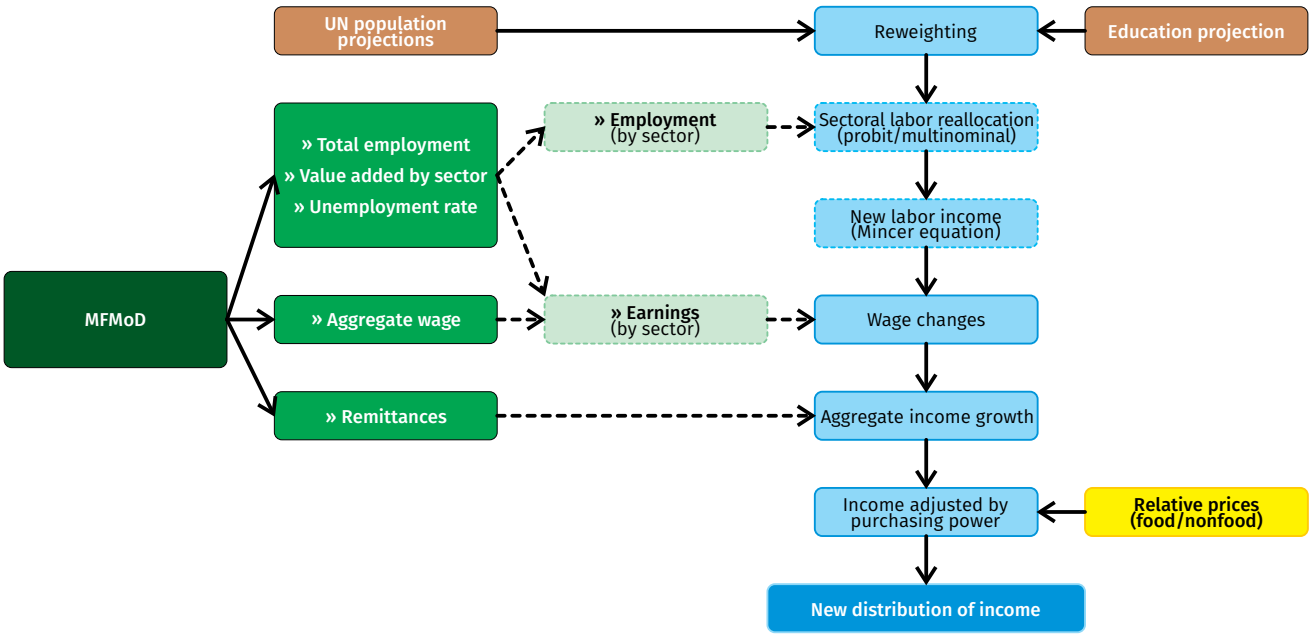
139 This is the latest year the World Bank has access to the consolidated EPHPM, which has a significantly larger sample size, because it includes information for the four quarters of the year (more than 88,000 observations), enabling the construction of estimates at lower geographic disaggregation (the department level).

140 The MFMoD-Microsim model is based on the Global Income Distribution Dynamics (GIDD). A full technical documentation on the GIDD model can be found in Maliszewska, Osorio-Rodarte, and Gupta 2020. https://openknowledge.worldbank.org/handle/10986/34833.

141 Changes in total and working-age populations are determined using the medium-variant population projection of the UN World Population Prospects (https://population.un.org/wpp/).

toward expanding sectors until sectoral macroeconomic projections are met.[142] Third, wages are adjusted in line with the macroeconomic market-clearing wages for each sector. A new wage is assigned to individual workers using a set of Mincer equations for those who (a) become employed between the base and final years and (b) change jobs between the base and final years. In addition, the model rescales changes in sectoral wages at the individual level to match projected changes at the macro level.[143] Fourth, the model accounts for nonlabor income shocks through changes in the remittances flow. Based on the projected changes in real remittances between the baseline and projected year in the macroeconomic model, the microsimulation model adjusts the remittances level for all remittance-receiving households.[144] For other nonlabor income sources (such as government transfers), the model assumes their values are constant in real terms. Finally, we simulate a new household and per capita income distribution. All variables are based on 2011 PPP values. For a detailed description of each step, see figure A.5.4.1.

Figure A.5.4.1: Macro-micro modeling framework—MFMoD-C-MicroSim Honduras



Source: World Bank elaboration.

