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Informality in Latin America and the Caribbean

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Abstract

This paper studies the causes and consequences of informality and applies the analysis to countries in Latin America and the Caribbean. It starts with a discussion on the definition and measures of informality, as well as on the reasons why widespread informality should be of great concern. The paper analyzes informality's main determinants, arguing that informality is not single-caused but results from the combination of poor public services, a burdensome regulatory regime, and weak monitoring and enforcement capacity by the state. This combination is especially explosive when the country suffers from low educational achievement and features demographic pressures and primary production structures. Using cross-country regression analysis, the paper evaluates the empirical relevance of each determinant of informality. It then applies the estimated relationships to most countries in Latin America and the Caribbean in order to assess the country-specific relevance of each proposed mechanism

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INFORMALITY IN LATIN AMERICA AND THE CARIBBEAN*

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Introduction

Informality is the collection of firms, workers, and activities that operate outside the legal and regulatory frameworks.[1] It entails avoiding the burden of taxation and regulation but, at the same time, not fully enjoying the protection and services that the law and the state can provide. Informality is sometimes the result of agents "exiting" the formal sector as consequence of cost-benefit considerations; other times, it is the outcome of agents being "excluded" from formality as this becomes restrictive and the economy segmented.

In all cases, informality is a fundamental characteristic of underdevelopment and is best understood as a complex, multi-faceted phenomenon. It is determined both by the modes of socio-economic organization inherent to economies in the transition to modernity and by the relationship that the state establishes with private agents through regulation, monitoring, and the provision of public services. Informality is not only a reflection of underdevelopment, but may also be the source of further economic retardation. It implies misallocation of resources and entails losing the advantages of legality, such as police and judicial protection, access to formal credit institutions, and participation in international markets.

According to the estimates presented below, there is large heterogeneity in the extent of informality across countries in Latin America. In all of them, however, informality is much more widespread than in the USA, and some countries in the region are among the most informal economies in the world. The typical country in Latin America produces about 40% of GDP and employs 70% of the labor force informally. These are astounding statistics, which indicate that informality is a substantive and pervasive phenomenon that must be explained and grappled with, particularly in the design of development policies.

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[1] This definition, introduced by De Soto (1989) in his classic study of informality, has gained remarkable popularity due to its conceptual strength, which allows it to focus on the root causes of informality rather than merely its symptoms. For an excellent review of the causes and consequences of the informal sector, see Schneider and Enste (2000). Drawing from a public-choice approach, Gerxhani (2004) provides an interesting discussion of the differences of the informal sector in developed and developing countries. The World Bank report by Perry et al. (2007) is the most comprehensive and in-depth study on informality in the Latin America region.

This chapter studies informality in Latin America from a macroeconomic and international perspective. It uses the cross-country variation on informality measures and potentially related variables to study its causes and consequences. It then examines Latin American countries against this broad international context. The paper is organized as follows. Section I presents and discusses various measures of informality. Section II assesses the impact of informality on economic growth and poverty. Section III analyzes the main causes of informality. Section IV evaluates the empirical relevance of each determinant of informality to every Latin American country in the sample. Finally, we offer some concluding remarks.

I. Measuring Informality in Latin America and around the World

Although the definition of informality can be simple and precise, its measurement is not. Given that it is identified with working outside the legal and regulatory frameworks, informality is best described as a latent, unobserved variable. That is, a variable for which an accurate and complete measurement is not feasible but for which an approximation is possible through indicators reflecting its various aspects. Here we consider four such indicators, available for a relatively large collection of countries. Two of them refer to overall informal activity in the country, and the other two relate in particular to informal employment. Each indicator on its own has conceptual and statistical shortcomings as a proxy for informality; taken together, however, they may provide a robust approximation to the subject.

The indicators related to overall informal activity are the Schneider index of the shadow economy and the Heritage Foundation index of informal markets.[2] The Schneider index combines the DYMIMIC (dynamic multiple-indicator-multiple-cause) method, the physical input (electricity) method, and the excess currency-demand approach for the estimation of the share of production that is not declared to tax and regulatory authorities. The Heritage Foundation index is based on subjective perceptions of general compliance with the law, with particular emphasis on the role played by official corruption.

[2] Details on definitions, sources, and samples for these and other variables used in this chapter are provided in Appendix 2.

The indicators that focus on the labor aspect of informality are the prevalence of self-employment and the lack of pension coverage. The former is given by the ratio of self to total employment, as reported by the International Labor Organization. The latter is given by the fraction of the labor force that does not contribute to a retirement pension scheme, as given in the World Bank's World Development Indicators. Appendix 3 presents some descriptive statistics on the four informality indicators. In particular, it shows that, as expected, they are significantly positively correlated, with correlation coefficients ranging from 0.59 to 0.90 –high enough to represent the same phenomenon but not so high as to make them mutually redundant.

Using data on these four indicators, we can assess the prevalence of informality across Latin America. For comparison purposes, Figure 1 presents data on the four informality indicators for individual countries in Latin America and the Caribbean (LAC). The USA and Chile are used as benchmark countries. The USA is the developed country to which the region is most closely related. Chile is the Latin American country often taken as a model for economic reforms and sustained growth in the region.[3] It is clear from the figure that there is considerable variation in informality across countries in Latin America. However, in all of them, the degree of informality is much higher than in the USA; and for some countries (e.g., Bolivia and Haiti) it is comparable to the most informal countries in the world. For the median country in Latin America, about 40% of GDP is produced informally. Informal employment is more difficult to ascertain. Using the measure based on pension contributions, about 70% of the labor force is informal in the median country in Latin America.[4]

II. The Cost of Informality

Informality is a distorted, second-best response of an excessively regulated economy to the shocks it faces and its potential for growth. It is a distorted response

[3] The LAC countries under consideration are those included in any of the four regressions where informality is a dependent variable (Table 3). They are 20 countries plus Chile, which functions as a comparator country, unless otherwise noted. Trinidad and Tobago is also excluded since the World Bank classification (as of July 2007) considers the country as a high-income country. See Appendix 1 for sample of countries in each regression.

[4] Self-employment is arguably a lower bound for the measure of informal labor given that tax and regulation evasion occurs massively in all types of firms.

because it implies misallocation of resources and entails losing, at least partially, the advantages of legality, such as police and judicial protection, access to formal credit institutions, and participation in international markets. Trying to escape the control of the state induces many informal firms to remain sub-optimally small, use irregular procurement and distribution channels, and constantly divert resources to mask their activities or bribe officials. Conversely, formal firms are induced to use more intensively the resources that are less burdened by the regulatory regime; in particular for developing countries, this means that formal firms are less labor intensive than they should be according to the countries' endowments. In addition, the informal sector generates a negative externality that compounds its adverse effect on efficiency: informal activities use and congest public infrastructure without contributing the tax revenue to replenish it. Since public infrastructure complements private capital in the process of production, a larger informal sector implies slower productivity growth.[5]

Compared with a first-best response, the expansion of the informal sector often represents distorted and deficient economic growth.[6] This statement merits further clarification: informality is sub-optimal with respect to the first-best scenario that occurs in an economy without excessive regulations and with adequate provision of public services. Nevertheless, informality is indeed preferable to a fully formal but sclerotic economy that is unable to circumvent its regulation-induced rigidities. This brings to bear an important policy implication: the mechanism of formalization matters enormously for its consequences on employment, efficiency, and growth. If formalization is purely based on enforcement, it will likely lead to unemployment and low growth. If, on the other hand, it is based on improvements in both the regulatory framework and the quality/availability of public services, it will bring about more efficient use of resources and higher growth.

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[5] See Loayza (1996) for an endogenous-growth model highlighting the negative effect of informality through the congestion of public services.

[6] This does not necessarily mean that informal firms are not dynamic or lagging behind their formal counterparts. In fact, in equilibrium the risk-adjusted returns in both sectors should be equalized at the margin. See Maloney (2004) for evidence on the dynamism of Latin American informal firms. The arguments presented in the text apply to the comparison between an excessively regulated economy and one that is not.

From an empirical perspective, the ambiguous impact of formalization highlights an important difficulty in assessing the impact of informality on economic growth: two countries can have the same level of informality, but if it has been achieved in different ways, the countries' growth rates may also be markedly different. Countries where informality is kept at bay by drastic enforcement will fare worse than countries where informality is low because of light regulations and appropriate public services.

We now present a simple regression analysis of the effect of informality on growth. As suggested above, this analysis must control for enforcement; and a straightforward, albeit debatable, way to do so is by including a proxy for the overall capacity of the state as a control variable in the regression. For this purpose, we try two proxies: the level of GDP per capita, and the ratio of government expenditures to GDP. The former has the advantage of also accounting for conditional convergence, and the latter has the advantage of more closely reflecting the size of the state.[7] Another important consideration for this empirical analysis is that informality may not only affect but also be affected by economic growth. For example, faster growth could raise the profitability of production and the real wage, relative to the perceived costs of formality, thus encouraging more firms and workers to shift out of the informal sector. In order to ascertain the impact of informality on growth, we need to isolate the exogenous variation in informality. We do this through an instrumental-variable approach, where the instruments are selected among the variables that are postulated as determinants of informality –indicators of law and order, business regulatory freedom, secondary schooling, and socio-demographic factors. Since some of them have a relationship with economic growth that is independent of informality, we only use as instruments the sets of variables that comply with the exclusion restrictions, as diagnosed by the Hansen test of orthogonality between the instruments and the regression residuals (see notes on Table 1a and 1b).

