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ARMENIA PUBLIC FINANCE REVIEW

ENHANCING FISCAL POLICY EFFICIENCY

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Abbreviation List

AE	Advanced Economies
AETB	Average Tax Burden
AETR	Average Effective Tax Rate
ALMM	Active Labor Market Measures
AMD	Armenian Dram
AMS	Application Management System
ArmStat	Statistical Committee of Armenia
ATC	Assessment and Testing Center
BAU	Business-as-Usual
BEPS	Base Erosion and Profit Shifting
CBAM	Carbon Border Adjustment Mechanism
CEQ	Commitment to Equity
CIT	Corporate Income Tax
CPAT	Climate Policy Assessment Tool
DEA	Data Envelopment Analysis
DPT	Distributed Profit Tax
ECA	Europe and Central Asia
ECEA	Extended Cost-Effectiveness Analysis
EECCA	Eastern Europe, Caucasus, and Central Asia
EEU	Eurasian Economic Union
EMDEs	Emerging Market and Developing Economies
EMIS	Educational Management Information System
ETP	Environmental Taxes and Payments
ETS	Emissions Trading Systems
EU	European Union
EU4Innovation	European Union for Innovation
FFS	Fossil Fuel Subsidies
G&S	Goods and Services
GDP	Gross Domestic Product
GES	Green Expenditure Subsidies
GHG	Greenhouse Gas Emissions
GMT	Global Minimum Tax
GoA	Government of Armenia
GTE	Green Tax Expenditures
HCI	Human Capital Index
HCP	Human Capital Project
HEI	Higher Education Institution
HIC	High Income Countries
ILCS	Integrated Living Conditions Survey
IMF	International Monetary Fund
IPPE	Independent Public Purchasing Entity
LAYS	Learning-Adjusted Years of Schooling
M&E	Monitoring and Evaluation

MIMIC	Multiple Indicators Multiple Causes
MNCOs	Municipal Non-Commercial Organizations
MoESCS	Ministry of Education, Science, Culture, and Sport
MoF	Ministry of Finance
MoTAI	Ministry of Territorial Administration and Infrastructure
MTEF	Medium-Term Expenditure Framework
NACET	National Center for Educational Technologies
NCO	Non-Commercial Organization
NDC	Nationally Determined Contribution
NHIF	National Health Insurance Fund
OECD	Organization for Economic Co-operation and Development
PCF	Per Capita Formula
PER	Public Expenditure Review
PFR	Public Finance Review
PIT	Personal Income Tax
PMO	Prime Minister's office
PSMP	Public Sector Modernization Project
RA	Republic of Armenia
SA	Social Assistance
SCD	Systematic Country Diagnostic
SME	Small and Medium Enterprises
SNCOs	State Non-Commercial Organizations
SRC	State Revenue Committee
STEM	Science, Technology, Engineering, and Mathematics
STR	Student-Teacher Ratio
TIMSS	Trends in International Mathematics and Science Study
TIN	Taxpayer Identification Number
TSP	Targeted Social Payment
UMIC	Upper-Middle-Income Countries
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNI	Universal Health Insurance
UNICEF	United Nations Children's Emergency Fund
VAS	Vulnerability Assessment System
VAT	Value Added Tax
VET	Vocational Education and Training
WB	World Bank
WDI	World Development Indicators

Box 1. Definition of Key Concepts

Effectiveness: the ability of the tax system or of public spending to efficiently meet the stated objectives of the measures or programs introduced.

Expenditure efficiency: being able to spend less for the same gains or being able to spend the same amount for higher gains. Efficiency analysis therefore involves looking at how inputs and outputs relate to each other.

Gini coefficient: a measure of inequality that is on a scale of 0 to 100, in which zero denotes perfect equality and 100 denotes perfect inequality.

Gross enrollment rates: the total enrollment of children in a specific level of education, regardless of age, expressed as a percentage of the population in the official age group corresponding to this level of education.

Learning-adjusted years of schooling (LAYS): a measure, which combines quantity and quality of schooling into a single easy-to-understand metric of progress.

Net enrollment rates: the enrollment of children that are part of the official age group for a given level of education expressed as a percentage of the population in that age group.

Labor informality: all remunerative work (i.e., self-employment and wage employment) that is not registered, regulated, or protected by existing legal or regulatory frameworks.

Tax buoyancy: a measure of the total response of tax revenues on both automatic changes to economic growth and on discretionary changes in tax policy.

Tax equity: the distribution of the tax burden usually defined in terms of (1) horizontal equity in which taxpayers of similar income and firms with similar profits are taxed similarly; and (2) vertical equity in which those with the greatest ability to pay shoulder more of the tax burden.

Tax system efficiency: the ability of the tax system to achieve its objectives while minimizing: (i) distortions to the economy; (ii) the administrative burden of paying taxes (for taxpayers); and (iii) the costs of managing tax compliance (for the government).

Tax wedge: the ratio between the amount of taxes paid by a worker and the corresponding total labor cost for the employer.

Executive Summary

i. **Armenia has made significant progress in its development journey by improving its ability to withstand shocks and becoming an upper-middle-income country in 2018.** Armenia's GDP per capita more than doubled between 2017 and 2023, to USD 8,053 (current prices) despite several shocks including the COVID-19 pandemic and the military conflict with Azerbaijan in 2020. During this period, the government also implemented mitigation measures that helped contain increases in the poverty rate at 0.6 percentage points. In 2021, the economy began to rebound, with GDP growth averaging 9 percent between 2021 and 2023 and poverty and unemployment decreasing to below pre-pandemic levels at 24.8 and 12.6 percent, respectively. Some of this growth, however, has been driven by factors that may be temporary, such as large money transfer inflows to Armenia and re-exports in the aftermath of Russia's invasion of Ukraine in 2022.

ii. **To build on this progress, Armenia needs to address the key constraints to support more inclusive and sustainable growth (Systematic Country Diagnostic, 2024).** The key constraints identified include: (i) vulnerability to shocks as a result of fragility and conflict, lack of economic diversification, climate change, and natural disasters; (ii) limited access to physical and digital markets, as well as limited trade integration; (iii) factors limiting the quality of human capital, in particular, access to affordable healthcare and quality education; (iv) challenges to the business environment and private sector development; and (v) cross-cutting constraints related to the need to improve governance and institutional capacity, and to invest in data.

iii. **This Public Finance Review (PFR) seeks to address the critical questions associated with these challenges.** As a landlocked country with limited natural resources, improving fiscal performance, enhancing human capital, and boosting productivity are crucial for Armenia's future prosperity. The recent refugee crisis has further underscored the importance of mobilizing resources and optimizing the use of public resources. Some of the questions that this PFR seeks to address include: How can public finances simultaneously increase its spending efficiency while improving human capital? Is Armenia's education system equipped to provide the necessary skills for the future generation in an equitable way? How can the country mobilize additional resources to achieve these goals without impeding growth or exacerbating inequity?

iv. **While Armenia has a good track record of prudent fiscal management, there is room to improve the efficiency of its public finances.** Over the past decade, the fiscal deficit was broadly in check at an average 3.5 percent of GDP. The strong commitment to a prudent fiscal policy and updates to the fiscal rule in 2017 have contributed to the sustainability of the public debt, which is noteworthy given the context of recent shocks.¹ Armenia's fiscal policy has also demonstrated reasonable counter-cyclicality and progressivity in the last decade. However, it has had a muted impact on stimulating growth, and the efficiency of both spending and the tax system can be improved.

¹ The upgraded fiscal rule in 2017 removed the pro-cyclicality feature of the original rule, dropped the state deficit ceiling, and defined specific expenditure disciplinary rules that would come into effect if public debt levels reached certain thresholds (40, 50, and 60 percent of GDP). Furthermore, the new fiscal rule introduced an escape clause, which was used during 2020 (for details of Fiscal Rule, see "Law on the RA Budgetary System).

v. **The government of Armenia adopted an ambitious five-year program (2021–2026) to support inclusive growth by various means.** The program is built on six pillars, one of which focuses on human capital development and envisages: (i) providing affordable, high-quality healthcare services and introducing universal health insurance in Armenia, where out-of-pocket expenditures are among the highest in the world; (ii) improving the coverage and targeting of social assistance programs as well as increasing pensions; and (iii) improving education outcomes by modernizing the curriculum, upgrading infrastructure, and strengthening the links between education and the labor market.

vi. **Realizing this ambitious program requires boosting revenue collection as well as improving spending efficiency and service delivery outcomes.** In this context, it is important to improve the effectiveness and efficiency of the fiscal system, as well as its ability to support broader developmental objectives tied to the country’s economic plans. The public finance review published in 2023 (PFR I)² focused on assessing the quality of spending in public investment projects, social sectors, and the health sector. This PFR (PFR II) complements PFR I by analyzing the efficiency and equity of the tax system and of public expenditures in the education sector. Table ES.1 depicts how these public finance reviews seek to inform fiscal policy in key development priority areas. The following two sections summarize the findings of the two chapters of the PFR II.

Table ES.1. Public Finance Review Areas of Analysis and the SCD Key Challenges

PFR Areas of Analysis		SCD Challenges Addressed	V. Governance, institutional capacity, and data	SCD Key Challenges	
PFR I: Improving Spending Efficiencies	1. Macro-fiscal overview	I. Vulnerability to shocks and environmental risks			I. Vulnerability to shocks and environmental risks
	2. Capital spending	II. Access to market and trade integration			
	3. Social spending	IV. Private sector development	II. Access to market and trade integration		
	4. Health spending	III. Quality of human capital			
PFR II: Enhancing Fiscal Policy Efficiency	1. Tax revenue	I. Vulnerability to shocks and environmental risks	III. Quality of human capital		
		IV. Private sector development			
	2. Education spending	III. Quality of human capital			

Source: SCD, PFR I, and PFR II.

Improving the Effectiveness, Efficiency, and Equity of the Tax System

vii. **Armenia has a reasonable tax to GDP ratio that has increased in recent years and which the government plans to raise further.** Thanks to tax policy and administration reforms, revenue collection increased from an average of around 21.2 percent between 2014 and 2019 to an average of 23.5 percent over the last three years (2021–2023). The government’s Five-Year Plan (2021–2026) set a tax to GDP target of at least 25 percent by 2026 and aims to improve the competitiveness of the business environment through tax policy reforms. The first chapter of this PFR undertakes a diagnostic assessment of tax policy in Armenia. It focuses on assessing the quality of taxation, while also considering ways of raising potential tax collection such as broadening the tax base over the medium term.

² Public finance reviews are also referred to as public expenditure reviews (PER). World Bank, 2023. Armenia public Expenditure Review: Improving Spending Efficiency.

viii. **Compared to its peers,³ Armenia collects more from direct taxes than from indirect taxes and places a heavier burden on labor.** With respect to direct taxes, Armenia collects more than double the revenue in personal income tax (PIT) than the corporate income tax (CIT). Armenia's PIT collection is, on average, higher than in most of its peers and comparable with the levels of Estonia and Georgia. With respect to indirect taxes, Armenia collects between 7 and 8 percent of GDP in VAT, which is around 3 percentage points lower than the average of its peers. Similarly, Armenia collects between 1.5 and 2.0 percent of GDP in excises (the sum of all excises including alcohol, fuel, and tobacco), which is consistently lower than most of its peers. Armenia was the first country in the Eastern Europe, Caucasus, and Central Asia (EECCA) region to introduce environmental taxes and payments (ETPs) for the use of natural resources. Revenues from existing ETPs was 0.9 percent of GDP over 2018–2022, and the share is growing.

ix. **While Armenia's tax revenue is robust, its long-term tax buoyancy is lower than that of its peers.** The estimated lower-than-one tax buoyancy in Armenia suggests that tax revenues increase less than proportionately in response to an increase in GDP. In addition, results from the efficiency analysis suggest that the tax system in Armenia may be contributing to resource misallocation in the economy. For example, Armenia has a relatively high average tax wedge on labor for households with low wages in the formal market due to the combined effect of the personal income tax burden and the targeted social payment.⁴ On the other hand, Armenia offers a generous tax regime for microbusinesses (including sole proprietors), which creates a significant disincentive for formal labor.

x. **VAT collection in Armenia is generally low due to the low efficiency of VAT.** While Armenia's VAT rates are comparable to its peers, the country collects much lower VAT as a share of GDP. VAT collection is impacted by both revenues foregone from VAT tax expenditures (tax policy gap) and from tax avoidance and evasion (the compliance or administrative gap). The high VAT expenditures driven by tax policy are partly due to a high VAT threshold of AMD 115 million annual turnover (about USD 300,000), which is several times higher than its peers. This allows for a significant number of entities to operate under the simplified turnover regime. Exemptions of certain goods and service sectors, notably, the education, health, and agriculture sectors, also reduce the tax base. Overall, Armenia's VAT efficiency declined during the 2015–2019 period, and improved slightly in 2020, reaching 0.41 out of 1 (compared to an average of 0.6 among peers).

xi. **The three-tier tax regime (micro, turnover, and regular)⁵ and tax incentives within the regular regime contribute to large differences in the tax burden.** Different measures of the average effective tax paid reveal that it varies significantly by sector and firm size. The analysis shows that the trading and agriculture sectors are amongst the lowest-taxed, while real estate, mining, and financial services are amongst the highest-taxed. The average tax burden (defined as the tax liability on gross income declared by taxpayers) in 2022 was estimated to be 1.9 percent, which is at the lower end of the range of statutory tax rates within most turnover tax bands (for example, 5 percent for trading activities and 3.5 percent for

³ See Annex 1A for the definition of peers.

⁴ The targeted social payments (TSP) collected by budget and channeled to the funded pension individual accounts for the pension pillar ii participants.

⁵ The microbusiness regime covers the entities with turnover below AMD 24 million, with the exception of some specific activities. Entities with turnover above the micro threshold (AMD 24 million) and below AMD 115 million can register to be taxed under the turnover regime.

production activities).⁶ This suggests distortions due to disparities across capital asset types, economic sectors, and/or firm sizes, which result in resource misallocation in the economy.

xii. **There is also room to improve the progressivity of the tax system.** While the tax on formal income is regressive, the PIT appears to be progressive overall, mainly because of the impact of the micro tax regime exemptions and the large informal economy. The PIT system became more regressive due to a generous income tax refund on mortgage interest rates that was introduced in 2014. On the other hand, the recent property tax reform made it more progressive. The VAT is mildly regressive, while excise taxes are regressive, with the exception of fuel taxes.

xiii. **In terms of achieving sustainability goals, a higher carbon price can help lower emissions and support GDP growth as part of a broader policy package.** The 2021–2030 Nationally Determined Contribution under the Paris Agreement defines the broad parameters of the country's developmental plan. Sustainable growth is supported through an unconditional commitment to reducing domestic total greenhouse gas emissions (GHGs) to 40 percent below 1990 levels (by 2030). At USD 12 per metric ton of CO₂, Armenia's total carbon pricing (TCP), which measures the net effect of direct and indirect carbon prices, is relatively low compared to European countries and selected peers. The introduction of a carbon tax could help meet climate commitments while also increasing revenue collection in the medium term. The simplest and most economically efficient way of introducing this carbon tax is “upstream” in the energy supply chain, for example, importers of natural gas and oil products.

xiv. **The impacts from carbon taxes on GDP will depend largely on how the revenues are used.** A deficit-neutral reform scenario was run to simulate its potential impact. The scenario introduces a gradual increase in a carbon (CO₂) tax compared to the business-as-usual (BAU) baseline, with the carbon price rising to USD 30 per metric ton of CO₂ by 2040. This results in a tax-to-GDP increase of 0.62 percentage points. The revenue generated from this tax can be allocated across three main initiatives: (i) relieving the PIT burden for low-income earners; (ii) increasing public investment; and (iii) mitigating the impacts of higher carbon prices through general financial transfers to households. These simulations do not constitute a policy proposal but provide useful insights on how different policy mixes may impact the overall economy and the fiscal account. The model shows that the reform package reduces GHG emissions, fosters the formalization of the labor market, and can be beneficial for growth in the long term.

xv. **Armenia can improve the efficiency, equity, and sustainability of its tax system through a revenue-positive tax policy reform package.** This chapter provides a set of policy recommendations that aim to improve the tax system efficiency and its redistributive function while also supporting sustainable growth. The recommended package as a whole also aims to raise additional tax revenue by broadening the tax base over the medium term and substituting possible losses from the reduced PIT rate for the bottom 40 percent of income distribution with a more robust taxation of carbon emissions. The main recommendations are summarized below.