The inputs needed are

1. Household income/consumption survey—2019 EPHPM.
2. Macro inputs: Predictions of employment and earnings by sector and of remittance flow in real terms.

142 Sectoral employment projections are estimated using the Okun coefficient based on the historical relationship between employment and value added. Thus, changes in sectoral employment completely mirror changes in sectoral value added output, assuming that the structural relationships remain constant over time.

143 To estimate sectoral wages, the MFMoD-C model assumes that the labor share and capital share of value added in each sector is fixed in time.

144 The model does not assume new recipient households.

The MFMoD-C-MicroSim modeling framework follows five steps:

» Step 1: Sociodemographic and educational changes implementation

The first step in the microsimulation exercise is to implement a set of changes in the demographic structure.

In this case, the groups are formed by an intersection of 16 5-year age cohorts and 3 levels of educational attainment: primary, secondary, and tertiary, by gender. The assumption is that there is no improvement in enrollment and graduation rates from those observed at time t. A new set of m age-education groups by gender is produced by reweighting the original surveys, such that each additional member of the population within each partition is an exact replica of the average member of each partition before the reweighting.

» Step 2: Labor reallocation

Estimate the probability of being employed in each sector

The employment choice model relies on the utility maximation approach developed by McFadden (1974). Assume that the utility for individual i working in sector j is U_i^j and that it can be expressed as a function of observed individual and household characteristics X_{iH} and unobserved utility determinants of occupational status v_i^j. An individual chooses economic sector j if it provides her with the highest level of utility, calculated as follows:

$$U_i^{jk} = \beta X_{iH} + v_i^{jk}$$

In the Honduran case, the model has 10 sectors. The unobserved utility determinants of each employment status are assumed to be identically and independently distributed across individuals and sectors. In practice, we employ a probit model to estimate the probability of being employed for each individual i in sector j.

The probability of an individual being employed in sector j is a function of household's and individual's characteristics:

$$Pr(Employed_i^j = 1) = \beta_0 + \beta_1 age_i + \beta_2\, agesq_i + \beta_3\, educ_i + \beta_4\, INDchars_i + \beta_5\, HHchars_i + \beta_6\, Dominio\ FE + \varepsilon_i$$

where

$Employed_i^j$ is the probability of individual i being employed in sector j. It is equal to 1 if employed in sector j and 0 otherwise.
$INDchars_{ij}$ include gender and marital status.
$HHchars$ include household size, dependency rate, receive remittances, receive CCT, and receive benefit from another public program.

Simulation of employment status

In order to match the projected employment changes in each sector, the model reassigns working-age individuals to new employment status through two steps: (1) for sectors with a reduction in employment, the model ranks people who were working in these sectors in the baseline year by the likelihood of being employed in this sector, and kicks out people who were least likely to be employed in that sector, switching them to the status of not employed; these newly unemployed people join the existing unemployed group to form a new unemployed pool; (2) for sectors with an increase in employment, the model ranks people in the new unemployed pool by the likelihood of being employed in that sector and lets people who are most likely to be employed in that sector join that sector. As a result, some people move into other sectors and some will lose their jobs and become unemployed. The reallocation, as Bourguignon, Robilliard, and Robinson (2005) suggest, assumes neutrality of changes with respect to individual and household characteristics. Assigning the new employment choice is based on an individual's likelihood of being employed in each sector.

» Step 3: Simulation of labor market income

After assigning the new employment choice, the model moves on to predicting the new labor income using the estimates from Mincer earning regressions. The observed heterogeneity in wages for individual i in each sector j can be modeled using Mincer equations (Mincer 1974):

$$Ln(labour\ income)_i^j = \beta_0 + \beta_1\, age_i + \beta_2\, agesq_i + \beta_3\, educ_i + \beta_4\, INDchar_i + \beta_5\, HHchars_i + \varepsilon_i$$

where

$INDchars_{ij}$ include gender and marital status.
$HHchars$ include household size, dependency rate, receive remittances, receive CCT, and receive benefit from another public program.

This model is estimated for each sector. The results provide a set of coefficients and standard error estimates as well as an estimate of unobserved characteristics. Using the estimates, the model predicts the new labor income for people who change their employment status.

Next, wages are adjusted in line with the macroeconomic market-clearing wages for each sector. The model rescales changes in sectoral wages at the individual level to match projected changes at the macro level.