Table 1 presents the regression results. The dependent variable is the average growth of per capita GDP over 1985-2005. We choose a period of about 20 years for the measure of average growth in order to achieve a compromise between merely cyclical,

[7] We also considered as proxy the ratio of tax revenues to GDP. Even though the number of observations drops considerably, the results were similar regarding the negative effect of informality on growth.

short-run growth (which would be unaffected by informality) and very long-run growth (which could be confused with the sources, rather than consequences, of informality). We consider two alternative control variables: Initial GDP per capita (Table 1a) or initial ratio of government expenditures to GDP (Table 1b). The explanatory variables of interest are the four informality indicators, considered one at a time. The table first presents the ordinary least-square (OLS) results and then the instrumental-variable (IV) results.

The OLS and IV regression results are basically the same regarding the sign and significance of the coefficients on the informality indicators. If anything, the IV coefficient estimates are somewhat larger in magnitude than their OLS counterparts. They clearly indicate that an increase in informality leads to a decrease in economic growth. All four informality indicators carry negative and highly significant regression coefficients. The harmful effect of informality on growth is not only robust and significant, but its magnitude makes it also economically meaningful: Using the estimates from the IV regressions controlling for initial government expenditures/GDP, an increase of one standard deviation in any of the informality indicators leads to a decline of 0.7 – 1 percentage points in the rate of per capita GDP growth.[8] These are conservative estimates when compared to those from the regression that controls for GDP per capita –there, the growth effects of a reduction in informality are about twice as large.

There is also a close connection between poverty and informality, reflecting at least in part the negative relationship between economic growth and informality. Table 2 presents cross-country regression analysis with the headcount poverty index as dependent variable and, in turn, the four measures of informality as explanatory variables. In order to have a close chronological match between dependent and explanatory variables, the headcount poverty index corresponds to the latest available measure per country. As in the growth regressions, the level of GDP per capita (Table 2a) or the ratio of government expenditures to GDP (Table 2b) are included as control variables. Also as in previous

[8] To be precise, a one-standard-deviation increase of, in turn, the Schneider index, the Heritage Foundation index, the share of self-employment, and the labor force lacking pension coverage leads to a decline of, respectively, 1.1, 0.8, 0.8, and 0.7 percentage points of per capita GDP growth.

regressions, we present both OLS and IV estimates, the latter to account for the likely endogeneity of informality with respect to poverty.

The regression results reveal a positive relationship between the prevalence of informality and the incidence of poverty. When government expenditure is controlled for, the four measures of informality carry positive and significant coefficients in the IV regressions. Similarly, when the level of GDP per capita is controlled for, three of the four informality indicators carry positive and significant coefficients (self-employment is the exception).

The significant relationship between informality, on the one hand, and economic growth and poverty, on the other, is remarkable: it underscores the importance of the issue and urges for the analysis on the complex sources of informality. To this, we turn next.

III. The Causes of Informality

Informality is a fundamental characteristic of underdevelopment, shaped both by the modes of socio-economic organization inherent to economies in the transition to modernity and by the relationship that the state establishes with private agents through regulation, monitoring, and the provision of public services. As such, informality is best understood as a complex, multi-faceted phenomenon.

Informality arises when the costs of belonging to the country's legal and regulatory framework exceed its benefits. Formality entails costs of entry --in the form of lengthy, expensive, and complicated registration procedures-- and costs of permanence --including payment of taxes, compliance with mandated labor benefits and remunerations, and observance of environmental, health, and other regulations. The benefits of formality potentially consist of police protection against crime and abuse, recourse to the judicial system for conflict resolution and contract enforcement, access to legal financial institutions for credit provision and risk diversification, and, more generally, the possibility of expanding markets both domestically and internationally. At least in principle, formality also voids the need to pay bribes and prevents penalties and fees, to which informal firms are continuously subject to. Therefore, informality is more prevalent when the regulatory framework is burdensome, the quality of government

services to formal firms is low, and the state's monitoring and enforcement power is weak.

These cost and benefit considerations are affected by the structural characteristics of underdevelopment, dealing in particular with educational achievement, production structure, and demographic trends. Other things equal, a higher level of education reduces informality by increasing labor productivity and, therefore, making labor regulations less onerous and formal returns potentially larger. Likewise, a production structure tilted towards primary sectors like agriculture, rather than to the more complex processes of industry, favors informality by making legal protection and contract enforcement less relevant and valuable. Finally, a demographic composition with larger shares of youth or rural populations is likely to increase informality by making monitoring more difficult and expensive, by placing bigger demands on resources for training and acquisition of abilities, by creating bottlenecks in the initial school-to-work transition, and by making more problematic the expansion of formal public services (see Fields, 1990; Schneider and Enste, 2000; ILO, 2004).

Popular and even academic discussions often focus on particular sources of informality, rather than taking this comprehensive approach. Thus, some observers stress insufficient enforcement and related government weaknesses such as corruption; others prefer to emphasize the burden of taxes and regulations; yet others concentrate on explanations dealing with social and demographic characteristics.

As suggested above, all these possibilities make sense, and there is some evidence to support each of them. To illustrate this, Figure 2 presents cross-country scatter plots of each of the four measures of informality versus proxies for the major proposed determinants of informality. The sample observations include all countries with available data, and, for illustration purposes, countries in Latin America and the Caribbean are highlighted in the figures. The proxies for the determinants of informality are as follows.[9] An index on the prevalence of law and order --obtained from *The International Country Risk Guide*-- to proxy for both the quality of formal public services and government's enforcement strength. An index of business regulatory freedom --taken from Fraser Foundation's *Economic Freedom of the World Report*-- to represent the ease

[9] Again, details on definitions and sources of all variables are presented in Appendix 2.

of restrictions imposed by the legal and regulatory frameworks. The average years of secondary schooling of the adult population --taken from Barro and Lee (2001)-- to represent educational and skill achievement of the working force. And an index of socio-demographic factors --constructed from the World Bank's *World Development Indicators* and other databases-- which includes the share of youth in the population, the share of rural population, and the share of agriculture in GDP.[10]

Remarkably, all 16 correlation coefficients (4 informality measures times 4 determinants) are highly statistically significant, with p-values below 1%, and of large magnitude, ranging approximately between 0.54 and 0.87. All informality measures present the same pattern of correlations: informality is negatively related to law and order, regulatory freedom, and schooling achievement; and it is positively related to factors that denote the early stages of socio-demographic transformation.

Therefore, all these explanations may hold some truth in them. What we need to determine now is whether each of them has *independent* explanatory power with respect to informality. Or, more specifically, we need to assess to what extent each of them is relevant both in general for the cross-section of countries and in particular for a given country. To this purpose we turn next.

In what follows, we use cross-country regression analysis to evaluate the *general* significance of each explanation on the origins of informality. Each of the four informality measures presented earlier serves as the dependent variable of its respective regression model. The set of explanatory variables is common to all informality measures and represents the major determinants of informality. They are the same variables used in the simple correlation analysis, introduced above. Then, we apply these estimated relationships to the case of the Latin American and Caribbean countries with available data in order to evaluate the *country-specific* relevance of each proposed mechanism. We can do this for those countries that possess complete information on dependent and explanatory variables, or at least information on the latter, with which we can obtain *predicted* values of the dependent variable. There are 20 countries in the Latin

[10] This is constructed by first standardizing each component (to a mean of zero and a standard deviation of 1) and then taking a simple arithmetic average. We use a composite index, rather than the components separately, given the very high correlation among them.

American and Caribbean region that possess complete information on all explanatory variables, but comparable data on self-employment and pension coverage are not available for Haiti. Likewise, Nicaragua and Paraguay do not have data on self-employment, and Guyana has data on the Heritage index only. (In both cases, however, we can construct for them a predicted value based on the regression analysis using the sample of all other countries.)

The regression results are presented in Table 3. They are remarkably robust across informality measures. Moreover, all regression coefficients have the expected sign and are highly significant. Informality decreases when law and order, business regulatory freedom, or schooling achievement rise. Similarly, informality decreases when the production structure shifts away from agriculture and demographic pressures from youth and rural populations decline. The fact that each explanatory variable retains its sign and significance after controlling for the rest indicates that no single determinant is sufficient to explain informality. All of them should be taken into account for a complete understanding of informality.

The four explanatory variables account jointly for a large share of the cross-country variation in informality: the R-squared coefficients are 0.57 for the Schneider shadow economy index, 0.89 for the Heritage Foundation informal market index, 0.78 for the share of self-employment, and 0.88 for the share of the labor force not contributing to a pension program.

IV. Explaining Informality in Latin American Countries

The cross-country regression analysis presented above can be used to assess the determinants of informality that are most relevant to each Latin American country. The first issue to explore is whether these countries are outliers or follow the general trend established by the cross-country regressions. Figure 3 presents a scatter plot of the actual vs. predicted values of each informality measure. (For illustrative purposes, observations corresponding to Latin American countries are highlighted in the figure). The majority of countries in the world have small residuals (i.e., the unpredicted portion of informality), a fact which is consistent with the large R-squared coefficients obtained in the regressions.

Is this also the case of the Latin American and Caribbean countries under consideration? The answer is not simple and must be nuanced by the heterogeneity of the countries in the region. Some LAC countries are located around the 45-degree line, but some are quite far from it. In fact, when we include a "Latin American and Caribbean country" dummy in the regressions, its coefficient turns out to be positive in all cases and significant in three of them (the exception is self-employment).[11] The significance of the regional dummy indicates that the actual values of informality are larger than the predicted values for the majority of countries in the region. This is so for the Heritage index and the pension coverage measure. For the Schneider index, not only the majority of countries have positive residuals but also some of them could be considered as outliers.

In terms of specific countries, the following points seem noteworthy. For Brazil, Costa Rica, Honduras and Jamaica, the predicted values of informality are similar to their actual counterparts in all of the four informality measures. Five more countries -- Argentina, Guatemala, Nicaragua, Panama and Uruguay-- join this group in all but the Schneider index. In Colombia and Dominican Republic, while predicted values are much smaller than actual ones regarding *labor* informality (the last two indices), the actual and predicted values of *production* informality (that is, the first two indices) are quite close. Contrary to this, as clearly shown in the figure, actual values of the Schneider index are much larger than predicted ones for Bolivia, Panama, Peru and Uruguay, which in part explains why the R-squared coefficient for this regression is smaller than those of the other informality measures.