⁶ Turnover taxpayers are also allowed to deduct 4 percent for their expenses, but the final turnover payment cannot be less than the equivalent of 1.5 percent of turnover. In 2025, the main turnover tax rates will be raised and established at 10 and 9.5 percent for trade and production activities, respectively, with a minimum rate set at one percent.

Raise additional revenue in an efficient manner to carry out the government's ambitious plans

xvi. **To increase tax collection, the regular tax regime can be broadened and the tax expenditures in Armenia can be reduced.** Tax expenditures in Armenia are currently high. Joint analyses by the Ministry of Finance (MoF) and the International Monetary Fund (IMF) found that VAT expenditures account for the greatest share of tax expenditures and that they are, moreover, regressive. The analyses in this report show that the equity objectives of some of the VAT expenditures are much more effectively and efficiently served by expenditure measures. As a result, the report suggests rationalizing VAT expenditures by: (i) lowering the VAT threshold or narrowing the use of turnover tax regime, and (ii) removing selected VAT exemptions on specific goods and services. If a particular sector needs support, other types of programs or targeted measures can be provided.

Ensure fairness of the tax system

xvii. **Broadening the regular tax regime will help to reduce the differences in the tax burden among similar businesses and increase fairness in the tax system.** The MoF's 2024 Tax Plan already includes an objective to remove specific activities such as lotteries and notarial services from the turnover system. Moreover, amendments to the Tax Code draft that have been prepared by the MoF are set to be submitted to the National Assembly. These amendments propose phasing out all professional services with the skills to maintain bookkeeping from the turnover regime. These tax policy changes are consistent with best practice and are in line with one of the main policy directions of this report. Rationalizing income tax expenditures also needs to be prioritized. The income tax refund program on mortgages, for example, is both costly and regressive. This program is currently being phased out in Yerevan, and the government plans to completely phase it out in the rest of Armenia by January 1, 2029.⁷

xviii. **In addition to narrowing the coverage of the turnover regime, it is important to strengthen administrative measures.** This report finds evidence suggesting that the average effective tax burden (AETB) may already be higher in the turnover regime compared to the regular regime for most sectors. Recent research found that tackling non-compliance (mainly the underreporting of income) is critical to reducing taxpayer bunching below the turnover registration threshold. Together, these findings suggest that prioritizing compliance improvement within the turnover regime is more critical in the short term than increasing turnover tax rates. The government has already introduced some measures to strengthen the documentation in this tax regime and close non-compliance loopholes.

xix. **Avoiding special tax treatment of the corporate income tax (CIT) in specific sectors will increase the efficiency and equity of the tax system.** There are large disparities in the effective tax burden within the regular CIT regime that are driven by policy or compliance gaps.⁸ Differentiated tax treatment of specific sectors creates distortions in the market and generates more problems in the long term. For example, it negatively impacts firm competition by channeling resources from the economy to less efficient firms that may only survive in the marketplace because of advantageous tax treatment. This report therefore suggests: (i) closing policy and compliance gaps within the regular CIT regime, and (ii) retaining the CIT, avoiding special tax treatment of specific sectors and, if necessary, lowering the

⁷ After 2029, this incentive will still be available to communities on the national borders.

⁸ The effective burden is defined in this report as taxes paid as a share of profits and/or gross income, based on self-reported taxpayer data. The effective burden is different from the statutory burden, which is defined as what taxpayers should be paying based on the statutory tax rates in place. Section 1.3 discusses these concepts in greater detail.

statutory CIT rate for all sectors. The ongoing review of the special treatment of the CIT for the high-tech industry and start-ups is in-line with this report's recommendation.

xx. **Modernizing international tax rules to make them fully applicable to the digital economy and strengthening anti-tax avoidance rules are further means of improving the efficiency of the tax system.**

The digital economy is witnessing rapid growth and generating significant revenues. However, Armenia has not yet implemented the OECD VAT standards on the digital economy (including on e-services and low-value goods), which translates to forgone revenue from this source and results in an unlevel playing field between different sectors and firms. Income tax rules also need to be updated to better capture the digital economy. The report suggests: (i) modernizing VAT and CIT rules within the regular regime to ensure they apply to the digital economy, and (ii) strengthening anti-tax avoidance and other international tax rules to ensure that the base of the CIT and PIT is not eroded through aggressive tax planning and other forms of tax avoidance and evasion.

Improve the progressivity of the tax system

xxi. **Improving the progressivity of the income tax regime will also facilitate formalization of the labor force.**

Progressivity in the income tax can be improved by focusing on the bottom 40 percent of the income distribution. This will have the critical benefit of increasing formalization of the labor market. Simulations show that introducing a progressive rate schedule raises revenue and reduces the tax burden on the lowest-income deciles. However, introducing progressive tax brackets may lead to increased administrative costs. Given the good outcomes of Armenia's fiscal system on redistribution through expenditure policies, improving progressivity of the income tax regime could be attained by focusing on the bottom 40 percent without increasing rates on higher-income deciles. Lowering the bottom 40 percent's effective tax rate can be achieved by reduced rates, and/or by offering deductions and tax relief. For example, the bottom 40 percent may be permitted to reduce their tax liability by deducting a certain percentage equivalent of out-of-pocket health expenditure.

xxii. **Increasing passive income taxes will help to smooth the tax burden on different income sources.**

The reduced rates on passive income for a large share of the rental income bracket are regressive and distortive. The ongoing reform of the property tax to bring cadastral values closer to market values and strengthen the tax administration is expected to make the passive income taxation more progressive. The recently-introduced universal income declaration system of individuals will also help to improve income taxation. This report recommends taxing different income sources equally by raising passive income rates, or alternatively, by adopting a broader definition of income that includes both active and passive income.

Facilitate sustainable growth and reduce market distortions through an improved taxation system

xxiii. **Expanding Armenia's environmental taxation and carbon pricing will help Armenia reach its goal to become a low-carbon economy.**

Armenia's current environmental taxes do not generate a carbon price signal that is strong enough to accelerate the economy's transition to a low-carbon economy. It will not be sufficient for the country to rely on excises (an indirect carbon price). The report thus suggests introducing an explicit (direct) carbon price through an upstream tax and scaling up existing fossil fuel excises. While revenues generated from carbon pricing should not be earmarked, some revenue recycling can be used to provide support to the vulnerable who are affected by fuel price increases. This will incentivize efficient fossil fuel consumption while simultaneously ensuring that a green fiscal reform remains socially (and politically) acceptable. Other mitigation measures, for example, the implementation of a feebate mechanism in some sectors may be suitable and may increase support for the reform.

Improving the Equity and Allocative and Technical Efficiencies of Education Spending

xxiv. **While access to general education in Armenia is high and is evenly distributed across various regions, genders, and economic groups, this is not the case for pre-primary and higher education.** About 91 percent of children that fall into the primary- or middle-school age group were enrolled in 2022. However, the limited access to high-quality pre-primary education means that most students start primary school without the necessary basic skills, which has a negative impact on their learning outcomes. Access to higher education in Armenia is another area that requires attention as the enrollment rate is only 53 percent, which is notably lower than the average 60 percent in peer countries. Additionally, private tutoring remains inaccessible to the very poor, contributing to inequities in access to higher education. Vocational education and training (VET) in Armenia also remains underdeveloped, with only 9 percent of secondary students enrolled in vocational programs in 2022 compared to an average 17 percent in peer countries.

xxv. **Despite high enrollment rates in general education within Armenia, there is room to improve learning outcomes.** Educational outcomes have improved over the last decade, as evidenced by Armenia's performance in the 2019 Trends in International Mathematics and Science Study (TIMSS), with scores nearing the international average of 500 in mathematics (498) and science (466). However, there is a notable learning gap of 3.3 years when one compares the total 11.3 years in the education system with the estimated 8 learning-adjusted years of schooling (LAYS). This is below the average 8.9 LAYS in peer countries. Several factors may contribute to this learning gap, which may be related to school efficiency on both the extensive margin (e.g., school size and urban vs. rural location) and the intensive margin (e.g., the quality of principal and teacher inputs). Armenian educators also lack consistent access to high-quality professional development, impacting their performance, motivation, effort, and peer relationships, which, in turn, affects learning outcomes. Overall, the education system fails to deliver the modern skills required by emerging industries, such as analytical thinking, problem-solving, and the soft skills and practical skills demanded by employers.

xxvi. **Armenia's education expenditure was, on average, around 2.5 percent of GDP over the 2018–2022 period and predominantly supported general education, which falls under the responsibility of the state budget.** There is a distinct division of responsibilities in educational funding between the state and local governments in Armenia. The state budget is the predominate source for general education financing. Sixty-six percent of the state education budget goes to general education, while vocational and higher education respectively receive around 7 to 8 percent of the total state education budget. Community budgets, on the other hand, play a significant role in funding pre-primary education and extracurricular education. Out of the total community education budget, 65.3 percent is allocated to pre-primary education and 26.3 percent to extracurricular education.

xxvii. **Although most educational institutions' expenditures are directed towards staff compensation, teachers' salaries are lower than the national average salary.** In 2022, staff compensation accounted for 73 percent of the total expenditure in educational institutions. This share has been declining in recent years, but remains above the average of its peers (71 percent). Despite this, teacher salaries in Armenia are not only below the average salary of workers with similar education levels, but are also lower than the national average salary. In 2021, teachers in Armenia ranked among the lowest-paid professionals, earning only 75 percent of the average wage of tertiary-educated workers. In 2021, the government introduced a program increasing teachers' salaries to match or surpass the current average salary.

However, the raise only applied to teachers who successfully passed a voluntary certification, and after three years of implementation, only 17 percent of teachers in general education received salary increases.

xxviii. **Capital expenditures in the education budget have traditionally been low, but have increased in recent years as a result of the government’s ambitious Five-Year Plan (2021–2026).** Capital expenditures as a share of the total education budget increased from between 4 and 6 percent in 2019–2021 to 9 percent in 2022, approaching that of its peers (11 percent). Currently, only 40 percent of general schools in Armenia have adequate building conditions and 27 percent require ongoing maintenance. The remaining 33 percent require significant renovations, and most are in areas of high seismic risk. To address the existing infrastructure challenges, the government’s five-year program (2021–2026) included a plan to build or renovate at least 500 kindergartens and 300 schools. The consolidation of around 70 small schools was also included in the program, with the goal of providing new schools with the necessary facilities and equipment by 2026. With respect to higher education, the government’s Education Strategy 2030 envisioned the establishment of an academic city consisting of campus clusters designed to foster collaboration among higher educational institutions, scientific organizations, and production entities, the details of this program is under discussion.

xxix. **While lower levels of education in Armenia have a higher unit cost compared to the higher levels of education, there is insufficient room for resource reallocation.** In contrast with more developed education systems, Armenia’s education unit costs are lower in the higher levels of education. The pre-primary unit cost in Armenia is 1.6 times greater than that of general education, while the unit cost in higher education is only 70 percent that of general education. Moreover, the skills development sector in the vocational system has experienced reductions in education spending, despite being an underdeveloped sector. These factors leave limited room for the reallocation of resources across different levels of education from the state budget in the short term.

xxx. **Armenia can improve its educational outcomes even at the current level of expenditures by enhancing spending efficiency.** A cross-country data envelope analysis (DEA) suggests that while the efficiency of public spending on education in Armenia is better than that of its regional neighbors, it remains below the efficiency frontier. Armenia could increase its learning-adjusted years of schooling by 14 percent with its current expenditure levels, which would translate to a substantial increase in educational outcomes. After accounting for school size, location, and per student expenditures, the results show that the average school in Armenia has an efficiency score of 0.53, while schools in the 20th and 80th percentile have efficiency scores of 0.29 and 0.75, respectively. This large variation in technical efficiency within Armenia suggests that improvements can be achieved with the current level of school expenditures.

xxxi. **The quality of teacher and principal inputs are key to enhancing student learning outcomes.** Several indices were constructed to explore whether the quality of teacher and principal inputs was related to school efficiency. These indices were based on self-reported responses of teachers and principals in selected schools in Tavush, Lori, Shirak, and Yerevan. The exercise shows that 66 percent of the most efficient schools (top 20 percent) scored above the average in terms of the quality of school management and 68 percent scored above the average in terms of the quality of teachers. In comparison, only 49 and 61 percent of the least efficient schools (bottom 20 percent) scored above the average in terms of the quality of school management and the quality of teachers, respectively.

xxxii. **Overall, spending in education in Armenia is progressive, particularly at the lower levels of education.** The distribution of public expenditure in education by income deciles shows that a larger share is allocated to lower-income groups at the pre-primary, primary, and lower-secondary education levels. In contrast, spending is spread more evenly across income deciles at the middle, vocational, and higher education levels, with a slight skew towards higher-income groups. The analyses also show that spending on primary and lower secondary education can reduce income inequality, whereas higher education spending may increase it due to benefits favoring higher income levels.

xxxiii. **Access to education in Armenia is inequitable, particularly in pre-primary, upper secondary, and higher education.** Among the poor population, only 43.4 percent attend pre-primary school and only 17.2 percent have access to higher education. This has resulted in significant disparities in academic achievement among various student groups, with notable distinctions between the wealthiest and most economically disadvantaged quintiles. The location of schools is another factor correlated with inequities in access. In rural areas, only 42 percent of children have access to pre-primary education and only 26.7 percent have access to higher education. This highlights the need for targeted interventions to address educational inequalities that result from poverty and the rural-urban divide. With respect to gender, female students show higher enrollment rates in pre-primary, secondary, and higher education.

xxxiv. **A summary of the areas of the education sector which need improvement and suggested policy recommendations is presented below.**

Improve the coverage and effectiveness of pre-primary education

xxxv. **Pre-primary education coverage and systemic inefficiencies should be addressed.** As discussed, the enrollment and access to pre-primary education is relatively low and inequitable, particularly in certain geographical areas. There are different reasons for this low performance, including the perceived low value of pre-primary school among parents and lack of available institutions, which are financed by local government. While progress in expanding the pre-primary education network with state support is ongoing, challenges persist, particularly regarding maintenance costs. To improve pre-primary education performance, this report suggests the following in the short term: (i) implementing low-cost strategies to diffuse information among families about the benefits of investing in pre-primary education; (ii) encouraging private providers in the delivery of pre-primary programs; (iii) exploring alternative models for rapidly establishing pre-primary institutions at a low-cost and in collaboration with local communities; (iv) implementing regulations to standardize the quality of pre-primary education facilities. In the medium term, there are three potential options to consider for improving access to pre-primary education, each with its potential benefits and drawbacks: (i) making at least one year of pre-primary education compulsory, (ii) setting up incentives for communities to allocate more of their unconditional grants towards pre-primary education and (iii) exploring the feasibility of directing earmarked support to communities for pre-school education. The report also suggests considering the establishment of a department/division dedicated to pre-primary education within the MoECS to help design pre-primary education policies and ensure the quality of education.