» Step 4: Adjustment of nonlabor market income sources through remittances flow

Based on the projected changes in real remittances between the baseline and projected year from the macroeconomic model, the microsimulation model adjusts the remittance level for all remittance-receiving households.[145] The per capita remittance income of each individual i in the projected year $t1$ is the per

145 The model does not assume new recipient households.

capita remittance income of individual *i* in baseline year *t0* multiplied by the change in overall peak remittances flow through the period *t1–t0*.

$$Y\ remittances_{t1}^{i} = Y\ remittances_{t0}^{i} * \Delta Real\ remittances$$

For other nonlabor income sources (such as government transfers), the model maintains the real baseline value.

» Step 5. Construction of household and per capita income

Finally, a new household and per capita income are constructed by adding all income sources: simulated labor income and simulated nonlabor income (shock by remittances). All variables are in 2011 PPP values.

In addition to the data limitations and shortcomings of the macroeconomic modeling that permeate into the microsimulation model, further methodological caveats remain with regard to a more accurate poverty assessment. The assumptions and caveats of the model are presented in Box A.5.4.2. As mentioned before, severe data limitations prevent the making of a comprehensive assessment of the poverty and distributional impacts of natural hazards and climate change. Thus, in light of the data and modeling limitations, rather than attempting to quantify the effect of climate change, the microsimulations aim to assess the potential impacts of different hypothetical increases in disaster risk due to climate change and of different policy responses to poverty outcomes.

Box A.5.4.2: Assumptions and caveats of the joint MFMoD-C and microsimulation poverty analysis

The microsimulation model makes key assumptions that are crucial to explaining long-term poverty reduction trends in Honduras.

- ***The country continues to be affected by climate-induced natural hazards as in the past, with no accelerating climate change and no change in the incidence or intensity of those events.*** Given the data limitations, it is not possible to quantitively assess the impact of climate change on the severity and frequency of disaster risks. This is not a feature of the model; it is a feature of the lack of data. Although it is possible to incorporate no future climate change, the model does include "climate," as it is based on observed historical patterns of natural hazards (with no changes in the incidence or intensity of those events). The model follows a stochastic approach in order to capture the probability of ending up with better or worse outcomes, depending on whether future disasters caused by natural hazards are milder or worse than historical disasters. The baseline scenario is defined as the median of the 1,000 simulated scenarios.

- ***No policies are implemented to mitigate the adverse poverty and distributional impacts of natural hazards in the baseline.*** Reconstruction and emergency responses are made mainly via budget reallocation from nonessential public investment (capital redeployment is capped

Continued

at 0.5 percent of public investment, which is equal to 15 percent of damage pure disaster management cost), and there are no adaptation or mitigation policies in place. There is no change to total expenditure in response to a disaster. It is assumed the safety net will not expand or improve during the next 30 years.

- *Nonlabor income (which includes capital but excludes remittances and social transfers) is assumed to be constant in real terms.* No specific growth is assumed, because there is not sufficient information to infer a plausible growth rate. Also, capital income is not properly measured in the household survey, so the model cannot properly analyze its regressivity. The real value of current public transfers is maintained.

Structural relationships remain constant over the period. The MFMoD-C produces projections of employment levels and real wages by sector to feed the microsimulation exercise. To do so, Okun's ratios are applied to convert sectoral value added into employment levels based on the historical relationship between employment and value added. Therefore, changes in sectoral employment completely mirror changes in sectoral value added. Moreover, to estimate the sectoral wage, the model assumes that the wage bill grows at the same rate as value added and thus the former remains a constant proportion of the latter.

No new remittance-receiving households. Based on the projected changes in real remittances, the microsimulation model adjusts the real value of remittances for all remittance-receiving households, but does not include new such households. Precise specific information about remittance-receiving households is needed to accurately model an expansion of coverage.

In addition to the data limitations and shortcomings of the macroeconomic modeling described in box A.5.4.1 that permeate into the microsimulation model, further methodological caveats remain with regard to a more accurate poverty assessment. Despite the effort made to perform a comprehensive poverty analysis, several caveats remain:

No impacts on asset losses and household consumption. Based on the 2019 household survey, 42 percent of residential housing is owned by the poor; however, there is not sufficient information on the value of this housing and how it has been damaged by past natural hazards in order to infer likely future trends. In addition, the latest consumption data available for the country are outdated (2004), so it is difficult to assess the differential impact of consumption loss on households of varying income levels.