Focusing now on the portion of informality explained by the cross-country regression model, we can evaluate the importance of each explanatory variable for the case of the 20 Latin American and Caribbean countries with sufficient available data. In particular, we can assess how each determinant contributes to the difference in informality between individual countries and a comparator one, for which we choose Chile given its widely-recognized status of reform leader in the region. The contribution

[11] Regression results with "LAC country" dummy are not presented but available upon request. For the Schneider index, the Heritage index, self employment, and pension coverage, t-statistics of the dummy variable are 2.91, 2.46, 1.20, and 2.36, respectively.

of each explanatory variable is obtained by multiplying the corresponding regression coefficient (from Table 3) times the difference in the value of this explanatory variable between each Latin American and Caribbean country and the comparator country.

The importance of a particular explanatory variable would, therefore, depend on the size of its effect on informality in the cross-section of countries *and* how far apart the two countries are with respect to the explanatory variable in question. Naturally, the sum of the contributions equals the total difference in predicted informality between each individual country and Chile. This difference is plotted in Figure 4. As expected, it shows that all the countries have larger (predicted) informality levels than Chile. Haiti, Honduras and Guatemala are predicted to be the most informal (and in general show the largest difference with respect to Chile). On the other hand, Uruguay, Argentina and Costa Rica are predicted to be the least informal among the Latin American and Caribbean countries, though they still show larger informality levels than Chile.

Figure 5 presents the decomposition of the difference of (predicted) informality between each of the 20 countries under analysis and Chile. The figure has four panels, corresponding to each of the four informality indicators. The most remarkable observations are the following. Policy and institutional variables related to the quality of the state are the most important factors explaining the differences in informality. Restricted regulatory freedom tends to contribute to larger informality in all Latin American and Caribbean countries for the Heritage index, self employment and pension coverage, while deficient law and order explains the bulk of informality for the Schneider index.

Education, measured by average years of secondary schooling, does not play a major role in explaining differences in informality with respect to Chile for any of four informality measures, even in the cases of Haiti and Honduras. Socio-demographic factors are particularly important in explaining the differences regarding *labor* informality, and less so regarding *production* informality. Moreover, in the case of *labor* informality, the larger the differences in informality with respect to Chile, the larger the importance of socio-demographic factors. This is the case of, for instance, Haiti and Honduras, where all determinants of informality (excluding educational level) are about as important. On the other hand, there is not such trend regarding the two *production*

informality measures –for them, the variables dealing with the quality of the state are always more important, especially law and order for the Schneider index and regulatory freedom for the Heritage index.

V. Conclusion

By any measure, informality is quite prevalent in the countries of Latin America and the Caribbean. This is worrisome because it denotes misallocation of resources (labor in particular) and inefficient utilization of government services, which can jeopardize the countries' growth and poverty-alleviation prospects. The evidence presented in this chapter shows that informality has a statistically and economically significant negative impact on growth – and an equally significant positive impact on the incidence of poverty across countries.

Informality arises when the costs of belonging to the economy's legal and regulatory framework exceeds the benefits. Thus informality is more prevalent where the regulatory framework is burdensome, the quality of government services is low, and the state's monitoring and enforcement capacity is weak. But these cost-benefit calculations are also affected by key structural characteristics of the economy – such as its productive and demographic structure and the availability of skilled labor. This chapter has argued that it is important to take into account all these factors when trying to ascertain the causes of informality.

In the case of Latin America, this chapter has shown that informality is primarily the outcome of a combination of poor public services and a burdensome regulatory framework. Low levels of education, as measured by secondary schooling, are less important in this respect. In lower income countries, informality (particularly regarding labor markets) is exacerbated when the production structure is heavily based on agriculture and other rural activities and when the labor participation of young people, resulting from recent demographic transition, is large.

Informality is a complex phenomenon that is best understood from several angles: considering different indicators that reflect its various aspects and treating it as both cause and consequence of underdevelopment. This chapter is a modest contribution in this direction.

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Table 1a. The Effect of Informality on Economic Growth, controlling for GDP per capita

Dependent variable: Per capita GDP Growth, 1985-2005, country average

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Initial GDP per capita	-0.1966	-0.3519	-0.3498*	-0.6910*	-0.6976***	-0.7684***	-1.2819***	-1.7200***
(2000 US$, 1985, in logs)	1.29	1.54	1.88	1.98	3.06	2.83	2.69	2.95
Schneider Shadow Economy	-0.0747***				-0.1479***			
(% of GDP)	3.87				4.39			
Heritage Foundation Informal Market		-0.8009**				-1.3294***		
(ranging 1-5: higher, more informality)		2.41				4.05		
Self Employment			-0.0657***				-0.1775***	
(% of total employment)			3.11				3.21	
Non-contributor to Pension Scheme				-0.0423***				-0.0872***
(% of labor force)				2.80				3.39
Constant	5.4231***	6.9131**	6.6475***	9.2161**	11.8634***	11.7604***	17.1971***	19.8890***
	3.15	2.57	3.35	2.59	4.29	3.80	3.18	3.33
No. of observations	119	127	72	91	84	87	59	68
R-squared	0.20	0.08	0.13	0.11	-	-	-	-
Hansen J Statistic (P-value)	-	-	-	-	0.48	0.21	0.30	0.70

Notes:

1. Heteroskedasticity-robust t(z)-statistics are presented below the corresponding coefficients.
2. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.
3. For IV regressions [5] to [8],
   - Endogenous variable: each of four informality measures.
   - Instruments: Law and order; Business regulatory freedom; Average Years of Secondary Schooling.
   - Sociodemographic factors is not included as an instrument because it does not pass the exogeneity test using the C statistic (Difference-in-Sargan statistic).
4. See Appendix 1 for definitions and sources of variables.

Source: Authors' estimation

Table 1b. The Effect of Informality on Economic Growth, controlling for government expenditure/GDP

Dependent variable: Per capita GDP Growth, 1985-2005, country average

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Initial Government Expenditure	-0.0340*	-0.0513**	-0.0681***	-0.0588**	-0.0593**	-0.0717***	-0.1008**	-0.0776***
(% of GDP, 1985)	1.96	2.60	2.82	2.59	2.14	2.94	2.55	3.34
Schneider Shadow Economy	-0.0622***				-0.0789***			
(% of GDP)	4.76				4.31			
Heritage Foundation Informal Market		-0.6724***				-0.6085***		
(ranging 1-5: higher, more informality)		5.52				4.18		
Self Employment			-0.0557***				-0.0596***	
(% of total employment)			3.84				2.85	
Non-contributor to Pension Scheme				-0.0183***				-0.0203***
(% of labor force)				3.58				3.51
Constant	4.1214***	4.5441***	4.6023***	3.5267***	5.0933***	4.6934***	5.0909***	4.1156***
	6.71	7.98	6.69	6.19	6.18	6.72	4.50	6.70
No. of observations	112	118	69	85	88	91	59	72
R-squared	0.20	0.18	0.18	0.11	-	-	-	-
Hansen J Statistic (P-value)	-	-	-	-	0.53	0.89	0.62	0.72

Notes:

1. Heteroskedasticity-robust t(z)-statistics are presented below the corresponding coefficients.
2. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.
3. For IV regressions [5] to [8],
   - Endogenous variable: each of four informality measures.
   - Instruments: Business regulatory freedom; Average Years of Secondary Schooling; Sociodemographic factors
   - Law and order is not included as an instrument because it does not pass the exogeneity test using the C statistic (Difference-in-Sargan statistic).
4. See Appendix 1 for definitions and sources of variables.

Source: Authors' estimation

Table 2a. The Effect of Informality on Poverty, controlling for GDP per capita

Dependent variable: Poverty Headcount index, latest year

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Initial GDP per capita	-0.1331***	-0.1028***	-0.0995***	-0.0656**	-0.1129***	-0.0800***	-0.0796	-0.0346
(2000 US$, 1985, in logs)	6.18	4.07	3.02	2.33	3.48	3.10	1.26	0.94
Schneider Shadow Economy	0.0067**				0.0104*			
(% of GDP)	2.34				1.71			
Heritage Foundation Informal Market		0.0841**				0.1229*		
(ranging 1-5: higher, more informality)		2.38				1.89		
Self Employment			0.0004				-0.0017	
(% of total employment)			0.22				0.24	
Non-contributor to Pension Scheme				0.0031**				0.0051**
(% of labor force)				2.34				2.08
Constant	0.8607***	0.6053**	0.8476***	0.4127	0.5717	0.3001	0.7636	0.0436
	4.54	2.30	3.48	1.55	1.46	0.83	1.09	0.11
No. of observations	51	51	34	46	41	42	30	38
R-squared	0.51	0.42	0.34	0.35	-	-	-	-
Hansen J Statistic (P-value)	-	-	-	-	0.47	0.33	0.11	0.69

Notes:

1. Heteroskedasticity-robust t(z)-statistics are presented below the corresponding coefficients.
2. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.
3. For IV regressions [5] to [8],
   - Endogenous variable: each of four informality measures.
   - Instruments: four determinants of informality (Law and order; Business regulatory freedom; Average Years of Secondary Schooling; Sociodemographic factors).
4. See Appendix 1 for definitions and sources of variables.