Address inefficiencies in the general education system

xxxvi. **The sustainable implementation of the new curriculum reform will help to enhance learning outcomes.** Armenia's STEM curriculum reform, initiated in 2018, aims to transition towards a competency-based system, focusing on student-centered, inquiry-based, and outcome-oriented teaching, learning, and assessment. With financial support from the European Union, the World Bank partnered

with the Ministry of Education, Science, Culture, and Sport of Armenia (MoESCS) in designing a new STEM curriculum for grades 1 to 12 and piloting its adoption in selected grades in Tavush in the first year of piloting. A robust evaluation of the pilot in the Tavush marz showed a positive and sizeable impact on student achievement in math and science, equivalent to an additional six months of learning over the two years of implementation. However, the evaluation also showed that the second year of implementation, which was completed with significantly less resources, registered a 30 percent reduction in the impact of the new curriculum on learning outcomes. This suggests that to maximize the learning gains from the curriculum reform, the government needs to ensure sufficient funds for adequate implementation over the next four to five years.

xxxvii. **Improvements in the national student assessment system and school funding formula need to address the education outcome challenges.** The current assessment system should be modified to provide sufficient data to monitor school and individual performances and to inform the policy-making process. In this regard, this report suggests developing a national assessment system and educational management information systems (EMIS) to strengthen the evaluation and accountability process, and to provide the data necessary for supporting a performance-based model and targeting interventions for improvement. Additionally, the current input-based funding formula, which relies on class numbers, fails to incentivize enhancements in school-level learning. The approach should shift the focus from merely counting inputs, such as the number of classes, to rewarding measurable educational achievements. The report suggests introducing performance-based incentives in school funding formulas, which will significantly motivate schools to enhance learning outcomes.

xxxviii. **The introduction of school networks will help address some of the inefficiencies in small schools.** The report shows that small schools are associated with lower outcomes and inefficient spending. Nearly one third of schools in Armenia are considered small (100 students or less). These small schools enroll a mere 5.3 percent of the total number of students in Armenia, but employ 16.4 percent of the total number of teachers in Armenia. This report suggests constructing a network of schools that serves two or three communities, by taking into account the delineation of functional areas within Armenia for policy purposes. This strategic approach aims to minimize the potential increase in travel time for students and to ensure a more efficient and accessible educational environment. Improved public school transportation system for networks of schools should also be considered.

xxxix. **Improving teachers' salaries and investing in the professional development of teachers will help make the teaching profession more attractive.** The number of individuals entering the teaching profession is significantly smaller than the number of those leaving the system. This pattern is largely explained by a large proportion of teachers reaching retirement age. Additionally, teacher salaries are low, and the current incentives appear insufficient. Recently, minimum salary rates have been introduced and the existing attestation process aims to increase teacher salaries to the average salary of the economy. To ensure high-quality teaching, it is also essential to: (i) emphasize the professional development of teachers, including initial training, induction, deployment, and ongoing support and supervision, and (ii) consider adjusting the minimum salary for teachers every year to ensure that teacher salaries do not fall behind those of other professionals and reflect changes in the cost of living.

Develop vocational education and address the skills mismatch in higher education

xl. **Enrollment in both vocational and higher education can be expanded through targeted interventions, improved financial aid programs, and ensuring the connection with labor market needs.** Vocational education has been underdeveloped and is characterized by low enrollment rates, particularly

in rural areas. At the same time, the budget for scholarships is decreasing, making it less attractive and creating supply-related constraints. To increase the attractiveness in vocational programs and to supplement educational resources and funding, this report suggests providing targeted interventions and collaborating with non-governmental organizations (NGOs) and the private sector. Financial aid programs should also be expanded and enhanced to increase access to higher education among students from low-income backgrounds, and priority field programs should be updated to maintain their relevance in the labor market and ensure they are aligned with national priorities.

xli. **Population demographic trends provide an opportunity to reallocate resources from the general education sector to skills development in vocational and higher education.** In the medium to long term, as the population of primary education-age children decreases and the demand for upper secondary and higher education increases, the freed resources may be strategically redirected towards expanding access to vocational training and higher education programs.

Streamline the governance and oversight of education sector

xlii. **Streamlining the fragmented funding and governance mechanisms within the education sector will help to increase the spending efficiencies in the sector.** Multiple authorities (including the MoESCS, the Ministry of Territorial Administration and Infrastructure (MoTAI), regional governments, and the Yerevan Municipality) are involved in the governance, financing, and oversight of general education. This presents challenges to the universal implementation of educational policies in Armenia, leading to inconsistencies in achieving the universal implementation of sectoral policies. Moreover, the financing of pre-primary educational institutions relies directly on the budget of communities, and thus, it directly depends on the financial and service delivery capabilities of the community. To streamline the governance structure for education financing and oversight in the medium term, this report recommends: (i) defining clear roles, responsibilities, oversight, and accountability of each level of governmental agencies, and (ii) improving the oversight process by creating clear and consistent reporting procedures for all education institutions—pre-primary, general, vocational, higher education—so that financial data is easily accessible to all levels of government.

The key recommendations of the report are summarized in Table ES.2.

Table ES.2. PFR II Recommendations

Policy Area	Recommendation
<i>Chapter 1: Improving the Efficiency, Effectiveness, and Equity of the Tax System in Armenia</i>	
<i>Raising additional revenues in an efficient manner</i>	<ul style="list-style-type: none"> • Rationalize VAT exemptions and reduce the VAT threshold.
<i>Ensuring firms are taxed fairly</i>	<ul style="list-style-type: none"> • Broaden the regular regime. • Prioritize compliance improvements within the turnover regime. • Close policy and compliance gaps within the regular CIT regime and avoid special treatment of specific sectors. • Close opportunities for tax evasion and avoidance for large firms and the digital economy by strengthening international tax rules.
<i>Improving the progressivity of the tax system</i>	<ul style="list-style-type: none"> • Introduce progressivity in the PIT system focused on the bottom 40 percent.

	<ul style="list-style-type: none"> • Raise the income tax rates on passive income (and remove exemptions on capital gains). • Ensure full implementation of the ongoing property tax reform.
<i>Facilitating sustainable growth</i>	<ul style="list-style-type: none"> • Consider introducing an explicit carbon price through an upstream tax and scale up the existing fossil fuel excises. • Carbon pricing revenues should not be earmarked, but some revenue recycling can help provide support to the vulnerable.
Chapter 2: Improving Equity and the Allocative and Technical Efficiencies of Education Spending	
<i>Strengthening governance and oversight</i>	<ul style="list-style-type: none"> • Empower regional governments to oversee education funds. • Streamline the governance structure and clearly define the roles, responsibilities, oversight, and accountability for each level of government.
<i>Increasing access and equity in pre-primary education</i>	<ul style="list-style-type: none"> • Implement low-cost strategies to raise awareness about the benefits of pre-primary education. • Secure financing, incentivize communities to allocate more towards pre-primary education, promote private sector participation, and enhance policy support. • Standardize the quality of education facilities, and consider the establishment of a unit dedicated to pre-primary education within MoESCS.
<i>Addressing inefficiencies in general education</i>	<ul style="list-style-type: none"> • Maximize learning gains from the new competency-based curriculum reform by ensuring and adequately financing its implementation over the next four to five years. • Develop a national assessment system and education management information system (EMIS) to strengthen the accountability process. • Introduce performance-based incentives in school funding formulas to motivate the enhancement of learning outcomes. • Consider the consolidation of schools and improve public transportation for students. • Emphasize the professional development of teachers and consider an annual adjustment of the minimum salary for teachers.
<i>Enhancing resources and funding for vocational education</i>	<ul style="list-style-type: none"> • Consider collaboration with NGOs and the private sector. • Provide targeted interventions to increase enrollment and attractiveness of vocational programs.
<i>Addressing mismatches between the higher education system and labor market</i>	<ul style="list-style-type: none"> • Regularly update and align higher education programs with labor market needs and national priorities. • Increase financing with a focus on performance-based mechanisms and expand financial aid for low-income students.

Introduction

1. **Armenia has made impressive gains in income per capita in the last few years, although it continues to face important challenges for sustainable and inclusive growth.** Armenia achieved upper-middle income status in 2018 and more than doubled GDP per capita during 2017–2023, reaching USD 8170 in 2023 (at current prices). The economy has also demonstrated resilience to geopolitical and economic shocks in recent years. Nevertheless, Armenia faces many challenges for sustainable and inclusive growth. As a small, open economy, Armenia heavily relies on export-led growth and lacks diversification in terms of its trade partners and export products, exacerbating volatility. Armenia also faces challenges regarding job creation and the quality of human capital. Armenia also needs to strengthen its resilience to fragility and conflict, climate change, and environmental and natural disasters, which represent additional sources of risk. Cross-cutting constraints towards achieving inclusive and sustainable growth include governance bottlenecks, institutional capacity, and lack of data and evidence-based decision making.⁹

2. **Armenia has a track record of implementing sound and prudent fiscal policies.** Between 2014 and 2019, the country's tax-to-GDP ratio fluctuated around a five-year average of 21.2 percent, and has reached an average of 23.5 percent over the last three years (2021–2023). The observed improvement in the tax-to-GDP ratio was supported by a tax and customs policy and administrative reforms, and improvements in formalizing the labor market. Together, these efforts have brought Armenia's tax-to-GDP ratio closer to those of countries in the region as well as upper-middle-income country (UMIC) peers. Public spending levels have remained prudent and below regional and UMIC averages with an increase in capital expenditure as share of GDP to around 4.8 percent on average in the last three years (2021–2023) from 3.3 percent during 2014–2020. Deficits have stabilized to around 3.5 percent of GDP over the last decade as a result of a strong commitment to prudent fiscal policy and an updated fiscal rule in 2017, and despite shocks. This is also reflected in a sustainable debt dynamic with government debt standing at 48.1 percent of GDP at end-2023. In line with recent the Medium-Term Public Debt Strategies, the government has also been working towards increasing the share of domestic debt as a percentage of total debt. While the share of external debt has decreased from approximately 90 percent in the early 2000s to around 53 percent end-2023, it still remains a source of vulnerability.¹⁰

3. **Fiscal policy has contributed to reducing inequality in Armenia, driven by the progressivity of pensions and direct transfers.** Applying the Commitment to Equity (CEQ) methodology using 2021 data reveals that the net overall effect of taxes and public transfers reduces inequality. Most of the inequality reduction comes from in-kind benefits (public health and education). When comparing the 2021 results with those of the previous fiscal incidence analysis of 2017, it is possible to observe that the progressivity of fiscal policy has increased in recent years, with the poorest decile of the population being the only net cash beneficiary of fiscal policy (see [Box 2](#)).

⁹ Armenia. The Second Systematic Country Diagnostic. Beyond Boundaries: Unlocking Potential for a Sustainable Tomorrow. World Bank. 2024.

¹⁰ The strong appreciation of the Armenian dram in 2022–23 also helped to reduce the total share of external debt.

Box 2. Updated Fiscal Incidence Analysis – 2021

This box summarizes the fiscal incidence analysis based on 2021 data and compares the results with the previous fiscal incidence analysis from 2017.

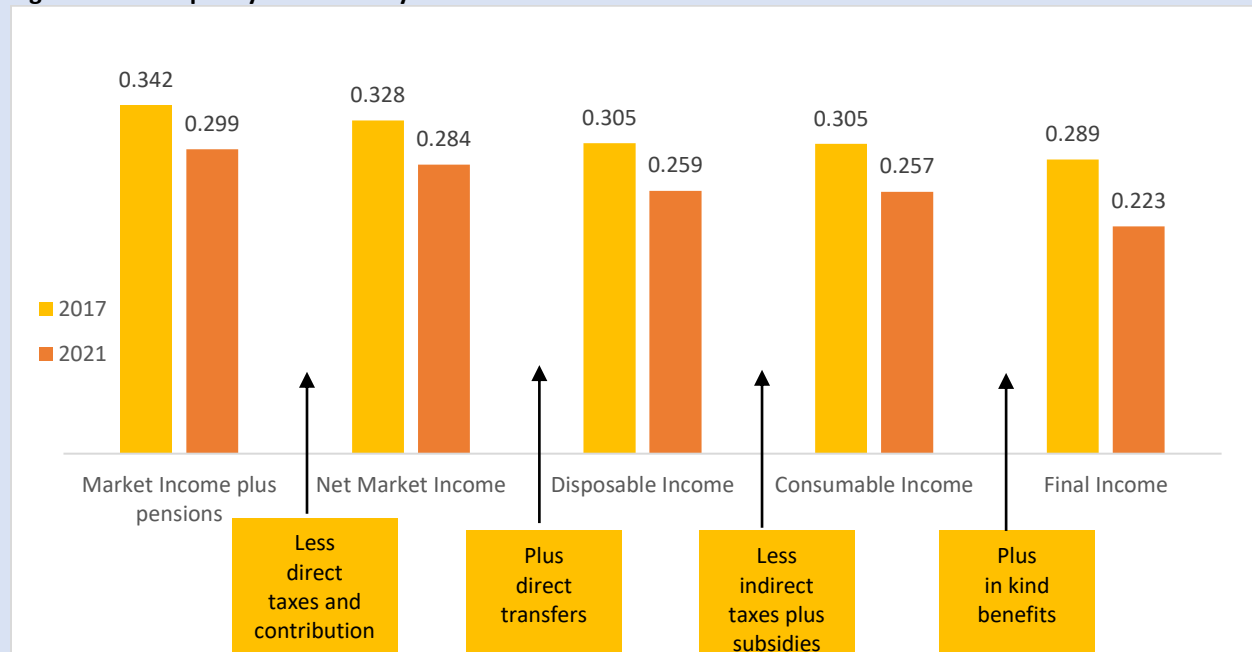
Fiscal policy in Armenia continues to be progressive and to improve the Gini index.^a Applying the CEQ methodology using 2021 data reveals that the net overall effect of taxes and public transfers reduces inequality. Inequality is estimated to fall by 8 Gini points from 0.30 (at market income plus pensions) to 0.22 (at final income) on the Gini coefficient (Figure B2.1).^b

Most of the inequality reduction comes from in-kind benefits (public health and education). Comparing final income versus consumable income shows that benefits in the form of public free education and public health services reduce the Gini coefficient of inequality by 3 Gini points. The second contributor to inequality reduction was social protection direct transfers, including family benefits.

Results from 2021 show that the progressivity of fiscal policy has increased in recent years, compared to a similar analysis from 2017. This can be attributed to a doubling of the contribution from in-kind benefits to the reduction of inequality and to a larger impact from direct social transfers. In contrast, the impact of direct and indirect taxes on the Gini coefficient remained unchanged compared with the 2017 CEQ analysis.

Only the poorest decile of the population is a net cash beneficiary of fiscal policy. Considering the combined impact of taxes and spending on the net cash position, only the first decile of the population (with the lowest income) is a net cash beneficiary of the fiscal system. This decile increases its market income (income received before fiscal policy interventions) plus pensions by approximately 40 percent. When considering health and education, the poorest four deciles are net beneficiaries.

Figure B2.1. Inequality Measured by the Gini Coefficient



Source: WB staff analysis, based on ILCS 2021 and fiscal data.

^a Progressivity and regressivity are measured by: (i) the Kakwani index and (ii) marginal contributions. Marginal contributions depend both on the size and progressivity of fiscal interventions.

^b The Gini coefficient is on a scale of 0 to 1, where a lower coefficient means more equality.

4. **The Armenia Public Finance Review published by the World Bank in 2023 (PFR I) assessed the sustainability of public finances, as well as spending efficiency in infrastructure, healthcare, and social protection.**¹¹ PER 2023 found the fiscal policy to be reasonably counter-cyclical and progressive. However, its impact on stimulating growth has been limited and improvements could be made in spending efficiency. The review also found that although public finances remain sustainable, the ambitious plans to increase public spending may exhaust fiscal space. It is worth noting that the social support needed for the recent influx of refugees has led to increased deficits, which could impact debt dynamics if compounded by additional shocks. [Table 1](#) summarizes the PER 2023 recommendations in improving the efficiency in capital, social, and health spending. It also shows the government’s progress and plans in implementing the policy recommendations.

5. **PER 2023 also highlighted the need to mobilize additional resources and improve the quality of taxation in order to address the government’s priorities and commitments.** Despite significant improvements in tax policy and administration over the last decade, and ongoing efforts, there is room to improve the efficiency, fairness, and progressivity of the tax system. For example, VAT and capital income tax collection remain below potential, tax expenditures are high and create distortions in the economy, environmental taxes have low effectiveness, and there are still gaps in compliance despite recent improvements.

6. **This public finance review (PFR) complements PFR I (2023) by analyzing the efficiency of the tax system and suggesting ways in which fiscal space could be increased** while both implementing the government’s Five-Year Plan and maintaining an effective tax system. Chapter one evaluates: (i) the extent to which the tax system is effective in raising revenue, and (ii) whether other tax system objectives are met (e.g., redistributing the national income and helping the government address market failures such as the mispricing of carbon).

7. **This PFR also builds on PFR I by extending the analysis of human capital with a particular focus on assessing spending in the education sector.** The quality of education, one of the main pillars of human capital development, has improved in Armenia over the last 25 years, however, progress can still be made. For example, while the actual number of years of schooling in the country is, on average, 11.3 years, when adjusted for learning, this number drops to only 8 years of schooling. Additionally, Armenia’s education expenditure is currently around 2.5 percent of GDP (2018–2022 average), which is relatively low compared to its peers. Chapter two evaluates the efficiency and equity of spending in the education sector.

¹¹ World Bank, 2023.