Lack of projections of relative prices of food. The macroeconomic model produces projections of overall CPI inflation but not projections of food inflation, limiting the microsimulation model's ability to assess how changes in relative prices (that is, of food versus non food) can affect affordability and household welfare, both monetary and non monetary. This is a critical transmission channel of the climate shock in Honduras, because food inflation can exacerbate food insecurity and disproportionately affect the poor, who dedicate a larger share of their budgets to food. For example, in a parallel exercise, simulation results for 2019 show that food inflation of 9 percent could lead to

Continued

Box A.5.4.2 continued

a 2.4 percentage points increase in poverty. Therefore, the simulated results on poverty presented here should be considered as a lower bound; the effect might be underestimated.

Geographical heterogeneity is not captured in both the MFMoD-C and the microsimulation model. Disasters may impact a particular area, affecting a small share of the population; however, the model aggregates the impact at the country level. Notwithstanding this limitation, as mentioned before the model has some heterogeneity, because employment and wages are disaggregated by 10 sectors and the model considers the individual work heterogeneity in order to move workers across sectors in the aftermath of a climate shock.

The lack of data disaggregated by ethnicity and race limits the ability to assess impacts on specific groups. Indigenous peoples and Afro-descendants remain largely absent as considerations in policy making and programming largely because of statistical invisibility, structural discrimination, and limited voice and agency to demand change.

No assessment of the distributional impact of taxes and public spending. Further customization of the microsimulation model is required to produce an ex ante analysis of the distributional impact of taxes and spending, such as per the Commitment to Equity (CEQ) Approach (see the forthcoming Honduras Poverty Assessment [World Bank forthcoming]). Thus, the impacts of policy scenarios that include taxation (scenario C2) are partial; a full assessment of the entire fiscal policy is needed.

Annex 5.5 SIMLAB: A Structural Macro-Micro Simulation Tool to Analyze the Distributional Impact of Human Capital on the Labor Market and Poverty

SIMLAB is a structural search and matching model of the labor market capable of simulating a rich array of labor market and other relevant macroeconomic variables. The underlying model is an equilibrium search and matching model with unemployment and two employment sectors, formal and informal, as well as ex ante worker heterogeneity, similar to that presented in Albrecht, Robayo-Abril, and Vroman (2017), but with a formal and an informal sector. The model includes firms in the formal and informal sectors that open vacancies and search among the pool of job seekers and unemployed workers with different characteristics (different human capital and age) who are searching for formal or informal jobs in the labor market.

These models are critical to answering distributional questions, because they are able to match well not only aggregate labor market outcomes but also distributional outcomes. The parameters in the model are estimated using household-level data to replicate the current labor market structure of the country. The model's key objective is to capture the ex ante effects of selected policy reforms, including human capital policies, public-sector employment policies, formalization, and labor market policies. SIMLAB can capture the microdistributional as well as the macroeconomic effects of selected policy reforms. The structural microsimulation tool can be used to inform discussions at the country level on tackling significant labor market challenges by providing ex ante evidence on the potential employment, wage, and distributional impacts of selected policy reforms.

The model is estimated to match key characteristics[146] *of the Honduras urban and rural labor markets using data from two alternative data sources.* For most of the analysis and the model, we use household-level data from the 2019 EPHPM, which provides information on labor market indicators, including wages, employment, socioeconomic conditions, and poverty. We complement these data with retrospective labor market information from the 2021 WB-UNDP LAC HFPS conducted in Honduras at the end of 2021, as the EPHPM does not contain such information. This retrospective information is necessary to estimate labor market transitions out of employment and unemployment and job destruction rates. In addition to the retrospective information, the HFPS also feature questions to proxy informality status, enabling the estimation of job durations in the formal and informal sectors, as well as the average monthly flow out of employment as a percentage of employment in each sector. Without this information and without panel data, it would be impossible to estimate such a model. The estimation of the model is done using the simulated method of moments.

Note that we do not need firm-level data to calibrate the model. Given that vacancy data are not available for Honduras (to estimate a matching function), we calibrate the parameters of the firms with relatively few parametric assumptions and data exclusively from the EPHPM, as is usually done in the literature. Reservation productivity and reservation wages (wages at which firms and workers are willing to match), for example, are estimated nonparametrically using minimum observed wages (after trimming) for each worker group. The parameters of matching function are calibrated to get a reasonable value of LM tightness.