Source: Authors' estimation

Table 2b. The Effect of Informality on Poverty, controlling for government expenditure/GDP

Dependent variable: Poverty Headcount index, latest year

	OLS				IV			
	[1]	[2]	[3]	[4]	[5]	[6]	[7]	[8]
Initial Government Expenditure	0.0031	0.0096	0.0114	0.0063	0.0033	0.0157*	0.0224***	0.0123
(% of GDP, 1985)	0.51	1.58	1.09	1.01	0.37	1.86	3.44	1.54
Schneider Shadow Economy	0.0075*				0.0240***			
(% of GDP)	1.95				2.97			
Heritage Foundation Informal Market		0.2135***				0.2470***		
(ranging 1-5: higher, more informality)		4.41				3.47		
Self Employment			0.0091				0.0230***	
(% of total employment)			1.51				3.08	
Non-contributor to Pension Scheme				0.0064***				0.0076***
(% of labor force)				4.95				3.41
Constant	-0.1130	-0.7019***	-0.2911	-0.3624***	-0.7887**	-0.9201***	-0.9325***	-0.5467**
	0.59	3.33	0.99	2.86	2.45	2.77	3.34	2.56
No. of observations	48	48	32	43	40	41	29	37
R-squared	0.12	0.33	0.13	0.36	-	-	-	-
Hansen J Statistic (P-value)	-	-	-	-	0.25	0.14	0.52	0.61

Notes:

1. Heteroskedasticity-robust t(z)-statistics are presented below the corresponding coefficients.
2. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.
3. For IV regressions [5] to [8],
   - Endogenous variable: each of four informality measures.
   - Instruments: four determinants of informality (Law and order; Business regulatory freedom; Average Years of Secondary Schooling; Sociodemographic factors).
4. See Appendix 1 for definitions and sources of variables.

Source: Authors' estimation

Table 3. Determinants of Informality

Method of estimation: Ordinary Least Squares with Robust Standard Errors

Dependent variable: Four types of informality measures, country average

	Informality measures			
Explanatory variables: *Average of 2000-2005 by country*	Schneider Shadow Economy index (% of GDP) [1]	Heritage Foundation Informal Market index (1-5: higher, more) [2]	Self Employment (% of total employment) [3]	Non-contributor to Pension Scheme (% of labor force) [4]
Law and Order (ICRG, index ranging 0-6: higher, better)	-3.2360** -2.57	-0.0969* -1.76	-1.6925* -1.84	-2.9764* -1.67
Business Regulatory Freedom (The Fraser Institute, index ranging 0-10: higher, less regulated)	-2.0074* -1.80	-0.5333*** -9.95	-2.5196** -2.17	-5.8675** -2.28
Average Years of Secondary Schooling (Barro and Lee 2001)	-1.9684* -1.70	-0.1152** -2.00	-2.1527** -2.25	-5.8114*** -3.27
Sociodemographic Factors (average of share of youth population, share of rural population, and share of agriculture in GDP)	3.8438** 2.00	0.5027*** 4.99	5.9743*** 3.77	21.6130*** 7.31
Constant	60.3429*** 10.48	6.6326*** 31.72	54.7254*** 14.06	113.3110*** 11.40
No. of observations	84	86	57	70
Adjusted R-squared	0.57	0.89	0.78	0.88

Notes:

1. t-statistics are presented below the corresponding coefficients.
2. *, ** and *** denote significance at the 10 percent, 5 percent and 1 percent levels, respectively.
3. See Appendix 1 for countries included in each regression and Appendix 2 for definitions and sources of variables and periods used to compute country averages of informality measures.

Source: Authors' estimation

Figure 1. Size of Informality, Various Measures

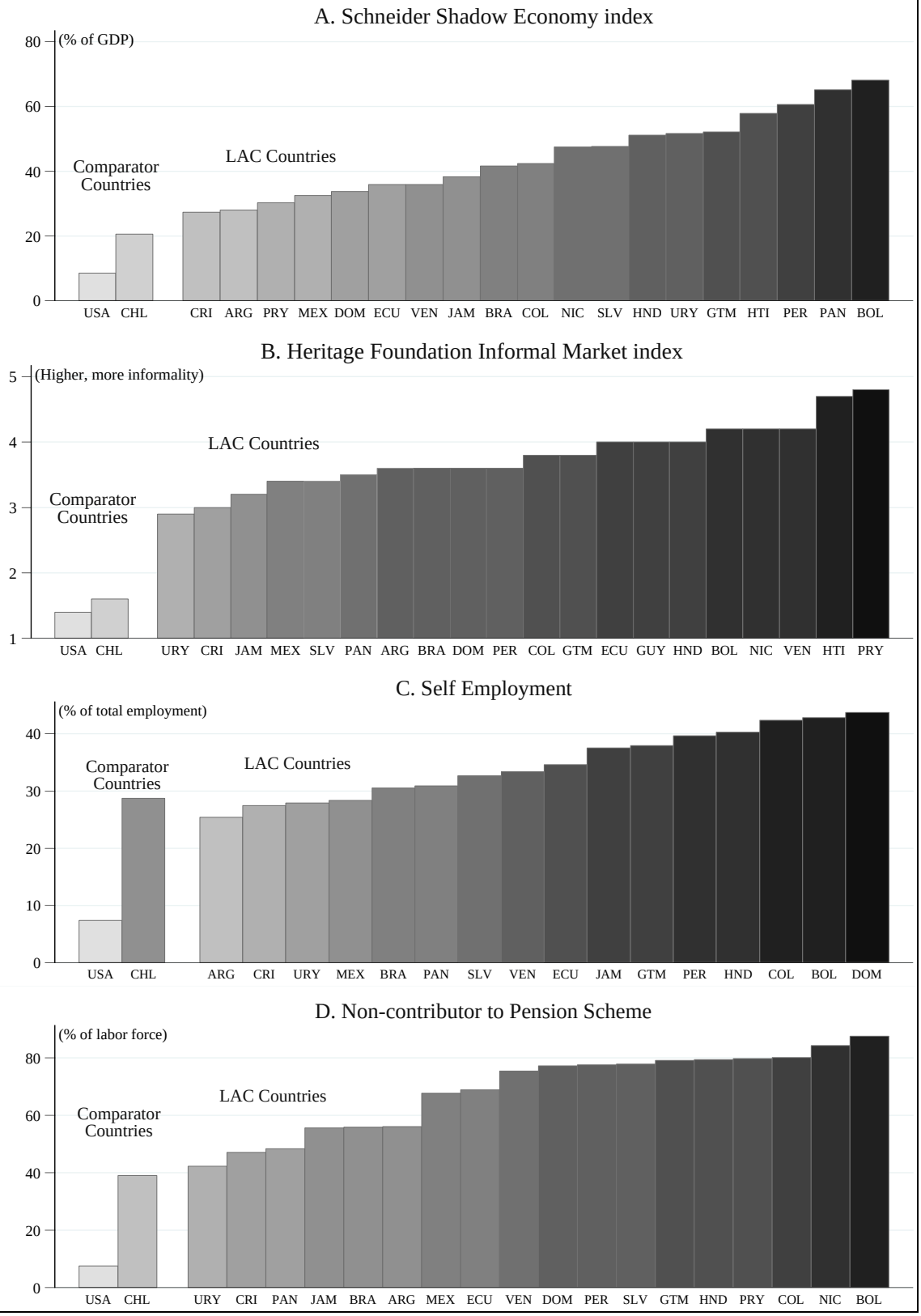
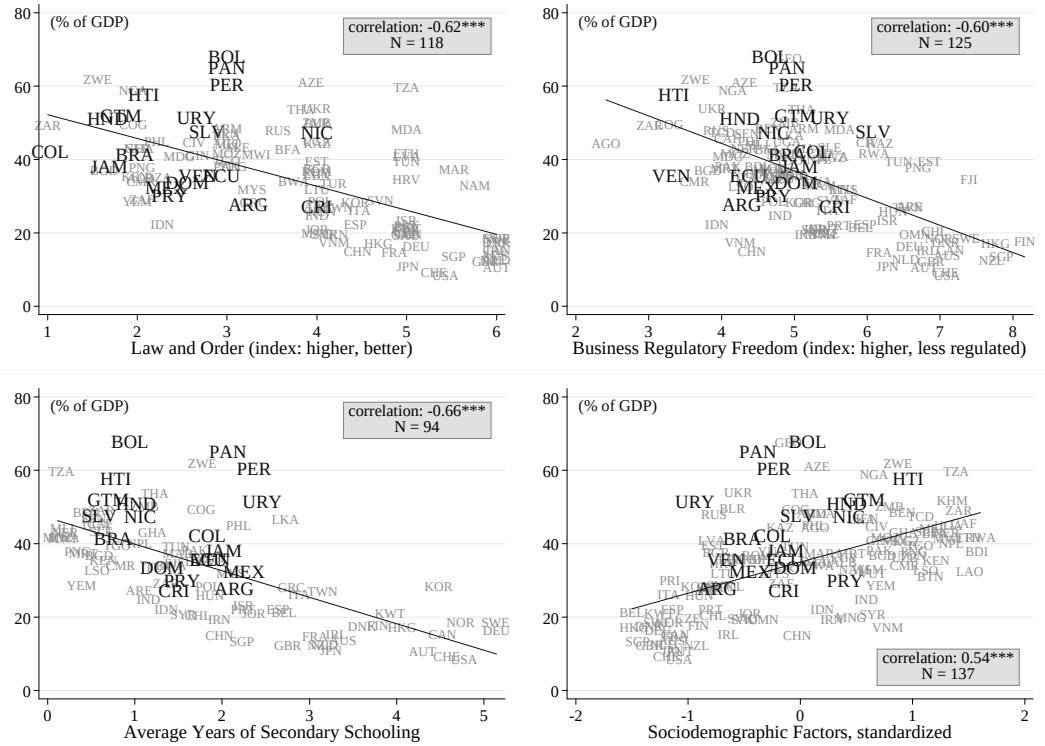