Table 1. PFR I (2023) Policy Recommendations and Government Progress and Plans

PER 2023 Recommendations	Progress and Plans (as of April 2024)
<i>Improving the Efficiency of Capital Spending</i>	
<p>Strengthen strategic planning and budgeting of capital expenditures, including building a prioritized pipeline of appraised and costed projects and costing sector strategies</p>	<ul style="list-style-type: none"> The World Bank (WB) team is providing technical assistance on strategic planning with the Prime Minister’s office and other concerned government stakeholders. The proposed reform actions will then be presented to the Prime Minister for operationalization.
<p>Improve project monitoring and address key project implementation constraints, including introducing a digital register of capital projects with identifying codes, and focusing on the analysis of the largest stalled projects</p>	<ul style="list-style-type: none"> A whole-of-government Monitoring and Evaluation (M&E) framework will be implemented with the support of an IT system. The World Bank team will support this activity under the ongoing Fourth Public Sector Modernization Project (PSMP4), which will be implemented by the Prime Minister’s office (PMO) from June 2024 to May 2025. A newly established Performance Evaluation Unit within the Ministry of Finance (MoF) will also undertake periodic expenditure reviews. There is a mutual understanding that the PMO and MoF will work in close coordination to implement the whole-of-government M&E framework. MoF plans to proceed with the implementation of an Integrated Financial Management Information System.
<p>Improve data on capital spending to enable evidence-based decision making, including collecting data on maintenance spending, updating asset registries, and improving reporting on public capital expenditure execution</p>	<ul style="list-style-type: none"> In the context of Government Financial Management Information System reforms, MoF is undertaking steps for a better information base for planning and managing domestically financed capital expenditures and for improving the reporting of capital expenditure execution.
<i>Improving the Efficiency and Effectiveness of Social Protection Spending</i>	
<p>Pensions: Implement pension reforms, which include options to ensure that minimum pension increases do not disincentivize labor market participation, and progressively phase out government contributions to Pillar 2</p>	<ul style="list-style-type: none"> The basic pension increased to AMD 36,000 and exceeds the minimum food basket (AMD 32,500). To avoid disincentivizing formal participation in the labor market, the labor pension will increase to the level of the consumer basket (estimated to be AMD 70,000) by 2026. To maintain a sustainable pension system, many different scenarios are under discussion for a gradual phasing out of government contributions to the funded Pillar.
<p>Social Assistance Programs: Improve social assistance (SA) by rolling out the new vulnerability assessment system for targeting benefits, invest in information systems, and rationalize less cost-effective SA benefits</p>	<ul style="list-style-type: none"> The Vulnerability Assessment System (VAS) is ready as it was piloted in six territorial centers, and lessons have been incorporated to the overall mechanism. It was planned that the new system would start functioning in early 2024, however the full implementation has been delayed due to the refugee crisis in September 2023. To improve the investment system, a new Application Management System (AMS) has been developed based on interoperability with other

	government databases and information systems. The AMS will be operational when VAS is launched.
<p>Active Labor Market Measures (ALMM): Improve the efficiency of labor market measures by prioritizing target groups, consolidating services in a limited number of flagship programs, and improving the monitoring of results</p>	<ul style="list-style-type: none"> • The Employment Strategy has been developed and it will be approved in the third quarter of 2024. It will, among other things, define priority target groups and delineate ALMM. • To digitize and standardize data records in ALMMs, the eWork program has been launched in May 2024. Capacity building activities are planned for the staff of the public employment service.
Improving the Efficiency and Equity of Health Spending	
<p>Ensure that the Universal Health Insurance (UHI) reform rollout is preceded by a clear understanding of the operational details and a careful estimate of the reform cost and its financing arrangements</p> <p>Consider a gradual increase in the public health budget in line with the available fiscal space and consider merging state funding for different services</p>	<ul style="list-style-type: none"> • The draft Universal Health Insurance (UHI) Law with all operational details is currently under active discussion in government. Actuarial costing for the phased UHI implementation is in process. • The latest medium-term expenditure framework (MTEF 2024–2026) envisaged a gradual increase in the annual government budget for health by 0.6 percentage points of GDP per year through 2026. Nonetheless, this is still significantly below the initial costing of the reform. The discussions to finalize the UHI benefit package and financing are ongoing between MoF and the Ministry of Health (MoH) to fit it in the available fiscal space.
<p>Move towards more strategic purchasing by establishing a single strategic purchaser for state-funded care, with mechanisms to ensure accountability, and institute a mechanism to govern the revision of the benefits package, in a systematic and consultative manner</p>	<ul style="list-style-type: none"> • The draft Universal Health Insurance (UHI) Law, currently under active discussion in government, envisaged a single-payer model through the establishment of an independent public purchasing entity (IPPE)/National Health Insurance Fund (NHIF), which will be autonomous from the Ministry of Health. • The draft UHI law also designed a system of regularly reviewing and revisiting the Basic Benefit Package. However, its full implementation requires significant technical assistance and capacity building.
<p>Implement the service delivery and financing reforms in primary health care (PHC) facilities. Implement payment reforms to reward quality PHC services from a financing perspective</p>	<ul style="list-style-type: none"> • To modernize the medical equipment and improve the skills of health care providers, the government started to implement term licensing for both medical equipment and care providers. • To motivate PHC providers to promote preventive care and pre-hospitalization check-ups, the MoH introduced additional performance-based payments. • The comprehensive periodical review of the reimbursement in PHC envisaged in the UHI is considered one of the main functions of the IPPE/NHIF.
<p>Introduce pharmaceutical policies to reduce medicine prices, including centralizing procurement of commonly purchased medicines and medical supplies, using external reference pricing and implementing prescribing budgets</p>	<ul style="list-style-type: none"> • The practice for certain medicines to be procured centrally is already in place. These include medicines for 21 types of diseases, such as tuberculosis, mental illnesses, diabetes, etc. Approximately 65 to 70 different generics are being procured centrally by MoH on a 15-month cycle to avoid stockouts at year end.

	<ul style="list-style-type: none">• MoH plans to promote the use of the e-prescription system and adopt reference pricing to reduce the prices of medicines. MoH increasingly prioritizes reference pricing compared to centralized procurement, because reference pricing is more suitable given the scope of UHI for outpatient medicines in particular.
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***Chapter 1: Improving the Effectiveness,
Efficiency, and Equity of the Tax System***

Chapter 1 Improving the Effectiveness, Efficiency, and Equity of the Tax System

Section 1.1 Introduction

8. **Armenia’s level of tax collection is comparable with peers and the government has plans to both increase the tax-to-GDP ratio further and to improve the *quality* of the tax system.** Thanks to tax policy and administration reforms, revenue collection increased by around 2 percentage points of GDP to reach an average of around 23.5 percent over the last three years (2021–2023) from 21.2 percent average during 2014–2019. The 2021–2026 Government Five-Year Plan aims to: (i) increase the tax-to-GDP ratio to reach “at least 25 percent” by 2026, and (ii) leverage the tax system to support inclusive and sustainable growth more effectively by emphasizing the importance of tax policy “to create sound preconditions for export and long-term economic growth, for redistribution of public goods, and for fostering fiscal stability.” Additionally, the 2021–2030 Nationally Determined Contribution under the Paris Agreement defines the broad parameters of the country’s developmental plan, ensuring sustainability through the unconditional commitment to reducing domestic total greenhouse gas emissions (GHGs) by 40 percent below 1990 levels by 2030. To meet these ambitious objectives, the *quality* of tax policy is critical.

9. **This chapter undertakes a diagnostic assessment of tax policy in Armenia and identifies reforms that could help the authorities improve the tax system to meet their fiscal and economic objectives.** The chapter presents a diagnostic of the tax system, relative to standard tax policy principles and focuses on assessing the quality of tax system, while also considering ways of raising the potential tax collection. The rest of the chapter is organized into six sections. Section 1.2 provides an overview of the tax system, including a summary of key features of the main taxes and revenue collection trends. Section 1.3 tackles efficiency considerations, investigating tax buoyancy, tax gaps, and the extent to which the tax system can minimize distortions and facilitate formalization of the economy. Section 1.4 analyzes the tax system’s impact on progressivity, assessing distributional aspects within mainstream taxes. Section 1.5 looks at the tax system’s role in tackling negative externalities from CO₂ pollution as part of its role in supporting longer-term sustainable growth. Section 1.6 models the general equilibrium effects of a policy reform package that emerges from the previous sections. Section 1.7 concludes with a summary of policy recommendations, in particular to address the following questions: (i) how can additional revenue be raised in an efficient manner?; (ii) how can the fairness and progressivity of the system be enhanced?; and (iii) how can tax policy facilitate the sustainable growth?

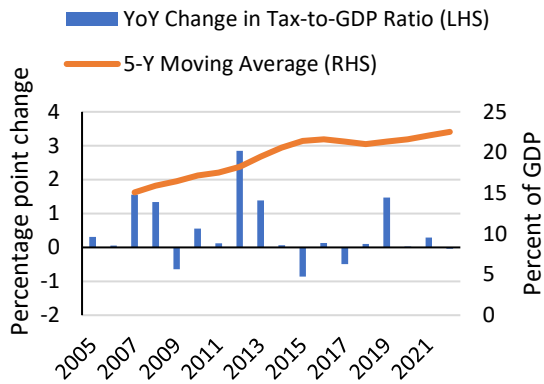
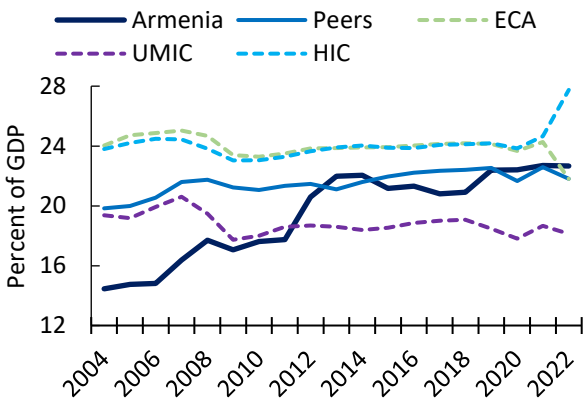
Section 1.2 Tax System Overview

1.2.1 Tax Revenue Trends

10. **Armenia has made steady progress in raising its tax-to-GDP ratio since 2007 and has maintained a stable collection of taxes in the face of recent economic shocks.** In 2022, Armenia’s tax-to-GDP ratio of 22.7 percent was higher than the average of upper-middle-income countries (UMICs), similar to the average of peers, and lower than the regional average of Europe and Central Asia (ECA) and the average

of high-income countries (HICs) (Figure 1).¹² Armenia’s tax-to-GDP ratio saw very strong growth over the 2007–2013 period, increasing by a total of 7.2 percentage points despite a brief drop in the aftermath of the 2008 global financial crisis (Figure 2). The increase in tax collection in 2007 and 2008 was due to: (i) a sharp increase in VAT supported by high economic growth and improvements in tax administration, and (ii) the continued accumulation of tax credits (advance tax collection). After fluctuating around a 5-year moving average of 21.2 percent of GDP between 2014–2019,¹³ Armenia’s tax-to-GDP has inched upwards to an average of 23.5 percent during in the last three years (2021–2023). This trend contrasts with those of most if its peer countries where the tax-to-GDP ratio was negatively impacted by the COVID-19 crisis and Russia’s invasion of Ukraine.¹⁴

Figure 1. Tax-to-GDP Ratio in Armenia Compared to Other Countries **Figure 2. Tax-to-GDP Ratio Trend in Armenia**



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFM) and IMF (GFS) data for other countries.
Note: See Annex 1A for more on the definition of peers and assumptions.

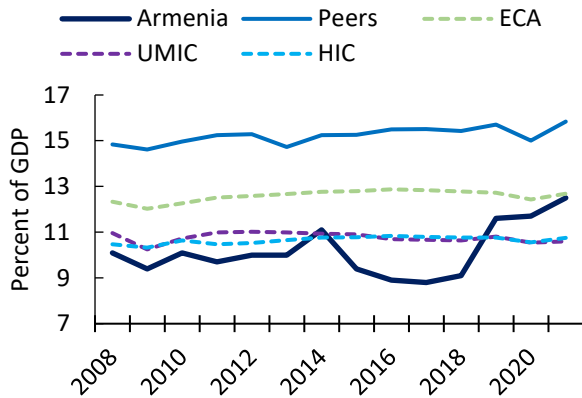
Source: WB staff analysis based on Armenia MoF data.
Note: The blue bars represent year-on-year changes in the tax-to-GDP ratio, measured in the left-hand-side (LHS) axis. The orange line represents a 5-year moving average, measured in the right-hand-side (RHS) axis.

11. Compared to its peers, Armenia collects less from taxes on indirect taxes and more from direct taxes. On average, Armenia collects lower revenue from indirect taxes compared to all of its peers, but collects similarly to the average level in ECA, and higher than averages for UMIC and HIC (Figure 3). Indirect taxes refer to the sum of revenue from general goods and services taxes (in most of the countries in the chart, this is the value added tax [VAT]) and excises. In contrast, Armenia collects much more from income taxes than most of its peers (Figure 4). Income taxes refer to the sum of revenue from taxes on business,

¹² See Annex 1A for background on benchmarking and definition of peers. The average for HICs is constructed with countries that are classified as HIC by the World Bank (WB) but excludes highly resource dependent HICs (Oman, Kuwait, Qatar, and Saudi Arabia).
¹³ The tax-to-GDP ratio also increased as a result of accumulated stock of tax credits (in particular, VAT credits) amounting AMD 275 billion (4.9 percent of GDP) at the end of 2017. The accumulation of these tax credits was partly due to legislative arrangements and partly due to advanced cash collection of taxes made to meet the tax revenue plans. The new tax code, which entered into force in January 2018, introduced a new, unified account within the treasury to enable it to receive the tax cash collections, net-out the VAT refund, and channel the taxes which actually accrued in the reporting period to the state budget.
¹⁴ This was partly explained by government supported programs during COVID-19, some of which may have supported formalization of the economy (e.g., a mortgage interest refund program resulted in greater declaration of property transactions, salaries, and income tax liabilities), and by robust growth in 2021–2022 following a significant inflow of capital and migrants after the Russian invasion of Ukraine.

labor, and capital income in the form of corporate income taxes (CIT), payroll taxes, and personal income taxes (PIT). Only HICs collect more from income taxes, and within peers, only Estonia and Georgia collect similar or slightly lower revenue as a share of GDP.

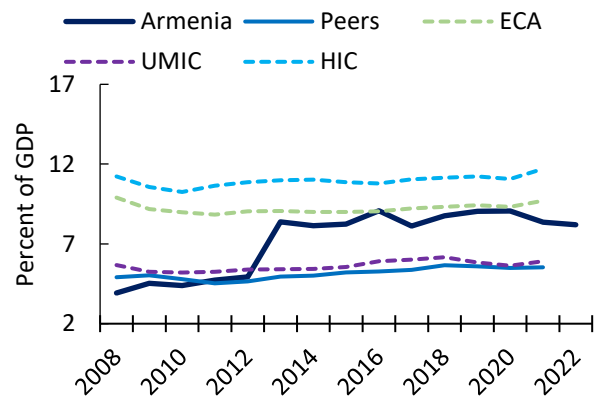
Figure 3. Revenue from Indirect Taxes as Percent of GDP in Armenia and Other Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMMod) and IMF (GFS) data for other countries.

Note: See Annex 1A for more on the definition of peers and assumptions.

Figure 4. Revenue from Taxes on Income as Percent of GDP in Armenia and Other Countries



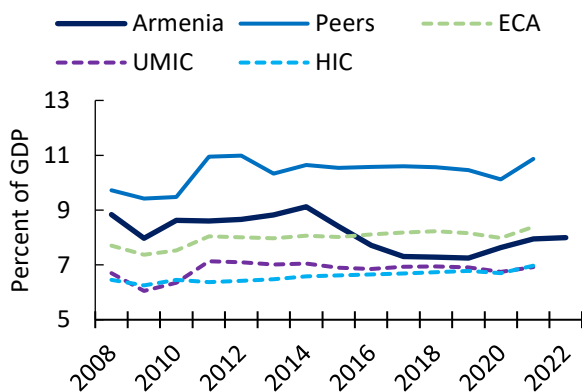
Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMMod) and IMF (GFS) data for other countries.

Note: See Annex 1A for more on the definition of peers and assumptions.