The labor market analysis applies to the prepandemic[147] *labor market for the unemployed and salaried and self-employed workers.* The sample of the employed is restricted to the working-age (15+) unemployed, the paid salaried workers, and the self-employed with labor income; it excludes unpaid family workers.[148] This is important, because self-employed workers constitute a large share of those employed in the country. The sample size is 7,690 observations, which represents 2.8 million people.

Once the labor model is calibrated, we simulate the model to quantify the compositional and distributional impacts of human capital reforms and other policy reforms affecting the labor market, and we use these counterfactuals to evaluate different policy packages and designs. In addition to policies affecting human capital and workers' productivity, the model is applied more generally in order to assess a different set of policies with expected impacts on the labor markets (that is, "formalization" policies), as well as matching efficiency policies, which are designed to reduce informational search frictions and the related skills mismatches described in more detail below.

Finally, two auxiliary models are used to determine the poverty and growth impacts of the different policy scenarios. A microsimulation is performed to determine the poverty impacts of the simulated labor market

146 The model is estimated with the simulated methods of moments to match the following moments: division of the labor force into unemployment, informal and formal (by education, age, and urban/rural), the mix of workers with age and education profiles in the two sectors (formal and informal), selected moments of earning distributions (mean and variance of log wages), and mean employment durations (formal and informal).

147 We use the 2019 data because this was the latest year for which we could construct poverty measures comparable with other years. Also, because the model is in steady state, it is better not to perform the analysis for a crisis year, such as 2020.

148 Unpaid family workers are excluded from the employed group because we do not have a measure of earnings for this group. Self-employment is an important group in Honduras, so we include them in the sample, but their measure of labor income, which can capture net profits, is fully comparable with wages for salaried workers.

changes from the SIMLAB model and a Shapley decomposition[149] is used to provide useful insights on the potential impacts on GDP per capita growth of the employment and productivity growth projected by the labor model, population growth (using from UN population projections up to 2030), and an assumed labor force growth.

149 The Shapley decomposition is an accounting tool for decomposing long-term per capita output growth into four components: productivity growth, employment rate growth, labor force participation growth, and working-age growth.

Annex 6. Pandemic Preparedness

The Global Health Security Index (GHSI) was developed in 2019 as an additional tool for assessing countries' capacity to respond to global health security concerns; Honduras ranks below the global average (table A.6.1). The GHSI is a comprehensive assessment and benchmarking tool for health security and related capacities that has been applied to 195 countries. It measures a country's capacity to rapidly respond to and mitigate the spread of an epidemic, given its health system's ability to care for the sick and protect health workers. The index relies on publicly available data sources that include individual countries; international organizations, such as WHO, the World Organization for Animal Health (OIE), and the World Bank's country legislation and regulations; and academic resources. Honduras scored 26.2 out of 100 (the global average was 39.0) and ranked 163rd out of 194 countries in 2021. In comparison, the highest-ranking country, the United States, scored 75.9.

Honduras is well equipped to detect epidemics early on, but this does not translate into the ability to respond swiftly. The country can improve upon its pandemic preparedness in many ways. It is in the 9th decile in its capacity to prevent the emergence of the release of pathogens among LAC countries and in the 8th decile globally.[150] It also ranks low in terms of speed of reacting to epidemics: it is in the 9th decile in the LAC region. Its health system is also not robust enough to treat the sick and protect its health workers, ranking in the 9th decile of LAC countries (8th globally). Regarding overall pandemic preparedness score, Honduras ranks in the 9th decile globally.

Table A.6.1: Global Health Security Index (GHSI)—Honduras vs. regional and global counterparts

Country	*GHSI Global Rank*	*GHSI Rank for LAC*	*GHSI Overall Score*	*1. Prevention of the emergence or release of pathogens*	*2. Early detection & reporting for epidemics of potential international concern*	*3. Rapid response to and mitigation of the spread of an epidemic*	*4. Sufficient & robust health system to treat the sick & protect health workers*	*5. Commitments to improving national capacity, financing, and adherence to norms*	*6. Overall risk environment and country vulnerability to biological threats*
Honduras	156/195	29/33	27.6	21.6	27.7	26.5	12.0	41.8	39.5
Guatemala	125/195	21/33	32.7	21.2	50.0	25.0	11.4	42.2	49.1
Nicaragua	73/195	11/33	43.1	41.7	39.9	39.2	45.9	51.8	41.0
Panama	68/195	10/33	43.7	40.5	44.6	46.4	35.1	35.3	63.8
El Salvador	65/195	9/33	44.2	22.1	73.9	42.1	25.2	50.5	48.0
Costa Rica	62/195	7/33	45.1	44.2	56.0	36.6	24.8	43.1	71.7
CA Average	n.a.	n.a.	39.4	31.9	48.7	36.0	25.7	44.1	52.2
LAC Average	n.a.	n.a.	38.1	32.1	37.3	36.2	22.6	49.0	56.9
Global Average	n.a.	n.a.	40.2	34.8	41.9	38.4	26.4	48.5	55.0