Figure 2. Informality and Basic Determinants

A. Schneider Shadow Economy index (% of GDP)



B. Heritage Foundation Informal Market index (range 1-5: higher, more informality)

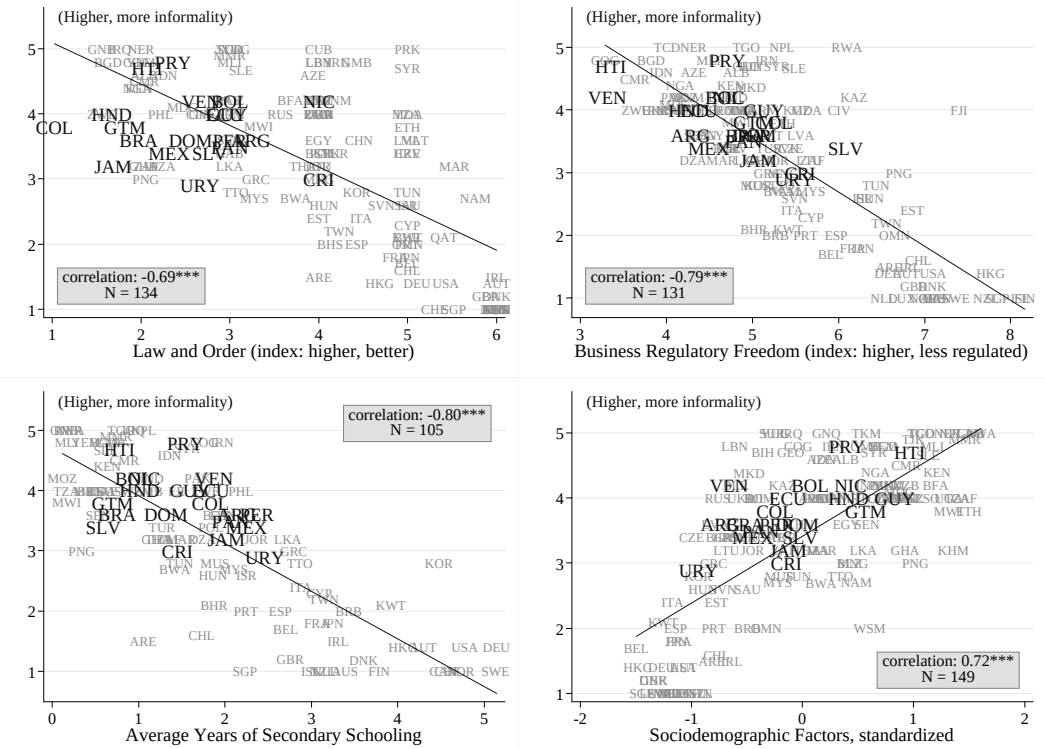
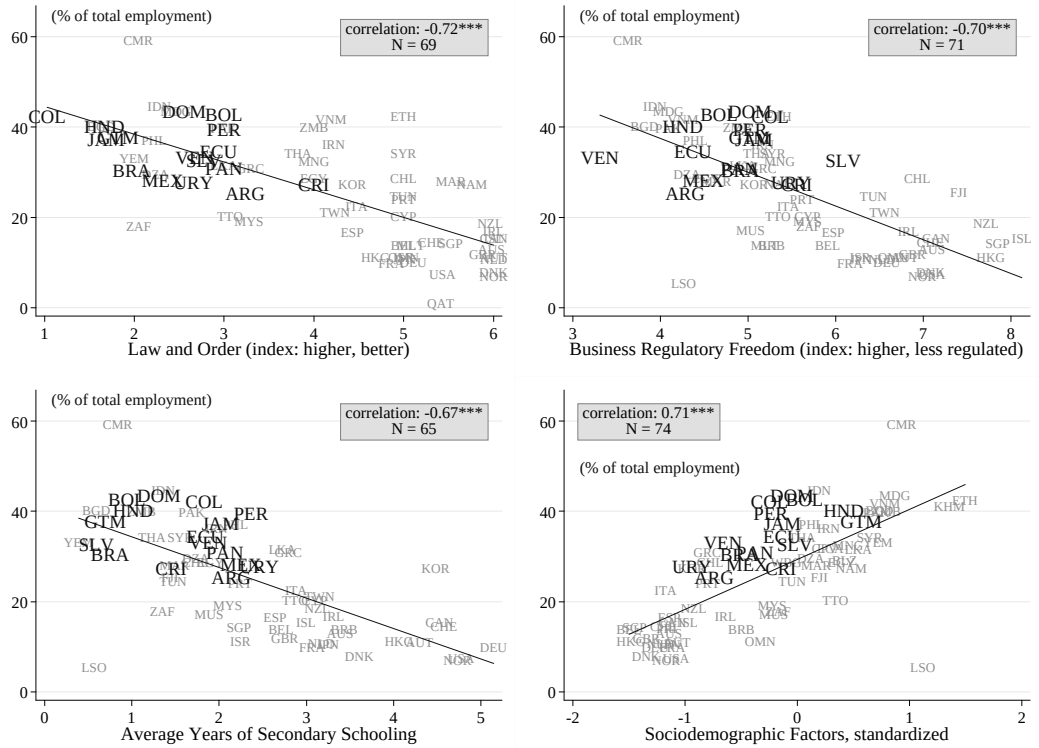
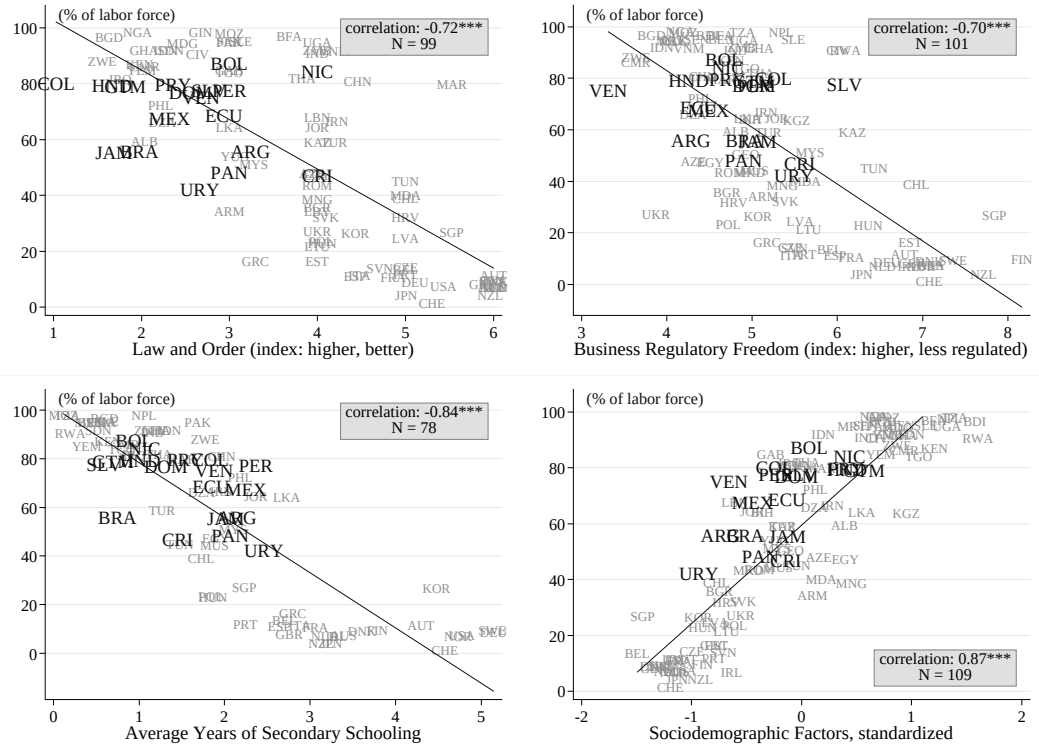


Figure 2. Informality and Basic Determinants (continued)