12. Concerning indirect taxes, Armenia collects lower VAT and even lower excise revenue than its peers. On average, Armenia collects between 7 to 8 percent of GDP in VAT, which is around 3 percentage points lower than its peers' average (Figure 5). VAT as percent of GDP has decreased overall since 2015, but has been increasing in recent years. The main reason for the dampening VAT collection in 2015 was an increase in the turnover tax threshold from AMD 58.3 million to AMD 115 million in 2015.¹⁵ Similarly, Armenia consistently collects lower revenues in excises (the sum of all excises including alcohol, fuel, and tobacco) than most peers. Excise collections, which amount to approximately 1.5 to 2.0 percent of GDP, have increased in the years up to 2020 as a result of annual increases in excise tax rates (Figure 6), but declined in 2021 and 2022.

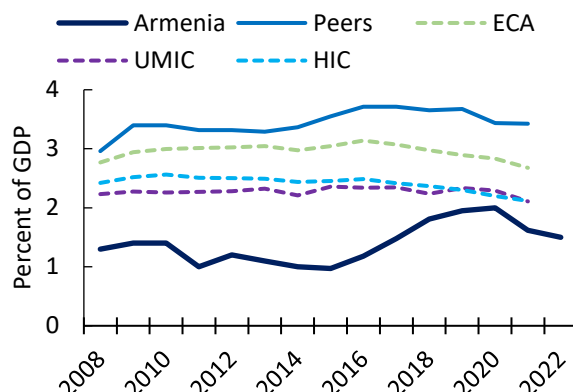
¹⁵ The initial plan was to temporarily increase the threshold to support recovery from the currency crisis that occurred at the end of 2014.

Figure 5. Revenue from VAT as Percent of GDP in Armenia and Other Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
 Note: See Annex 1A for more on the definition of peers and assumptions.

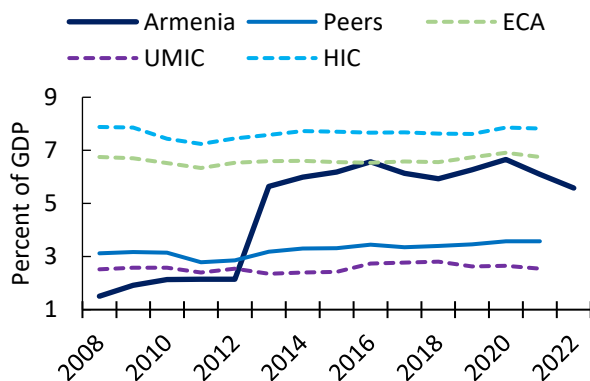
Figure 6. Revenue from Excises as Percent of GDP in Armenia and Other Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
 Note: See Annex 1A for more on the definition of peers and assumptions.

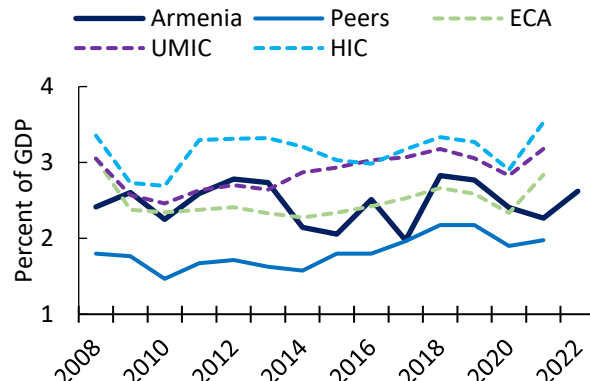
13. **Concerning income taxes, Armenia collects more than double the revenue in PIT than CIT.** On average, Armenia collects more from PIT than most of its peers (with the exception of Estonia and Georgia), with its annual collection in recent years at around 6 percent of GDP compared to around 3 percent of GDP for peers (Figure 7).¹⁶ The sharp increase in 2013 was due to the unification of the income tax with social contributions. In contrast, the CIT collected in Armenia is less than half of the PIT share and has ranged from 2.3 to 2.8 percent of GDP in recent years (Figure 8). This CIT collection is higher than its peers' average (with only Moldova and Serbia typically collecting similar amounts in shares of GDP), but is lower than UMICs.

Figure 7. Revenue from PIT as Percent of GDP in Armenia and Other Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
 Note: For most countries in this chart, the PIT excludes social security contributions. See Annex 1A for more on the definition of peers and assumptions.

Figure 8. Revenue from CIT as Percent of GDP in Armenia and Other Countries



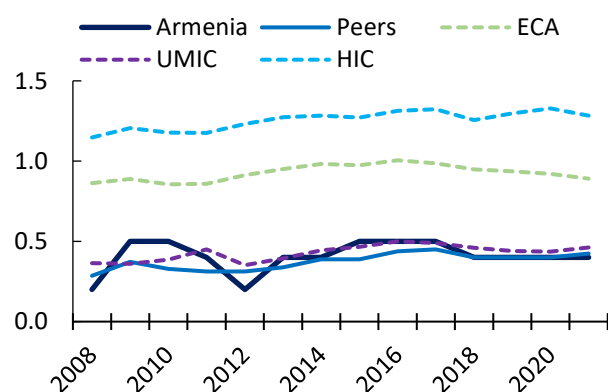
Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
 Note: See Annex 1A for more on the definition of peers and assumptions.

¹⁶ In 2013, Armenia's PIT became a unified income tax and included social contributions.

14. **Armenia’s revenue from property taxes is comparable to the average of its peers.** Armenia’s collection from property taxes ranks around the median within its peers and is comparable to the group’s average (**Figure 9**). Starting in 2021, property taxation has been undergoing a major reform. The reform involves bringing the cadastral value of properties closer to their market price and implementing a transitional period that allows for a gradual increase in the tax burden through 2026. The government estimates that this reform will create a four-fold increase in property tax revenue by the end of the reform period. Progress to date appears to be strong, with revenue in the first two years of the reform (2021 and 2022) showing a 55 percent increase compared to the pre-reform period.

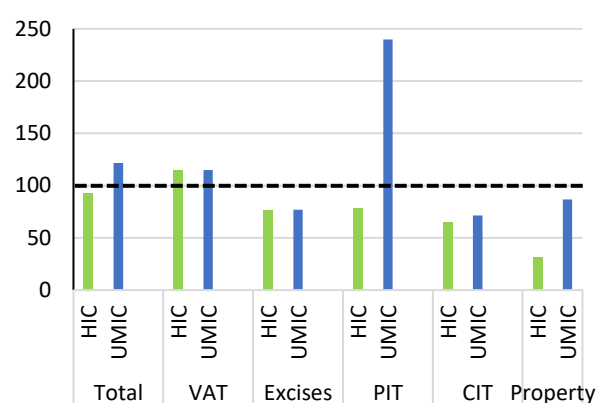
15. **In comparison with UMIC averages, Armenia collects much more in PIT and slightly more in VAT (as well as in total).** On the other hand, it collects much less than the average of UMICs in CIT and excises, and slightly less in property taxes (**Figure 10**). With the exception of VAT, Armenia collects less on every major tax handle in comparison with HICs with the lowest comparative revenues from property tax.

Figure 9. Revenue from Property Taxes as a Percent of GDP



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
Note: See Annex 1A for more on the definition of peers and assumptions.

Figure 10. Armenia’s Revenue Collection as a Percent of Comparator Group’s Revenue Collection (2021)



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMOD) and IMF (GFS) data for other countries.
Note: Tax collection for Armenia and peers is first expressed as a share of GDP. Armenia’s ratio is compared to HICs/UMICs, to estimate the ratios included in this chart. See Annex 1A for more on peers and assumptions.

1.2.2 Overview of Tax Rules by Major Taxes

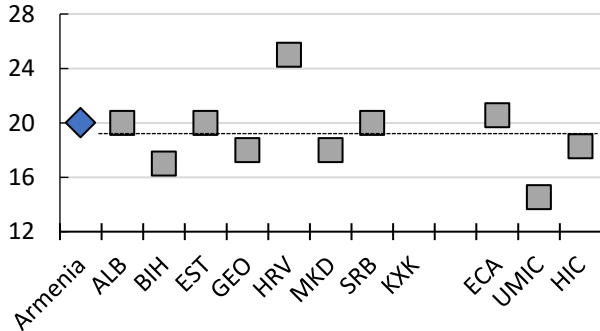
16. **This section provides a very brief overview of the main rules for each major tax in Armenia and compares them against those in peer countries.** Subsequent sections analyze how these rules interact with economic factors and taxpayer behavior to shape Armenia’s tax system performance and its impact on the economy.

Indirect taxation

17. **Armenia’s statutory VAT rate is comparable to its peers.** Consistent with good practice, Armenia applies a single statutory rate on most goods and services (G&S). Its statutory rate is set at 20 percent, which is comparable to many peers and the average for ECA (**Figure 11**).

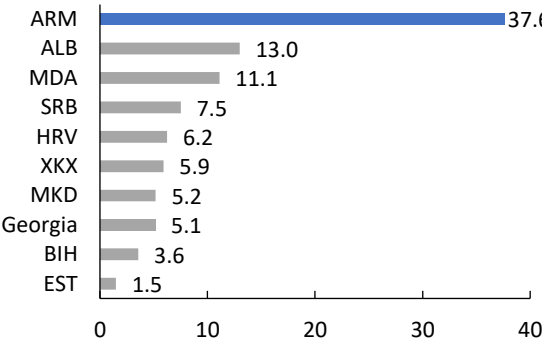
18. **Armenia’s tax base is narrowed by exemptions for certain G&S and a VAT registration threshold that is high relative to its peers, resulting in foregone revenue of around 5 percent of GDP.** Armenia’s taxable base for the VAT narrows the economic base (private consumption) by applying exemptions to certain G&S and by allowing businesses with annual turnover below AMD 115 million (approximately USD 300,000) to opt-out of the VAT, a threshold which is much higher than peers (Figure 12).¹⁷ Between 2020–2023, the revenue foregone from these policies amounted to an average of 4.9 percent of GDP, including reduced rates and exemptions for health (0.86 percent of GDP), education (0.39 percent of GDP), the agricultural sector (0.25 percent of GDP), and approximately 0.6 percent from the high VAT threshold.¹⁸ The rest of the foregone revenue belongs to exemptions to the financial sector, insurance, the sale of gold and precious stones, and gambling. Tax theory generally recommends uniform tax treatment within the VAT (i.e., to apply a standard VAT rate and offer no VAT exemptions or as few as possible).¹⁹ However, it is worth noting that within ECA region, the EU and the UK provide VAT exemptions on the financial sector, investment in gold and precious stones, and gambling for a variety of reasons.²⁰

Figure 11. Statutory VAT Rate in Armenia and Peer Countries



Source: WB staff analysis based on data from KPMG.
Note: Country codes follow ISO-3. See Annex 1A for background on benchmarking.

Figure 12. Ratio of VAT Threshold to GDP Per Capita in Armenia and Peer Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia and WB (MFMod) and IMF (GFS) data for other countries.
Note: Country codes follow ISO-3. See Annex 1A for background on benchmarking.

19. **Armenia has been reforming its tobacco excise taxes, but cigarette prices remain low compared to most peers.** From January 2020, the Armenian tobacco tax system shifted from an ad valorem excise with a specific floor to a pure specific excise tax system. The tax code was amended to

¹⁷ There are two broad types of value added tax expenditures (VATEs). The first type is G&S that are zero-rated under the VAT, which enable businesses to deduct their input VAT. Consistent with standard tax practice, zero-rated G&S includes those G&S that are exported. The second type are G&S that are VAT-exempt, which do not permit businesses to exempt their input VAT.

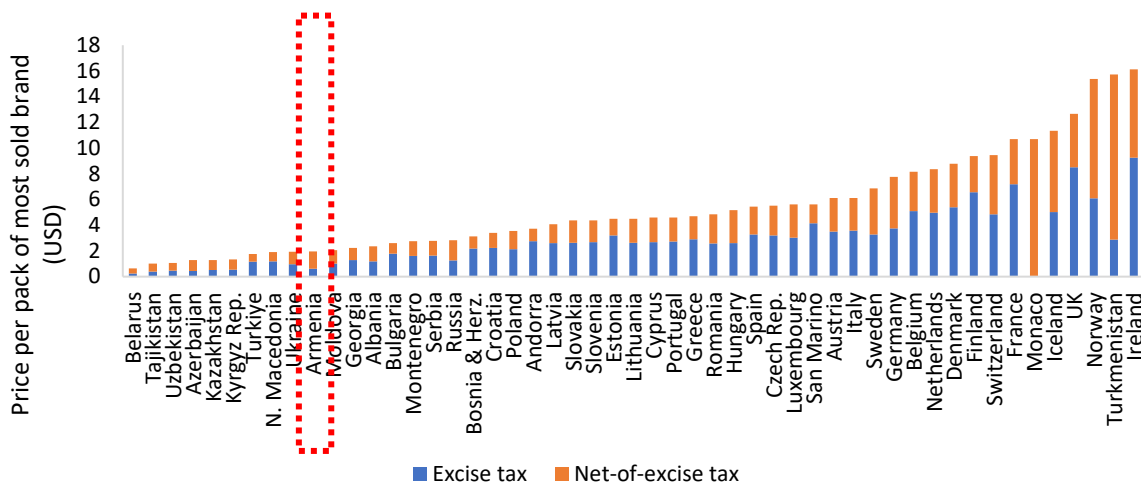
¹⁸ Data from State Annual Budgets. According to tax expenditures estimates done by the authorities and published in annual budgets, tax expenditures (TEs) in Armenia amount to approximately 6 to 7 percent of GDP per annum. Data used to produce these estimates include macro data from the National Accounts and micro-level tax administrative data. Around 70 to 80 percent of the revenue foregone from TEs is linked to the VAT, with the remainder split between CIT and PIT.

¹⁹ For example, see Mirrlees et al., 2011 and Sørensen 2007 and 2010.

²⁰ In every OECD country, most or all financial services, including insurance, are exempted due to the difficulty in determining where value added is created (the basis for applying the VAT). Most gambling services and games of chance (e.g., lotteries) are VAT exempt in the EU and the UK for cultural reasons. Historically, the EU and the UK applied VAT on investment-grade gold and silver. However, this led to tax competition as several countries offered a lower VAT rate on gold, so the EU and the UK responded by applying a VAT exemption. No such exemption is given to silver, nor is there an exemption on non-investment grade gold (so gold jewelry faces VAT, while investment-grade gold coins and bullion are exempt). Moreover, it is worth noting that capital gains tax applies within the EU and the UK to precious metals (including gold) when they are sold at profit, although some exemptions and special rules apply.

include heated tobacco sticks, with the tax based on the number of sticks. However, other tobacco products are taxed dramatically lower than cigarettes.²¹ In 2023, cigarette taxes were set at AMD 14,640 (EUR 33.27) per 1,000 sticks, below the Eurasian Economic Union (EEU) benchmark of EUR 35 per 1,000 sticks and far below the EU benchmark of EUR 90 per 1,000 sticks.²² Tobacco excises have increased substantially over the last decade, with the specific tax increasing by 96 percent in real terms since 2012. Yet, cigarette prices in Armenia remain low compared to most countries in ECA (Figure 13). This may be changing as the tax code has envisaged an annual 8 to 10 percent increase through 2026, with a 10 percent increase implemented in 2024.²³

Figure 13. Cigarette Prices in Armenia Compared to ECA Countries



Source: WB staff analysis based on WHO data.

Note: Figure charts average price of most sold brand in 2022, and not a weighted average price of all tobacco brands consumed in each country. Armenian prices are from 2023.

20. **Alcohol taxes are complex, with some categories taxed much lower than others.** Alcohol is taxed in several different categories in Armenia, with at least four fermented beverage categories and five for distilled spirits, one of which (cognac and brandy) is further sub-divided into six sub-categories based on age. Excise tax rates vary significantly between these categories. For example, cognac and brandy currently are taxed between AMD 3,564 and 25,920 per liter of absolute alcohol, depending on the age of the product. The complicated tax structure and varying tax rates between categories generate distortions in the market and provide opportunities for tax avoidance and evasion.

Direct taxation: individuals

21. **Armenia is among a minority of countries that apply a flat-rate PIT regime.** Armenia applies a flat tax regime on labor income, which is common amongst some of its regional peers but rare outside the Balkan, Baltic, and Caucasus regions. Peer countries in ECA with a flat tax regime include Bosnia and Herzegovina, Estonia, and Georgia (Table 1 in Annex 1B). In contrast, other peers including Albania, Croatia, and Kosovo, have a progressive rate schedule. All countries in the European Union, except for

²¹ For example, the rate on fine-cut tobacco of AMD 1,635 per kilogram is only 11 percent that of cigarettes, assuming 1 gram per cigarette equivalence.