Source: https://www.ghsindex.org/country/honduras/.

150 World Bank Benchmarking Exercise.

Honduras's National Statistical System (NSS) can improve its capacity to produce policy-relevant data of high quality using up-to-date methodologies; coordinate efforts across institutions, including data exchange and efficient communication; and increase statistical knowledge in the country. The 2020 Statistical Capacity Indicator (SCI) for Honduras was lower than the Latin America and the Caribbean (LAC) average and slightly below the IDA average, because the available Honduran data sources have become more outdated every year. The result is inadequate data for empirically based policy and a fragmented system that suffers from data gaps, duplication of efforts, and a general distrust in official statistics by some population segments and civil society. In addition, decision-making regarding the continuation and improvement of programs and how to allocate scarce budget resources among those programs is challenging without a modern and functional monitoring and evaluation system.

In Honduras, the World Bank poverty team has contributed to the improvement of data, statistics, and analytics practices by working directly with the Institute of National Statistics and the Central Bank of Honduras. The team has provided technical assistance in developing the 2014 poverty map based on the most recent population census. The team was working with the Central Bank of Honduras (Banco Central de Honduras, BCH) and the Institute of National Statistics (Instituto Nacional de Estadística, INE) to support the 2019–20 National Survey of Household Income and Expenditure (Encuesta Nacional de Ingresos y Gastos de los Hogares, ENIGH) until the COVID-19 pandemic postponed the fieldwork. The Poverty Global Practice represented the World Bank in the technical poverty committee, which supported the development of the country's multidimensional poverty index and was led by the Secretariat of Government Coordination (La Secretaría de Coordinación General de Gobierno, SCGG). In addition, it participated as a core member of Honduras's Technical Poverty Commission (led by the SCGG, INE, BCH, and Labor Secretariat), which updated and published a new poverty measurement methodology (the previous methodology was 40 years old and utilized the consumption of Hondurans from 1978).

This report benefited from consultations in Honduras with key public institutions and international organizations. These include the Ministry of Development and Social Inclusion (Secretaría de Desarollo e Inclusión, SEDESOL), Red Solidaria, the Ministry of Education (Secretaría de Educación, SE), the Ministry of Health (Secretaría de Salud, SESAL), the Ministry of Finance (Secretaría de Finanzas, SEFIN), the Ministry of Labor and Social Security (Secretaría de Trabajo y Seguridad Social, STSS), the INE, the Ministry of Agriculture (Secretaría de Agricultura, SAG), the BCH, the Tax Office (Servicio de Administración de Rentas, SAR), and the Secretary of State for the Presidency (Secretaría de Estado de la Presidencia, SEP). Consultations were also held with members of the G16 group, including the Inter-American Development Bank (IADB), the International Monetary Fund (IMF), the Office of the Coordination of the United Nations System in Honduras (SNU), the Central American Bank for Economic Integration (CABEI), the United States Agency for International Development (USAID), the European Union (EU), and several embassies.

The World Bank poverty team continues to support the government in several ways. First, the team is supporting the government in reestablishing the Technical Poverty Commission. Second, the team is engaging with the INE in the revision, approval, and publication of new poverty numbers. Third, in collaboration with the Social Protection and Jobs Global Practice, the team is supporting the efforts to improve the geographic targeting of social programs. Finally, the team will support the BCH in implementing the ENIGH that was postponed until 2023 due to the COVID-19 pandemic. This important survey will collect the underlying data for rebasing National Accounts, the CPI, and the poverty lines. In addition, the team will explore the possibility of providing support in activities related to the upcoming National Population and Household Census (2023).

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HONDURAS POVERTY ASSESSMENT

TOWARD A PATH OF POVERTY REDUCTION AND INCLUSIVE GROWTH