C. Self employment (% of total employment)

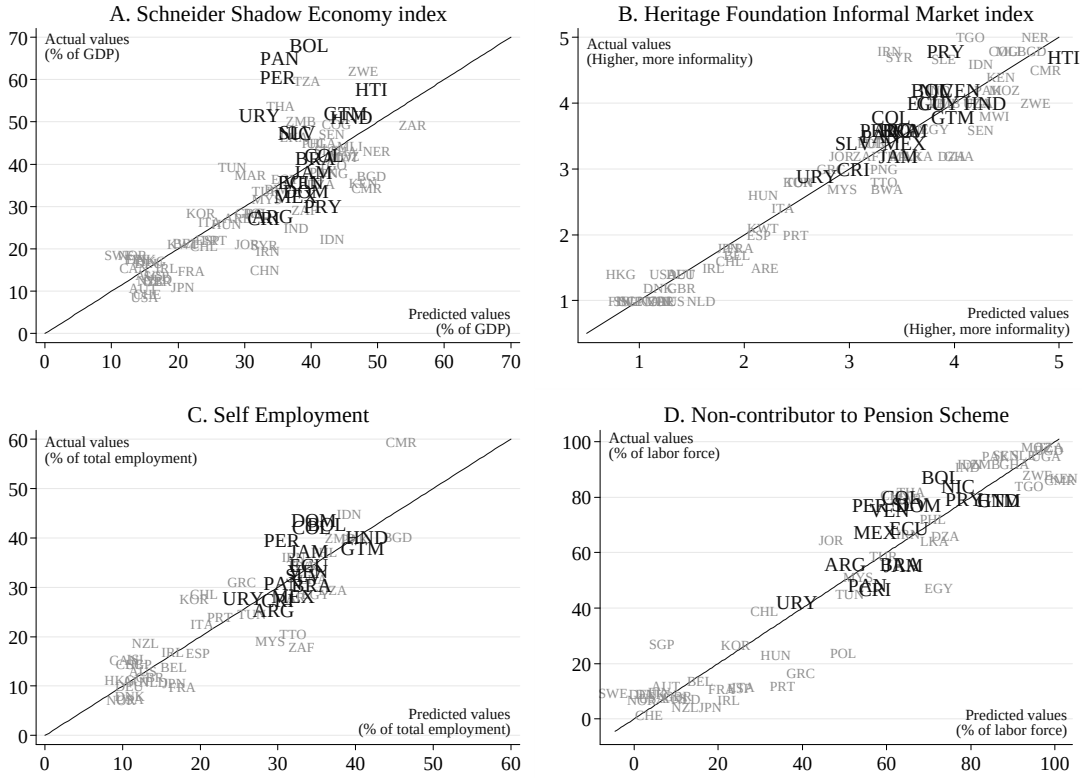


D. Non-contributor to pension scheme (% of labor force)



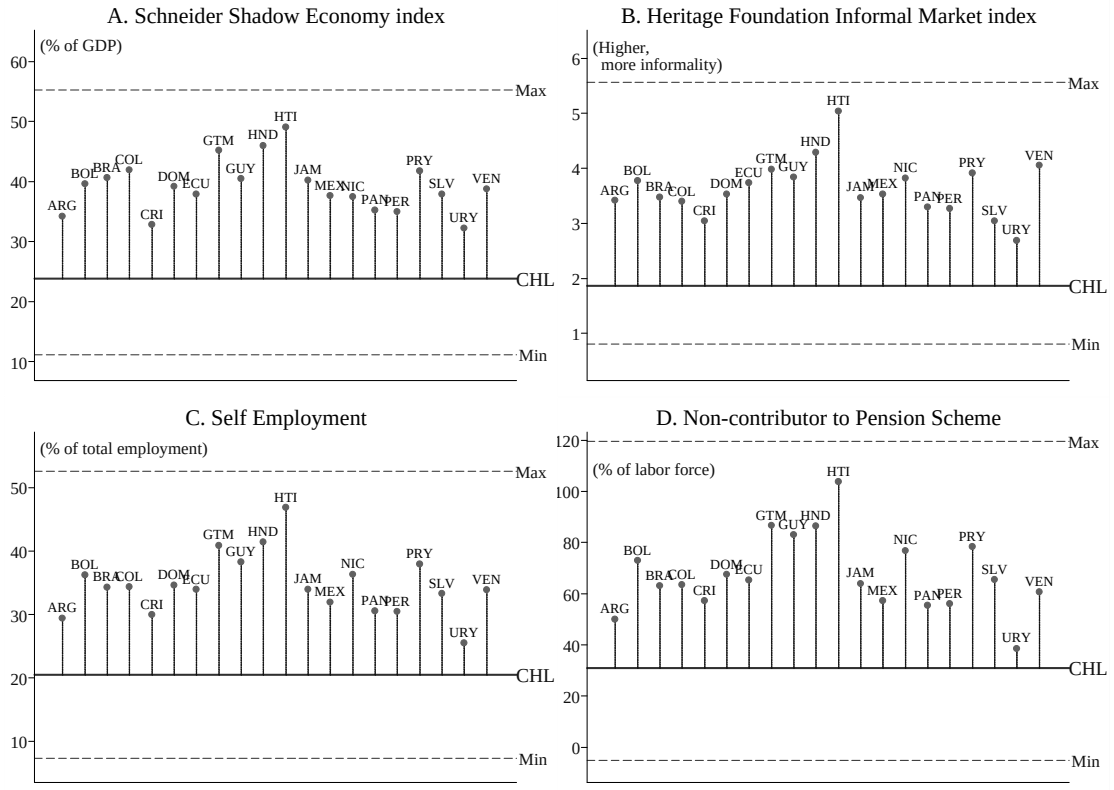
Note: *** denotes significance at the 1 percent level.

Figure 3. Predicted and Actual Levels of Informality



Note: In each graph, a 45-degree line is drawn to show a distance between predicted and actual levels.

Figure 4. Differences in Informality, LAC Countries and Chile



Note: Presented are all predicted levels, which may be above/below the actual max/min values.

Figure 5-A. Explanation of Differences in Informality, LAC Countries and Chile

Schneider Shadow Economy index (% of GDP)

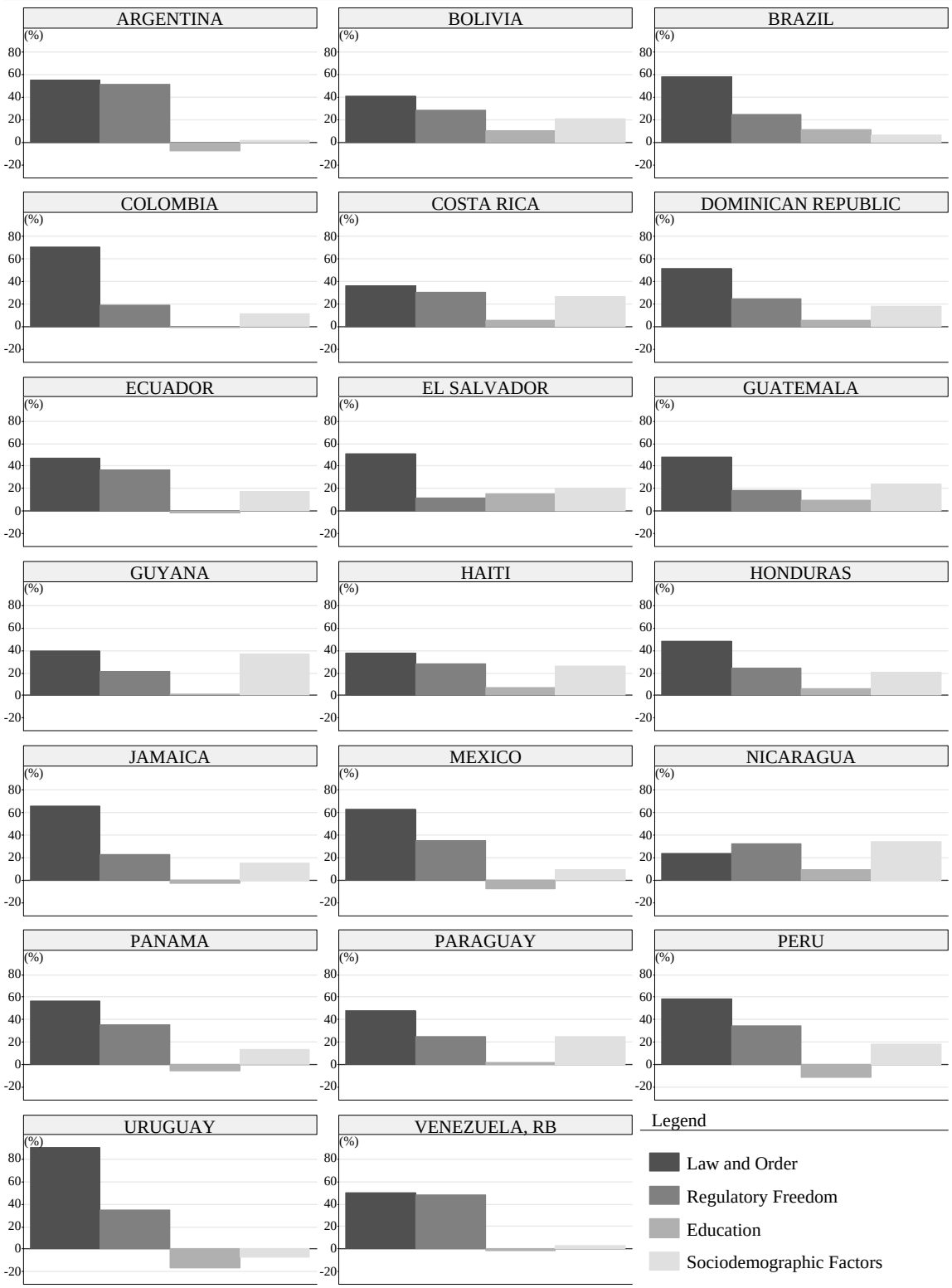


Figure 5-B. Explanation of Differences in Informality, LAC Countries and Chile

Heritage Foundation Informal Market index (range 1-5: higher, more informality)