²² Excise tax rates and categories from the Republic of Armenia Law on Excise Tax, for 2023.

²³ Thus, starting in 2024, cigarette taxes were increased to AMD 16,100 per 1,000 sticks.

Hungary, also have progressive rate schedules. At the same time, Armenia applies a reduced flat rate for certain income (for most property and royalties).²⁴

22. Armenia's PIT regime applies a higher rate on low to average income earners with a formal job compared to many peers, and is advantageous for high-income earners. Armenia applies a flat tax rate of 20 percent on labor income, which is identical to that of Georgia.²⁵ Meanwhile, high-income earners disproportionately benefit from its policy that offers a reduced rate of 5 percent on dividends and of 10 percent on royalties and income from the lease or sale of a property, while maintaining the same flat tax rate of 20 percent on high wage income earned.²⁶ Moreover, capital gains²⁷ are exempt from taxes if they are derived from the sale of land, from property sold by one individual to another individual, and/or from the sale of equity securities and bonds issued by the Armenian government. Estonia offers no such reduced rates/exemptions (but provides very limited deductions), while Croatia offers a progressive PIT schedule with a top rate of 35.4 percent.

23. In recent years, Armenia offered an income tax refund program on mortgages that proved both costly and extremely regressive, but this incentive is now gradually being phased out. Under this program, salaried taxpayers can claim the interest paid on mortgage loans as a cashback against tax paid during the year. To qualify for the cashback, the value of house property should not exceed AMD 55 million and the interest claim cannot exceed AMD 6 million during the year. The incentive is only available for one house property per taxpayer. The incentive program was introduced in 2014 and by 2023, the aggregate cashbacks claimed by taxpayers had gradually increased to AMD 51.9 billion in 2023 (equivalent to 0.6 percent of GDP). This incentive is regressive, with the top decile of taxpayers claiming 90 percent of the credit.²⁸ Since July 2022, owners of properties in the city center of Yerevan can no longer claim this benefit. Moreover, this incentive is set to be fully phased out for the city of Yerevan by January 2025, and there is a draft plan to completely phase out this program in all regions starting in 2029 (except for communities at the border).

24. Armenia's social security program applies mandatory targeted social payment (TSP) using a two-tiered structure for participants in the pension funded pillar.²⁹ From January 2023, the employees' contribution entails a 5 percent tax rate on the monthly gross salary if it is less than AMD 500,000, or 10 percent of the monthly gross salary minus AMD 25,000 if it is above this threshold. Employees' contributions are capped at a maximum of AMD 87,500.

²⁴ A lower flat rate is also in place in Georgia. Serbia applies higher flat rates on non-labor income, and Albania applies a higher rate on capital gains. Estonia and Kosovo offer the simplest flat regimes, with a broad definition of the tax base that includes both active and passive income.

²⁵ Estonia's rate is at 20 percent, but from 2025, this will rise to 22 percent. Armenia's rate structure remains much higher than most other peers, with Bosnia and Herzegovina applying a flat rate of 10 percent, Serbia of 9 percent, Albania a progressive rate schedule of 0 percent on low-income and 13 percent on all but high-income earners, and Kosovo applying a progressive 4-bracket rate schedule from 0 to 10 percent.

²⁶ In some cases, income from the sale of some properties may be taxed at the standard 20 percent rate depending on the type of property and whether sold to a tax agent or individual. The 20 percent rate also applies to annual rental income exceeding AMD 60 million.

²⁷ The Ministry of Finance has a plan to initiate taxing on the capital gain, although not yet finalized.

²⁸ Technical Assistance Report on Personal Income Tax: Policy Review and Introduction of a Universal Declaration, IMF, January 2023.

²⁹ The funded pillar is mandatory for citizens born after January 1974.

Direct taxation: corporate income and international tax

25. **Armenia applies a statutory rate of 18 percent on taxable profits as part of its corporate income tax regime (CIT).** CIT exemptions apply to agriculture sector activities at both entity and individual entrepreneur levels, to micro and turnover regimes, and other CIT expenditures.³⁰ The CIT revenue forgone for 2023 is estimated at 0.87 percent of GDP, most of which benefited the agricultural sector (0.49 percent of GDP), individual entrepreneurs and microbusiness, and turnover tax regimes (0.3 percent of GDP).³¹ Amongst its peers, Serbia and Croatia apply CIT with a standard rate of 15 and 18 percent, respectively, with a reduced rate of 10 percent for small and medium enterprises (SMEs). Annex 1B compares general individual and corporate taxation rules in Armenia with those of its peers.

26. **Armenia has made a commitment to the implementation of a broad range of international standards on tax avoidance and evasion.** Armenia is a member of the Inclusive Framework on Base Erosion and Profit Shifting (BEPS), the Global Forum on Transparency and Exchange of Information for Tax Purposes, and a signatory of the Two-Pillar Solution to Address the Tax Challenges Arising from the Digitalization of the Economy. Armenia has only partially implemented the BEPS Minimum Standards, and its CIT regime may face challenges with the Global Minimum Tax (GMT). Annex 1C provides more details on Armenia's recent reforms and outstanding issues within international taxes.

Direct taxation: taxes on micro, small, and medium enterprises

27. **Armenia offers a generous tax regime for microbusinesses, including sole proprietors.** Armenia established the microbusiness status for small entities and individual entrepreneurs who earn annual income less than AMD 24 million. With this status, they are exempted from taxes with the exception of PIT and TSP and are only required to pay AMD 5,000 per month for each employee as income tax. In 2023, the revenue foregone from this regime was estimated to be equivalent to 0.35 percent of GDP (including 0.2 percent of GDP from VAT and 0.15 percent from income taxes).³² As of July 2023, the regular PIT rate (20 percent) was applied to microbusiness employees.

28. **Armenia offers a turnover tax regime for small to medium-sized firms.** Sole proprietors and entities in eligible activities with income below AMD 115 million, can register as part of the turnover regime. For this category, Armenia has established another special regime, which applies a final turnover tax with different rates, ranging from 1.5 percent (on income from newspaper sales by publishing companies) to 25 percent (on income from lotteries).³³ Turnover tax regimes benefit SMEs by simplifying tax filing, which reduces the costs of compliance and encourages them to enter the tax regime. These regimes also result in forgone revenue and can have implications on efficiency and tax compliance. These issues are discussed in Section 1.3 below.

³⁰ Some incentive was applied to the IT sector which was abolished in 2024.

³¹ Data from State Annual Budget.

³² Data from State Annual Budget.

³³ MoF has an ambitious plan to limit the turnover regime by excluding particular activities, encouraging documentation, and moving firms to the regular regime. Some amendments were approved by the National Assembly in June 2024 and will become effective starting 2025.

29. **Armenia was the first country in the Eastern Europe, Caucasus, and Central Asia (EECCA) region to introduce environmental taxes and payments for the use of natural resources (ETPs).**³⁴ The introduction of ETPs in Armenia dates to 1986 when the country was still part of the Soviet Union. Armenia's new tax code, adopted in October 2016, continued this practice and dedicated an entire section to environmental taxes. According to Section 8 of the Armenian Tax Code, the taxable objects of environmental taxes are defined as emissions of harmful substances into the air, leakages into water resources, wastes, and imports of harmful goods, and Section 10 contains provisions about natural resource use fees. In addition to Sections 8 and 10, other sections contain environmental-related taxes, including Section 9 on road taxes, Section 12 on vehicle property taxes, and Article 88 on excises that include fossil fuels (see Annex 1D for details). In Armenia, fossil fuels are also subject to a VAT charge with a standard rate of 20 percent. An exception on VAT is granted to flights on international routes.³⁵

30. **Environmental tax rates vary, and exemptions include taxes on electric and hybrid motor vehicles.** The tax rate for fossil fuels, imported or manufactured in Armenia, is 2 percent.³⁶ The tax rate on used, imported vehicles depends on the fabrication year. In 2023, vehicles between 5 and 10 years old were taxed at a 2 percent rate, vehicles between 10 to 15 years old at a 10 percent rate, and those 15 years or older paid a rate of 20 percent.³⁷ Starting January 2024, the rates were revised and specified in five brackets from a minimum 2 percent tax rate for cars released (manufactured) up to 3 years, to a maximum of 24 percent for cars manufactured more than 15 years. Hybrid motor vehicles and electric vehicles are exempted from the environmental tax for emission of harmful substances into the atmospheric air from motor vehicles (vehicle tax).³⁸ Other exemptions apply, but are not related to environmental criteria.

31. **Together, existing ETPs contribute to a small but growing source of revenue.** Revenues from ETPs for use of natural resources have been gradually growing as a share of GDP, though they remain small compared to major tax handles. Collection from ETPs as a 5-year moving average grew from 0.5 percent of GDP over 2010–2014 to reach an average of 0.9 percent of GDP over 2018–2022 (Figure 14.A). In 2022, revenues from ETPs came from a variety of payments for the use of natural resources, representing 51 percent of the total, and environmental taxes, representing 49 percent of the total (Figure 14.B). The largest revenue item was payments 'for exhausted reserves of non-metallic minerals, underground fresh and mineral waters and reserves of extracted salt', which alone accounted for 38 percent of total ETPs.

³⁴ The EECCA region covers Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, the Russian Federation, Tajikistan, Turkmenistan, Ukraine, and Uzbekistan.

³⁵ Armenia Tax Code, Article 65, point 8a.

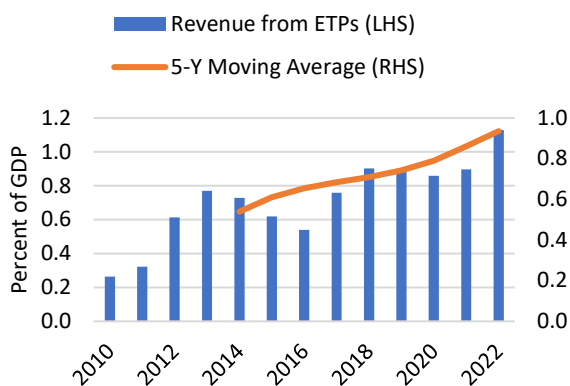
³⁶ This is in addition to VAT and tariffs. More details on the categories included and exemptions (using the Nomenclature of Foreign Economic Activity of the EEU) can be consulted in article 171 of the tax code.

³⁷ The rates applicable in 2023 were used in the analysis of this report.

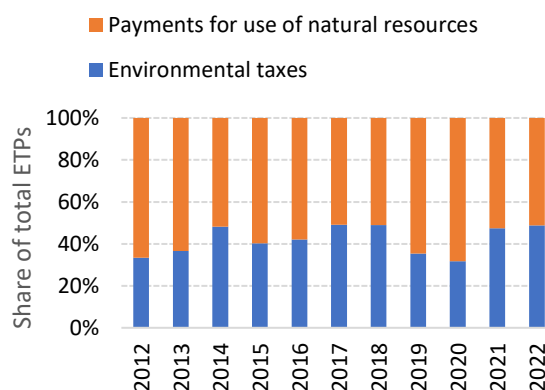
³⁸ Armenian Tax Code, Article 172, 1.(2).

Figure 14. Revenues from ETPs

A. Revenue as a Percent of GDP



B. Breakdown of ETPs (2022)



Source: WB staff analysis of data from ARMSTAT on environmental taxes and payments for nature use by types and years.

32. **There are areas where the environment taxes could be extended or strengthened.** Armenia has no direct tax or charge for CO₂ emissions. No taxes on plastic bags and other single-use plastics are levied but a ban is already under consideration.³⁹

Section 1.3 Assessing the Effectiveness and Efficiency with Which Tax Revenue is Raised

1.3.1 Analysis of Tax Buoyancy

33. **Analyzing tax buoyancy provides an indirect but useful starting point to assess the effectiveness and efficiency of the tax system.** Tax buoyancy, a measure of how tax revenues vary with changes in output, helps shed light on the role tax policy plays in stabilizing the economy over the business cycle in the short run, and its role in ensuring fiscal sustainability in the long run.⁴⁰ An inefficient system, which generates distortions to the economy and imposes high administrative costs of compliance on taxpayers, is unlikely to have high buoyancy.⁴¹ Annex 1E provides a summary of the methodology used to estimate short-run and long-run tax buoyancies in this chapter.

³⁹ More details on the categories included and exceptions (using the Nomenclature of Foreign Economic Activity of the EEU) can be consulted in article 171 of the tax code.

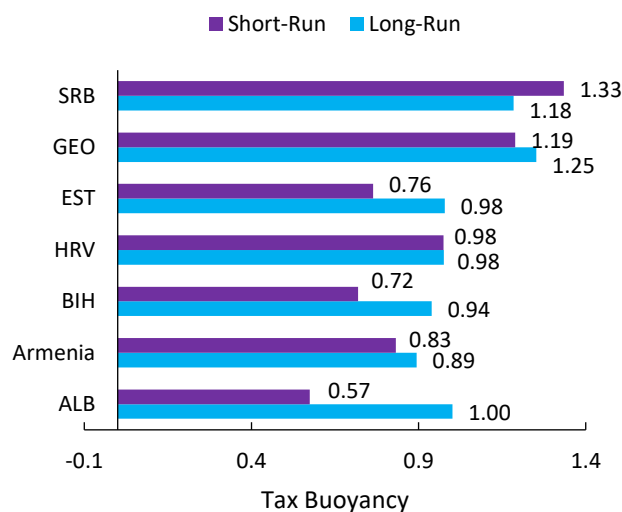
⁴⁰ Cornevin et al., 2023; Dudine and Jalles, 2017.

⁴¹ Cornevin et al., 2023; Hill et al., 2022; and Gupta et al., 2022.

34. **Tax buoyancy analysis suggests scope for improving the effectiveness and efficiency of taxation in Armenia.** First, tax systems with a high short-run buoyancy function well as automatic output stabilizers in the economy. Here, Armenia’s short-run buoyancy is estimated at 0.83, which is higher than some peers (Albania, Bosnia and Herzegovina, and Estonia), but lower than others (Georgia, Croatia, and Serbia) (Figure 15). This buoyancy is also lower than the average short-run buoyancy of emerging market and developing economies (EMDEs) and advanced economies (AEs), which are estimated to be 1.21 and

1.06, respectively.⁴² Second, tax systems with a high long-run buoyancy support the sustainability of fiscal policy. While Armenia’s long-run buoyancy of 0.89 is higher than its short-run buoyancy, it is nevertheless lower than all of its peers and lower than the averages of EMDEs and AEs, which are estimated to be 1.15 and 1.06, respectively.⁴³ Long-run buoyancies that are equal or greater than one imply that tax revenues increase more than proportionally with GDP and are needed for the tax system to ensure long-run sustainability. Given Armenia’s lower-than-one estimate, this result implies that the government has to rely more heavily on expenditure-management to ensure that the fiscal deficit is sustainable in the long run. Tax buoyancy can be improved in different ways, including: (i) improving the efficiency of corporate income taxation (as cross-country evidence finds that the CIT is typically the most buoyant tax instrument), and (ii) reforms that broaden the tax base (e.g., by limiting tax exemptions across all major tax handles) and that make taxes more responsive to economic changes.

Figure 15. Total Short- and Long-Run Tax Buoyancy in Armenia and Peer Countries



Source: WB staff analysis based on Armenia MoF data.
 Note: See Annex 1E for discussion on methodology and definition of short-run and long-run buoyancy.

1.3.2 Assessing Tax Gaps

Macro approaches to estimating tax gaps

35. **Aggregate tax performance indicators can provide an approximate sense of the effectiveness of the tax system in raising revenue and can flag efficiency and equity concerns.** The effectiveness of the major tax instruments can be estimated using macro indicators such as the VAT C-efficiency ratio and the CIT productivity ratio with each indicator measuring the effective coverage of the relevant tax handle.⁴⁴

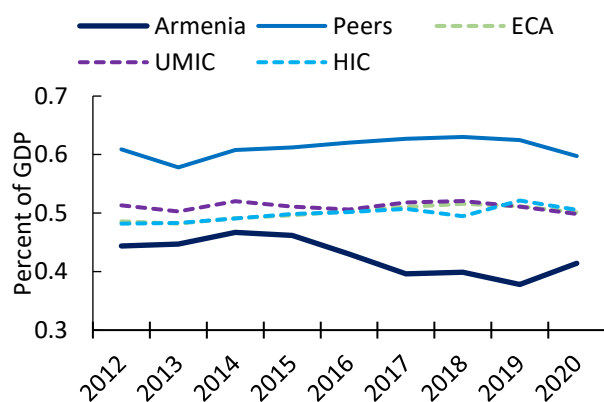
⁴² Dudine and Jalles, 2017.