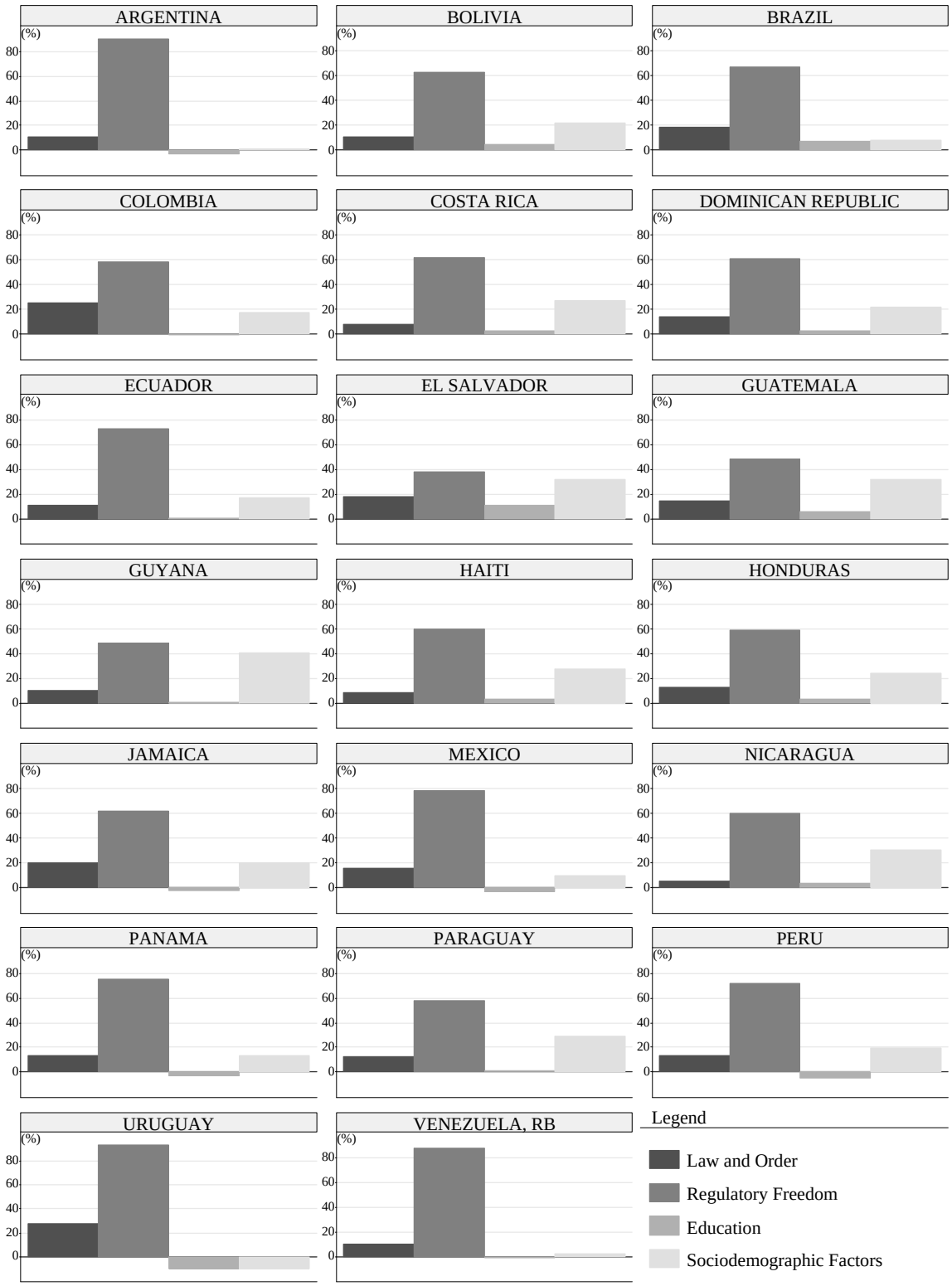


Figure 5-C. Explanation of Differences in Informality, LAC Countries and Chile
Self Employment (% of total employment)

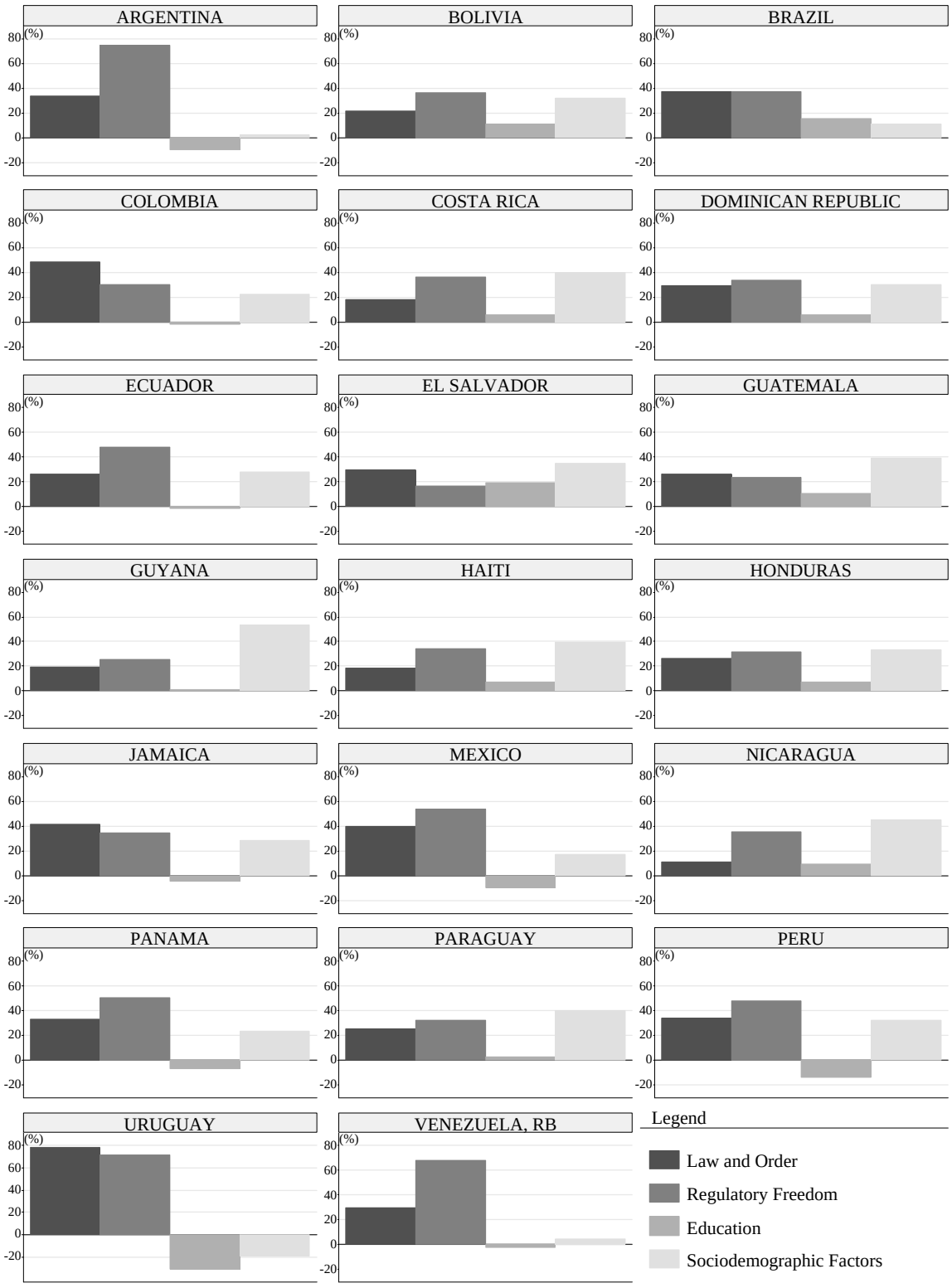
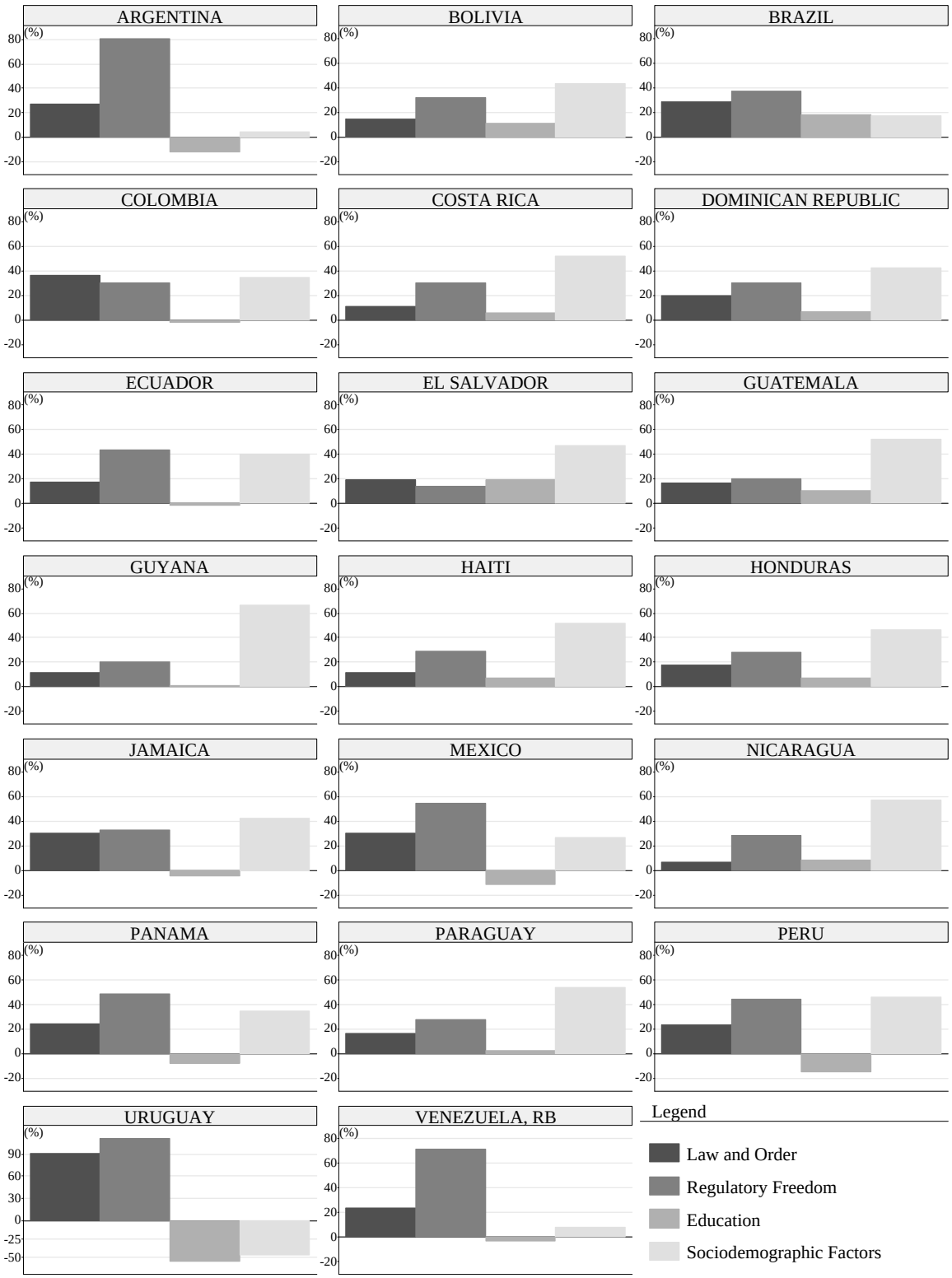