⁴³ Dudine and Jalles, 2017.

⁴⁴ Ebrill et al., 2001; Brondolo, 2009; Keen, 2013; Ueda, 2017. PIT productivity is usually calculated as the PIT revenue as a share of GDP divided by the top PIT marginal rate. Given the flat tax regime in Armenia, its PIT productivity appears very high compared to peers countries that have much higher top marginal rates, due to the mechanics of the formula. For this reason, the PIT productivity is not included in this chapter. Both CIT and PIT productivity may also be calculated using average effective tax rates (AETRs), but this requires micro-level data and has other methodological issues.

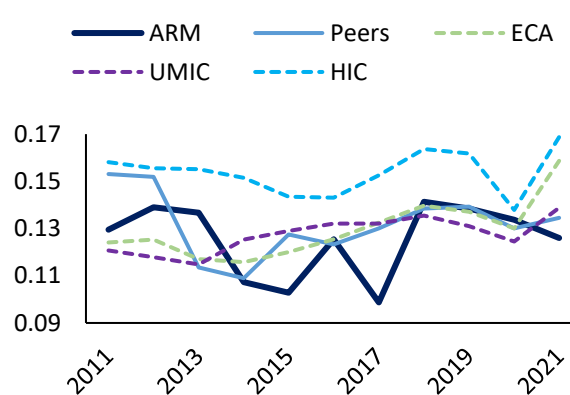
36. **Armenia’s VAT C-efficiency ratio is low compared to its peers, reflecting compliance and policy gaps.** As discussed earlier, Armenia’s VAT rate is comparable to that of its peers, but the country collects much lower VAT as a share of GDP. Unsurprisingly, Armenia has a low VAT C-efficiency ratio (Figure 16).⁴⁵ This ratio captures both the impact of revenue foregone from VAT expenditures (tax policy gap) and from tax avoidance and evasion (the compliance or administrative gap). Armenia’s VAT C-efficiency ratio was on a declining trend from 2015 to 2019 before slightly improving in 2020. Since VAT tax expenditures have been stable over this period, Armenia’s declining VAT C-efficiency may be driven in part by a widening compliance gap.

Figure 16. VAT C-Efficiency in Armenia and Peer Countries



Source: WB staff analysis based on MoF data for Armenia and Georgia, WB (MFMod) and IMF (GFS) data for other countries, and rates from KPMG.
Note: See Annex 1A for a more detailed explanation of peers.

Figure 17. CIT Productivity in Armenia, Peer Countries, and UMICs



Source: WB staff analysis based on Armenia MoF data.
Note: CIT refers to Armenia’s profit tax and related revenues from the turnover tax regime, while PIT refers to Armenia’s income taxes and related revenues from the micro regimes.

37. **Armenia’s CIT productivity has declined in recent years and is currently lower than its peers and UMICs.** Armenia’s CIT productivity was similar to the average of peers and UMICs in 2018, however after declines in 2019–2021, it is now lower than both groups (Figure 17). Armenia’s statutory CIT rate of 18 percent is higher than the average of its peers, which was approximately 14.1 percent in 2021. Armenia’s lower CIT productivity levels since 2018 may be driven by one of three factors: (i) a smaller economic base; (ii) more generous CIT tax exemptions and/or a higher CIT registration threshold that together result in a narrower tax base for the CIT; and/or (iii) higher non-compliance, due to weaker enforcement capacity and/or higher voluntary non-compliance.⁴⁶

⁴⁵ As described by Keen (2013): “Reforms that bring a VAT closer to the benchmark of 100 percent C-efficiency do not necessarily mean a better VAT. C-efficiency can be increased, for example, by denying VAT refunds to exporters, or by introducing exemptions for intermediate goods; there may or may not be other good reasons to do so, but the effect is in each case to undermine the intended role of the VAT as a tax on domestic consumption.”

⁴⁶ Measuring and comparing the economic base of the CIT is challenging at the macro-level. In national accounts data, the gross operating surplus (GOS) of corporations (reported using the income approach of estimating GDP) is arguably the most accurate measure of the economic base for the CIT, which is close to the aggregate earnings before interest, tax, depreciation, and amortization (EBITDA) of domestic corporations. A similar concept for unincorporated enterprises (e.g., SMEs) is gross mixed income (GMI). Some countries report GOS and GMI as one line item. Other complications include the fact that the aggregate value added generated by corporations is generated by a non-linear distribution of firms, which range from the very large multinational enterprises (MNEs) to the micro and small enterprises across different economic sectors. Hence, even two countries reporting similar aggregate GOS using similar calculation methods may not necessarily have the same CIT potential since the distribution of firms is very unlikely to be similar.

1.3.3 Analysis of Effective Tax Rates

38. **Important sources of tax inefficiency arise due to tax disparities across capital asset types, economic sectors, and/or firm sizes, which result in resource misallocation in the economy.** A growing body of literature has identified these channels as the main drivers of tax-induced resource misallocations in the economy, which can detract from productivity growth in the long run.⁴⁷ Estimating the presence of large variation in effective rates of taxation across economic sectors and/or firm sizes is an important means of establishing the presence of such inefficient tax disparities. This section estimates the burden of taxation for different sectors and firm sizes using tax administrative data.⁴⁸

39. **Two key indicators are estimated for different sectors and firm sizes: the average effective tax rate (AETR) and the average effective tax burden (AETB).** The AETR represents the tax paid over net income, as indicated in (1). This indicator is calculated for each taxpayer and year, from 2018 to 2022.

$$\text{Effective Tax Rate} = \frac{\text{Tax Paid}}{\text{Net Income}} \quad (1)$$

The AETB indicator represents the tax paid over gross income, as indicated in (2). This indicator is similarly calculated for each taxpayer and year, from 2018 to 2022.

$$\text{Effective Tax Burden Rate} = \frac{\text{Tax Paid}}{\text{Gross Income}} \quad (2)$$

40. **The analyses of tax burden suggest that the tax system may be contributing to resource misallocation in the economy through creating an uneven tax playing field.** Initial estimates of AETRs and AETBs by sector, regime type, and firm size, vary significantly. These estimates imply that Armenia's current tax system compromises the horizontal equity principle, with different taxpayers facing significantly divergent effective tax burdens.

41. **Differential tax burdens may be due to uneven tax policy, uneven enforcement, or both.** The data used here does not include audit assessments of taxpayer declarations. As a result, the data does not allow for a determination of whether AETRs and AETBs are lower than statutory rates due to tax policy design (revenue foregone, or tax policy gap) or due to taxpayer non-compliance (compliance/administrative gap). Further investigation is required to enable an assessment of the relative magnitude of these two effects on the estimated AETRs and AETBs.

⁴⁷ On tax disparities across capital asset types, see, for example, Liu, 2011; Fatica, 2013; and IMF, 2017; on undertaxing of small firms, contributing to a 'small business trap', see Fajnzylber, 2007; Levy, 2008; Pagés, 2010; Fajnzylber et al., 2011; Busso, et al., 2012; Leal Ordóñez, 2014. Other identified channels through which the tax system distorts the economy are: taxing debt less than equity (see Brown and Martinsson, 2016 and IMF, 2017); and over-taxing formal (compared to informal) firms and workers (see Gollin, 2006; Guner et al., 2008; Pagés, 2010; Buera et al., 2013; Bobbio, 2016; Brockmeyer and Hernandez, 2016; Benedek et al., 2017; Swistak et al., 2017; Bachas et al., 2018; Asatryan and Peichl, 2017; Cirera et al., 2018; and Garriga and Scot, 2023).

⁴⁸ The database contains firm-level data from the regular and turnover tax regimes from 2018 to 2022 that are based on taxpayer self-reporting. Note that while businesses in the regular regime must file both VAT and CIT, the database contains only data for these businesses from the CIT (known as the profit tax). An assessment of compliance gaps cannot be made as the database does not include data from audits. Annex 1F describes the data in more detail.

Global (dataset) averages

42. **The AETR in 2022 for all sectors and firms in Armenia operating under the regular regime, also known as the global (dataset) average, is estimated to be 16.9 percent, which is 1.1 percentage points lower than the statutory CIT rate of 18 percent.** This 1.1 percentage gap between the AETR and the statutory rate compares favorably to the government’s estimated CIT tax expenditure of 1 percentage point of GDP, which implies that the compliance gap for CIT in Armenia is small, at just 0.1 percentage points of GDP. However, this would only be an accurate representation if the AETR indicator is a relevant representation of the tax burden across the population (regardless of economic sector and firm size). The following analysis reveals that this is not the case.

43. **The global (dataset) average of the AETB in 2022 is estimated to be 1.9 percent, which is at the lower end of the statutory tax rates that apply within the turnover tax regime, which range between 1.5 to 25 percent.**⁴⁹ The AETB enables comparison of the tax burden across the regular and turnover regimes. The estimated AETB of 1.9 percent across all firms is significantly lower than the statutory rate within most turnover tax bands (which include, for example, a rate of 5 percent on trading activities and a rate of 3.5 percent on production activities).⁵⁰ This implies that complying with the turnover tax regime tax bands in many cases would result in a higher tax burden than the regular regime. This is in contrast to most turnover tax regimes worldwide, which offer lower rates for SMEs. This finding, however, is only reliable to the extent that it accurately represents the AETB of different sectors and firm sizes. Since the estimates draw on taxpayer reporting, they do not capture the impact of noncompliance.⁵¹

Analysis by economic sector

44. **AETRs and AETBs vary significantly by sector, with the trading and agriculture sectors amongst the lowest-taxed, and real estate, mining, and financial services amongst the highest-taxed.** Estimating AETRs and AETBs by economic sector reveals significant divergences from the overall averages (Figure 18 and Figure 19). For example, in 2022, the wholesale and retail trade sector had an AETR of 15.7 percent, which was 1.2 percentage points lower than the AETR global average and 2.3 percentage points lower than the CIT statutory rate. In contrast, the mining sector’s AETR closely matched the statutory rate. Similarly, agriculture had an AETB in 2022 of 0.3 percent, which was 1.6 percentage points lower than the global average AETB.

⁴⁹ The turnover tax rates were revised and will be applicable starting January 2025, according to HO-285-N Law amendment dated 12 June, 2024.

⁵⁰ It is worth noting that firms in the turnover regime that engage in trading activities may deduct 4 percent of the cost of goods for sale (including imported goods) purchased during the reporting period from the turnover tax payable for that period, provided such purchases are properly documented.

⁵¹ If SMEs are more likely to make reporting mistakes (‘accidental non-compliance’) and/or more likely to deliberately misreport (e.g., due to a lower likelihood of being audited), then it may be the case that estimates of the tax burden in the turnover regime are biased upwards in comparison to estimates of the tax burden in the regular regime.

Figure 18. AETRs by Sector, (2022)
(in percent)

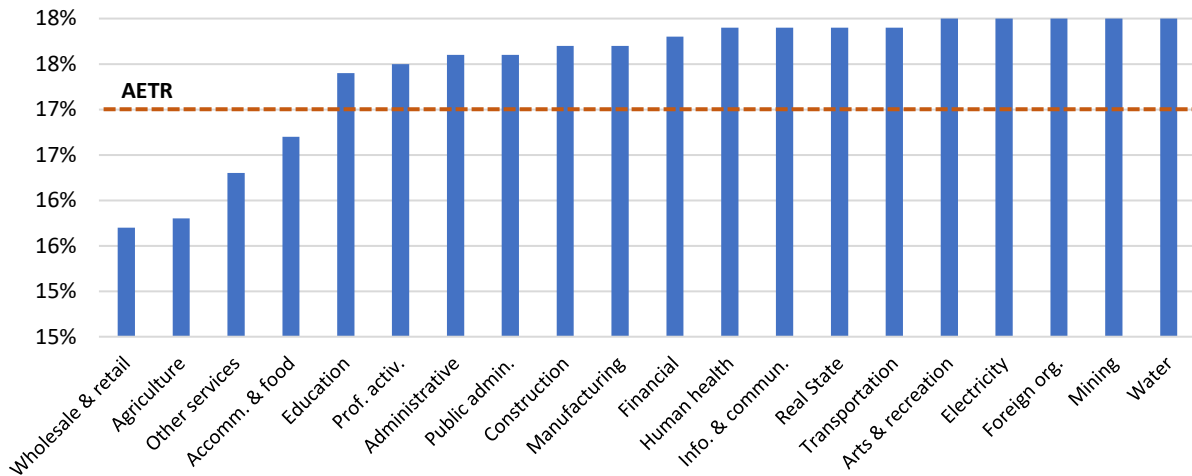
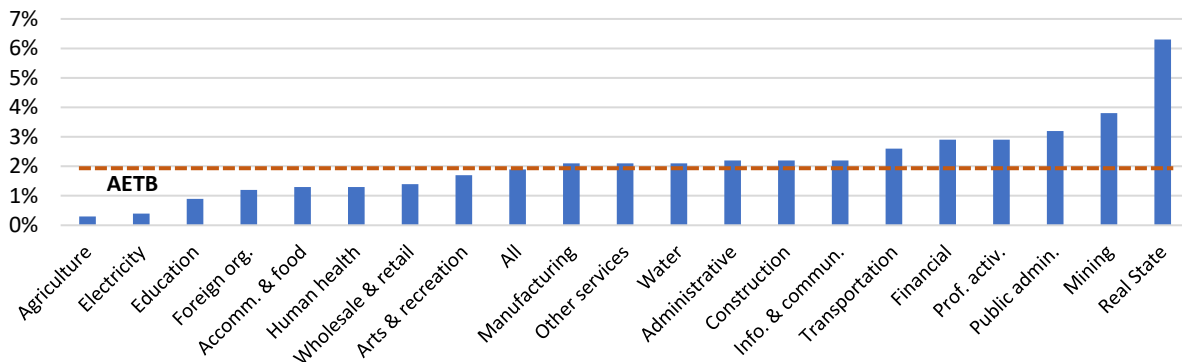


Figure 19. AETBs by Sector, (2022)
(in percent)



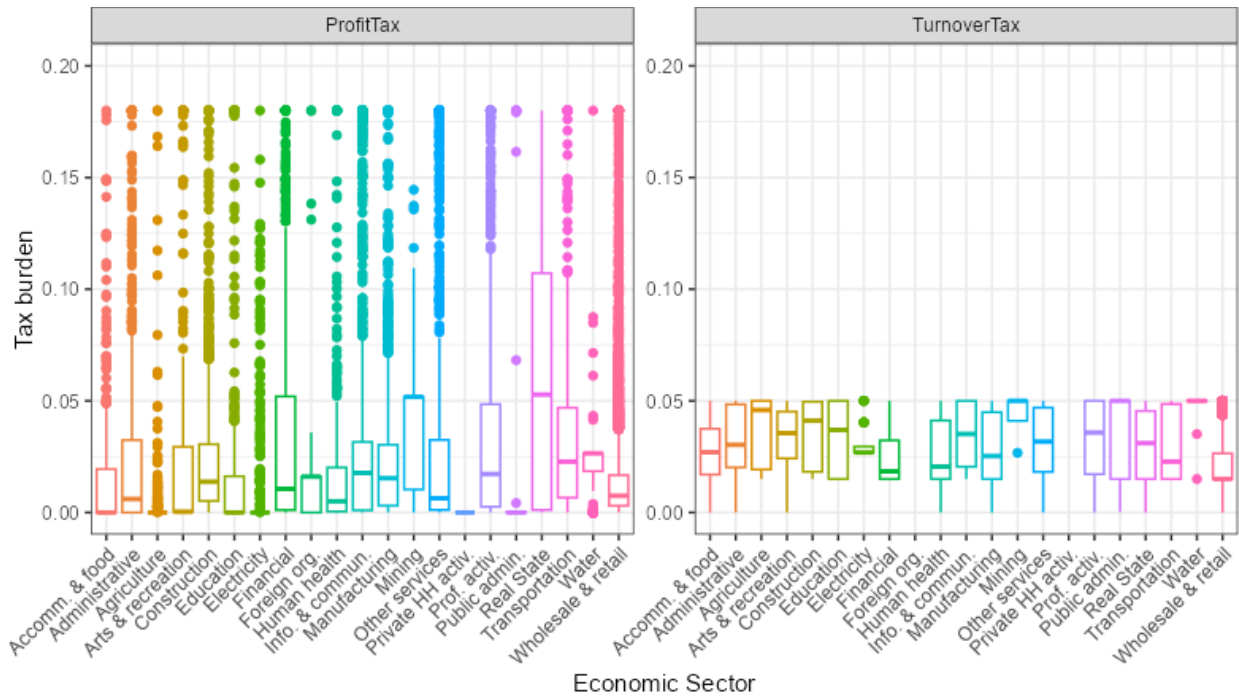
Source: Data from the State Revenue Committee; WB staff analysis.