Figure 5-D. Explanation of Differences in Informality, LAC Countries and Chile
Non-contributor to Pension Scheme (% of labor force)



Appendix 1. Sample of Countries in the Informality Regressions

Country Code	Country	Schneider Shadow Economy index (84 countries)	Heritage Foundation Informal Market index (86 countries)	Self Employment (57 countries)	Non-contributor to Pension Scheme (70 countries)
DZA	Algeria	√	√	√	√
ARG	Argentina	√	√	√	√
AUS	Australia	√	√	√	√
AUT	Austria	√	√	√	√
BGD	Bangladesh	√	√	√	√
BEL	Belgium	√	√	√	√
BOL	Bolivia	√	√	√	√
BWA	Botswana	√	√		
BRA	Brazil	√	√	√	√
CMR	Cameroon	√	√	√	√
CAN	Canada	√	√	√	
CHL	Chile	√	√	√	√
CHN	China	√	√		√
COL	Colombia	√	√	√	√
ZAR	Congo, Dem. Rep.	√			
COG	Congo, Rep.	√	√		
CRI	Costa Rica	√	√	√	√
DNK	Denmark	√	√	√	√
DOM	Dominican Rep.	√	√	√	√
ECU	Ecuador	√	√	√	√
EGY	Egypt, Arab Rep.	√	√	√	√
SLV	El Salvador	√	√	√	√
FIN	Finland	√	√		√
FRA	France	√	√	√	√
DEU	Germany	√	√	√	√
GHA	Ghana	√	√		√
GRC	Greece	√	√	√	√
GTM	Guatemala	√	√	√	√
GUY	Guyana		√		
HTI	Haiti	√	√		
HND	Honduras	√	√	√	√
HKG	Hong Kong, China	√	√	√	
HUN	Hungary	√	√		√
ISL	Iceland		√	√	
IND	India	√	√		√
IDN	Indonesia	√	√	√	√
IRN	Iran, Islamic Rep.	√	√	√	√
IRL	Ireland	√	√	√	√
ITA	Italy	√	√	√	√
JAM	Jamaica	√	√	√	√
JPN	Japan	√	√	√	√
JOR	Jordan	√	√		√
KEN	Kenya	√	√		√
KOR	Korea, Rep.	√	√	√	√
KWT	Kuwait	√	√		
MWI	Malawi	√	√		
MYS	Malaysia	√	√	√	√
MLI	Mali	√	√		
MEX	Mexico	√	√	√	√
MAR	Morocco	√	√	√	√
MOZ	Mozambique	√	√		√
NLD	Netherlands	√	√	√	√
NZL	New Zealand	√	√	√	√
NIC	Nicaragua	√	√		√
NER	Niger	√	√		
NOR	Norway	√	√	√	√
PAK	Pakistan	√	√	√	√
PAN	Panama	√	√	√	√
PNG	Papua New Guinea	√	√		
PRY	Paraguay	√	√		√
PER	Peru	√	√	√	√
PHL	Philippines	√	√	√	√
POL	Poland	√	√		√
PRT	Portugal	√	√	√	√
SEN	Senegal	√	√		√
SLE	Sierra Leone	√	√		√
SGP	Singapore	√	√	√	√
ZAF	South Africa	√	√	√	
ESP	Spain	√	√	√	√
LKA	Sri Lanka	√	√	√	√
SWE	Sweden	√	√		√
CHE	Switzerland	√	√	√	√
SYR	Syrian Arab Rep.	√	√	√	
TZA	Tanzania	√	√		√
THA	Thailand	√	√	√	√
TGO	Togo	√	√		√
TTO	Trinidad and Tobago		√	√	
TUN	Tunisia	√	√	√	√
TUR	Turkey	√	√		√
UGA	Uganda	√	√		√
ARE	United Arab Emirates	√	√		
GBR	United Kingdom	√	√	√	√
USA	United States	√	√	√	√
URY	Uruguay	√	√	√	√
VEN	Venezuela, RB	√	√	√	√
ZMB	Zambia	√	√	√	√
ZWE	Zimbabwe	√	√		√

Appendix 2. Definitions and Sources of Variables Used in Regression Analysis

Variable	Definition and Construction	Source
Schneider Shadow Economy index	Estimated shadow economy as the percentage of official GDP. Average of 2001-2002 by country.	Schneider (2004).
Heritage Foundation Informal Market index	An index ranging 1 to 5 with higher values indicating more informal market activity. The scores and criteria are: (i) Very Low: Country has a free-market economy with informal market in such things as drugs and weapons (score is 1); (ii) Low: Country may have some informal market involvement in labor or pirating of intellectual property (score is 2); (iii) Moderate: Country may have some informal market activities in labor, agriculture, and transportation, and moderate levels of intellectual property piracy (score is 3); (iv) High: Country may have substantial levels of informal market activity in such areas as labor, pirated intellectual property, and smuggled consumer goods, and in such services as transportation, electricity, and telecommunications (score is 4); and (v) Very High: Country's informal market is larger than its formal economy (score is 5). Average of 2000-2005 by country.	Miles, Feulner, and O'Grady (2005).
Self Employment	Self employed workers as the percentage of total employment. Country averages but periods to compute the averages vary by country. Average of 1999-2006 by country, but countries in Europe and Central Asia (ECA) are excluded (Loayza and Rigolini 2006).	ILO. Data retrieved from laborsta.ilo.org.
Non-contributor to Pension Scheme	Labor force not contributing to a pension scheme as the percentage of total labor force. Average of 1993-2005 by country.	World Development Indicators, various years.
Per Capita GDP Growth	Log difference of real GDP per capita (2000 US$).	World Development Indicators, various years.
Initial GDP per capita	Real GDP per capita (2000 US$) in 1985, in logs.	World Development Indicators, various years.
Initial Government Expenditure	Ratio of general government final consumption expenditure to GDP in 1985.	World Development Indicators, various years.
Poverty Headcount index	The fraction of the population with income below a given poverty line. The poverty line is $1 per person a day, converted into local currency using a PPP-adjusted exchange rate. The latest/final year of each country's poverty spell is used.	Loayza and Raddatz (2006).
Initial Gini index	A measure of income inequality ranging 0 to 100 with higher values indicating more inequal income distribution. The initial year of each country's poverty spell is used.	Loayza and Raddatz (2006).
Law and Order	An index ranging 0 to 6 with higher values indicating better governance. Law and Order are assessed separately, with each sub-component comprising 0 to 3 points. Assessment of Law focuses on the legal system, while Order is rated by popular observance of the law. Average of 2000-2005 by country.	ICRG. Data retrieved from www.icrgonline.com.
Business Regulatory Freedom	An index ranging 0 to 10 with higher values indicating less regulated. It is composed of following indicators: (i) Price controls: extent to which businesses are free to set their own prices; (ii) Burden of regulation / Administrative Conditions/Entry of New Business; (iii) Time with government bureaucracy: senior management spends a substantial amount of time dealing with government bureaucracy; (iv) Starting a new business: starting a new business is generally easy; and (v) Irregular payments: irregular, additional payments connected with import and export permits, business licenses, exchange controls, tax assessments, police protection, or loan applications are very rare. Average of 2000-2005 by country.	Gwartney, Lawson, Sobel, and Leeson (2007), The Fraser Institute. Data retrieved from www.freetheworld.com.
Average Years of Secondary Schooling	Average years of secondary schooling in the population aged 15 and over. The most recent score in each country is used, while figures are computed for countries data are not available.	Barro and Lee (1993, 2001); and authors' calculations.
Sociodemographic Factors	Simple average of following three variables: (i) Youth (aged 10-24) population as the percentage of total population; (ii) Rural population as the percentage of total population; and (iii) Agriculture as the percentage of GDP. All three variables are standardized before the average is taken. Average of 2000-2005 by country.	Authors' calculations with data from World Development Indicators, ILO and UN.

Appendix 3. Descriptive Statistics

Data in country averages; periods vary by informality measure

(a) Univariate (regression sample)

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
Schneider Shadow Economy index (% of GDP)	84	32.960	14.735	8.550	68.200
Heritage Foundation Informal Market index (range 1-5: higher, more informality)	86	3.055	1.251	1.000	5.000
Self Employment (% of total employment)	57	26.204	12.028	7.132	59.335
Non-contributor to Pension Scheme (% of labor force)	70	53.198	33.482	1.450	98.000

(b) Univariate (full sample)

Variable	Obs.	Mean	Std. Dev.	Minimum	Maximum
Schneider Shadow Economy index (% of GDP)	145	34.838	13.214	8.550	68.200
Heritage Foundation Informal Market index (range 1-5: higher, more informality)	159	3.409	1.201	1.000	5.000
Self Employment (% of total employment)	86	25.158	12.118	1.119	59.335
Non-contributor to Pension Scheme (% of labor force)	110	55.999	31.905	1.450	98.500

(c) Bivariate Correlations between Informality Measures
(upper triangle for regression sample (in italics) and lower triangle for full sample)

Variable	Schneider Shadow Economy	Heritage Fndn. Informal Market	Self Employment	Non-contributor to Pension
Schneider Shadow Economy index (% of GDP)	1.00 145 | *84*	*0.68**** *83*	*0.71**** *55*	*0.72**** *70*
Heritage Foundation Informal Market index (range 1-5: higher, more informality)	0.65*** 132	1.00 159 | *86*	*0.88**** *57*	*0.90**** *70*
Self Employment (% of total employment)	0.65*** 69	0.79*** 76	1.00 86 | *57*	*0.89**** *51*
Non-contributor to Pension Scheme (% of labor force)	0.59*** 104	0.77*** 107	0.88*** 57	1.00 110 | *70*

Notes:
1. Sample sizes are presented below the corresponding coefficients.
2. *** denotes significance at the 1 percent level.