Note: Estimates are calculated at the firm-level, then weighted using gross income. There are 21 sectors available in the dataset (see Annex 1F for more details).

Analysis by Firm Size

45. **AETBs by firm size appear unexpectedly higher in the turnover regime than in the regular regime for most sectors.** Figure 20 breaks down the analysis of AETBs by sector into the two main regime types: the regular regime’s profit tax and the turnover tax regime. The analysis finds that in most sectors, both the sector median and sector averages of AETBs in the turnover regime are higher than in the regular regime for most sectors, with retail estate being the one clear exception. This result is unexpected because the turnover regime is perceived within the business community and government as a preferential tax regime. There are several factors that could explain this, which are discussed in Box 3.

Figure 20. Variation in ETBs by Sector within the Regular Regime (Profit Tax) and Turnover Tax



Source: WB staff analysis based on data from the State Revenue Committee.

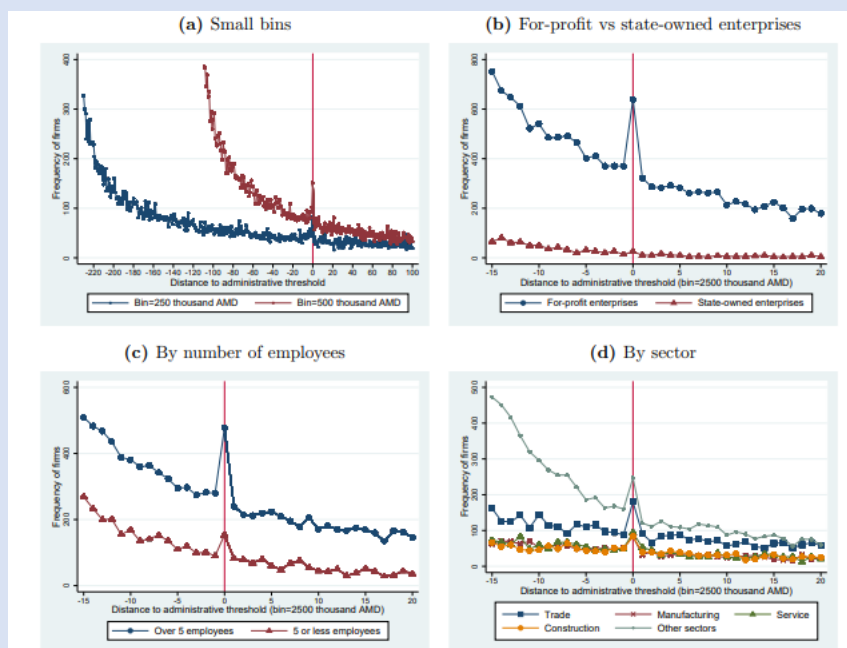
Note: Estimates of tax burden are calculated at the firm level, with weights applied using gross income.

Box 3. Demystifying the Tax Burden Puzzle: Why Some SMEs May Prefer to Pay a Higher Effective Tax Burden within the Turnover Regime Instead of Participating in the Regular Regime

Given that participation in the turnover regime is voluntary (SMEs can alternatively opt to file CIT and VAT), what could explain the continued participation of SMEs within the turnover regime, when turnover regime faces higher AETB than regular regime?

- (1) **The lower administrative cost of compliance could be a major factor.** The main benefit of participating in the turnover regime could be its lower administrative burden. Firms in the turnover regime: (i) can use simplified tax accounting procedures instead of having to comply with the International Financial Reporting Standards (IFRS) as mandated in the regular regime, and (ii) are allowed to file tax returns and make payments on a quarterly basis, rather than the monthly basis required for the VAT for firms in the regular regime.
- (2) **A higher AETB within the turnover regime may in part reflect the fact that some of the tax burden is intended to be related to the VAT.** The turnover tax regime is in lieu of both the CIT (profit tax) and the VAT. While the VAT is theoretically a tax on final consumption, meaning the ultimate tax burden of the VAT should be the final consumer, this may not be the case in practice due to several factors including cascading from VAT exemptions and the distortive impact of the VAT threshold on businesses within the VAT. Moreover, compliance with the VAT imposes an additional administrative burden on businesses. Finally, given that VAT adds to the price of goods and services sold to consumers, avoiding VAT may result in competitive advantages.

Figure B3.1 Frequency of Firms over Different Firm Sizes around the IFRS Threshold



Notes: Figures plot the frequency of firms per bin around the administrative notch. The administrative threshold is normalized to 0 and is denoted by a vertical line.

Source: Asatryan and Peichl, 2017.

- (3) **Participation in the regular regime may hurt SMEs' cashflow.** The difference of quarterly versus monthly filing may have significant implications for firms' cashflow, which the analysis of AETBs/AETRs does not factor into the equation. Given that SMEs are much more likely to be cash-constrained than larger firms (and less likely to have access to affordable credit lines), it follows that a tax regime that provides more space to manage monthly cashflow would be perceived as a significant added advantage. Moreover, in the VAT regime, there could be other complications, such as VAT refunds, or VAT withholding at the border.
- (4) **Finally, the turnover regime may make it easier for firms to engage in tax avoidance and/or evasion.** The simplified reporting of the turnover regime may make it easier for firms to underreport their income, inflate their costs, and/or engage in other misreporting. The turnover regime may additionally be associated with a lower likelihood of being audited or of less effective audits. If this lower-likelihood/lower-effectiveness of audits is known to firms within the turnover regime, then these firms have a greater incentive to avoid or evade taxes.
- (5) **Research using VAT data in Armenia finds evidence for the first and fourth abovementioned factors.** Using panel data on CIT with audits, Asatryan and Peichl (2017) find: (i) a strong bunching response to the accounting threshold where IFRS becomes mandatory, and (ii) strong evidence to suggest that underreporting of income, rather than changes in real-sector activity, drives the bunching response of firms. These findings are consistent with other studies such as Aghion et al. (2023).

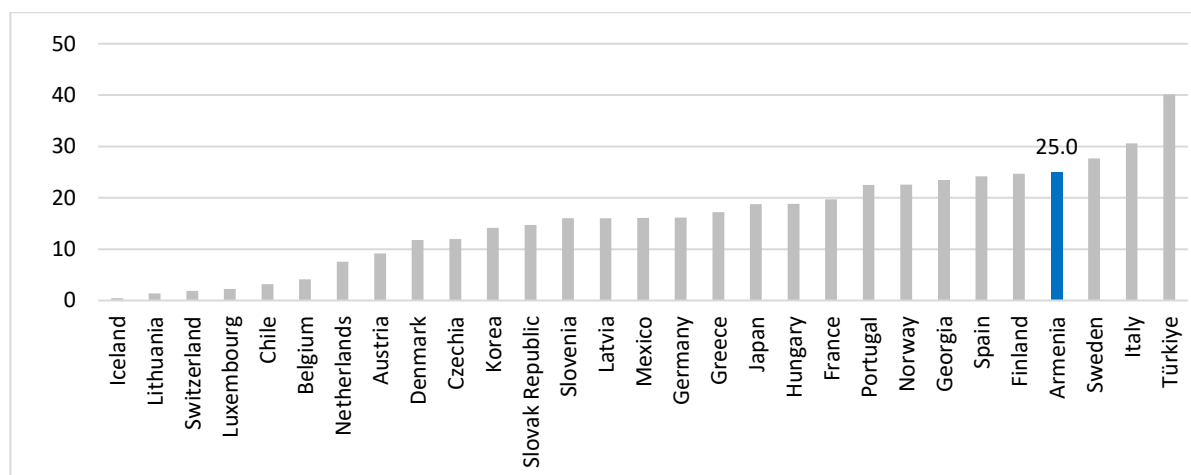
46. **Variation in AETBs by sector appears to be mainly driven by very large differences in ETBs in the regular regime.** In the regular regime, the analysis finds notable differences in AETBs: (i) between sectors, which is most clearly seen in the much higher median for the real estate and mining sectors compared to many other sectors), and (ii) within sectors, which is shown by the size of the boxplots and the long tails indicating the presence of many outliers (Figure 20, left panel). In contrast, while there is some divergence within the turnover tax regime, the differences are less sharp (Figure 20, right panel). The fact that the turnover regime is, by definition, simpler to apply (a flat tax is imposed per category on turnover and, for most sectors, credits cannot be claimed), likely explain why estimates of AETBs within the turnover regime are less dispersed than those within the regular regime. Moreover, larger firms operating in the regular

regime may be more complex and can therefore qualify for more eligible deductions on their tax base, and/or are able to capture a greater share of the tax expenditures that government offers, resulting in a much greater diversion in AETBs both within and between sectors.

1.3.4 Exploring the Nexus between Armenia’s Tax System and Informality

47. **The combination of the tax on labor with the targeted social payments (TSPs) imply a relatively high average tax wedge on labor for households with low wages from formal employment.** Figure 21 illustrates the average tax wedge for a one-earner married couple with two children, earning 50 percent of the average wage.⁵² Armenia’s tax wedge is estimated to be higher than many countries, and is approximately triple that of The Netherlands and double that of Czechia.

Figure 21. Average Tax Wedge for Low-Income Households Engaged in Formal Labor, (in percent of average wage)



Source: WB staff analysis based on OECD, Taxing Wages, 2023.
 Note: Household = one-earner married couple with two children and 50 percent of average wage. Armenia’s estimated tax wedge includes the sum of both the tax on labor income and social security contributions, less standard deductions (including basic allowance, child allowance, and tax thresholds).

48. **Tax policy is often designated as one of the key drivers of informality, and the relatively higher burden on formal labor in Armenia combined with the presence of special regimes may be contributing to higher informality.**⁵³ Armenia’s high tax wedge on formal labor for low-waged workers can be contrasted with the presence of special tax regimes for microentrepreneurs and small and medium firms discussed above. Special tax regimes provide simplification, lowering the administrative burden, which may promote registration and reduce informality over time. On the other hand, sharp discontinuities in the tax regime (between special regimes and regular tax treatment, defined by arbitrary thresholds) may create disincentives for firm growth and/or incentives for firms to engage in tax avoidance and evasion

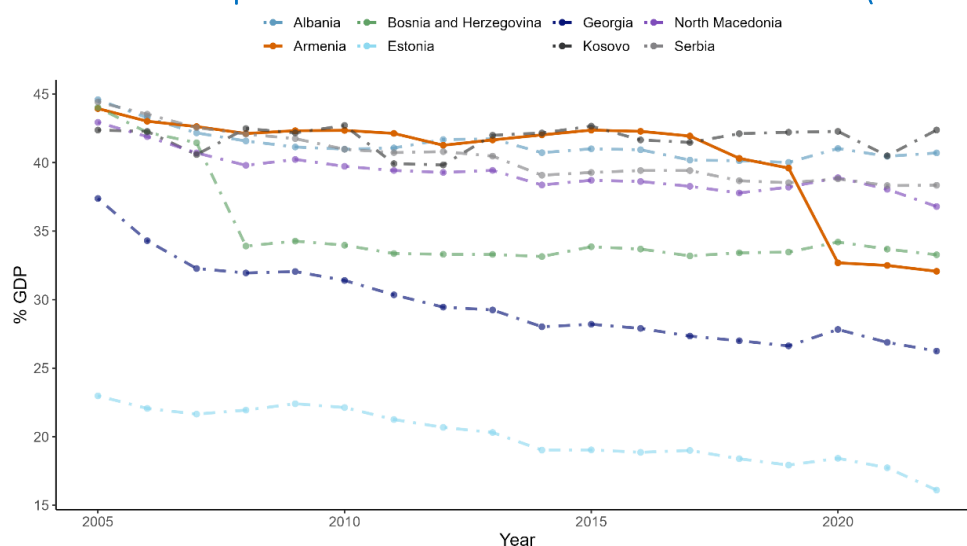
⁵² Tax wedge is defined as the ratio between the amount of taxes paid and the corresponding total labor cost for the employer. The average tax wedge measures the extent to which tax on labor income discourages employment. This indicator is measured in percentage of labor cost. It can be estimated with reference to the wages of an average single or married worker/couple, with earnings compared to the average wage in a country, with or without children.

⁵³ See also Mitra, 2017 and Ohnsorge and Yu, 2022.

(consistent with Box 3), including through firm-splitting and underreporting of turnover.⁵⁴ These negative effects contribute to the persistence of informality.

49. **To explore the relationship between tax system features and informality, the multiple indicators multiple causes (MIMIC) model is employed.** Annex 1G describes the model, the advantages, and limitations it brings compared to other approaches, and the data and variables used. According to the model, the share of the informal sector in Armenia’s GDP has been declining, particularly in recent years, but remains higher than Estonia and Georgia at approximately 33 percent in 2021 (Figure 22).⁵⁵ The findings suggest that an increase in indirect tax and CIT revenues measured as percent of GDP potentially achieved through enhanced compliance, the elimination of exemptions, and/or the adjustment of tax rates, is concomitant with a more formalized economy. This correlation does not seem to hold for individual taxation (PIT).

Figure 22. Informal Output as Percent of GDP in Armenia and Peer Countries (2002–2021)



Source: WB staff analysis.

50. **The findings of an empirical analysis support the hypothesis that the income tax system may be contributing to informality in Armenia.** Multiple Indicators Multiple Causes (MIMIC) modeling cannot provide causal evidence behind specific PIT design features and formality. However, the overall finding regarding PIT being an important burden suggests Armenia’s high reliance on PIT (compared to indirect taxes) and specific PIT design features are factors that are likely to be distorting the formalization of labor and firms in the economy. Empirical evidence using microdata helps to further prove this point.

⁵⁴ Firms may split in different ways. Interviews with stakeholders revealed that some firms may split off some of their departments (e.g., marketing, research, sales, etc.) into separate firms so that their revenue can appear below tax thresholds, even though they are in fact one firm. Another way firms split is when the owner uses other family members or acquaintances to channel income and avoid going over the turnover threshold. An alternative way of splitting income would be for the same individual to open a corporation as a shareholder, and split their income between themselves as sole proprietors and their corporations.

⁵⁵ WB staff analysis.

Section 1.4 Tax and Equity Considerations

1.4.1 Findings from the Commitment to Equity Approach

51. **This section presents the findings from a fiscal incidence analysis of data from the application of the commitment to equity (CEQ) methodology to the main taxes.** The objective is to understand the impact of the different taxes on different households (from the poor to the most affluent). Overall, the analysis covers 78.9 percent of total tax revenue in 2021, which equates to 73.5 percent of total revenue. This includes VAT, excises on tobacco, alcoholic beverages, and petroleum products, PIT and TSP, and customs duty. Due to the limitations of the CEQ methodology, CIT is not included in the analysis. Annex 1H discusses the specific methodology used, the taxes covered, and other limitations.

52. **The VAT and excises (with the exception of fuel taxes) are found to be mildly regressive and regressive, respectively.** According to the analysis, the VAT has a mildly regressive impact.⁵⁶ The excise on tobacco and alcoholic beverages are found to be most regressive (Figure 23).⁵⁷ However, according to the extended cost-effectiveness analysis (ECEA), which takes into account the implications of reduced consumption on the economy and the population, increased excise taxes bring substantial health and financial benefits and are pro-poor, reducing premature deaths, out-of-pocket medical expenditure, averting thousands of poverty cases.⁵⁸ The analysis shows that half of the premature deaths and 27 percent of poverty cases averted would be concentrated among the bottom 40 percent of the population. In contrast to excises on tobacco and alcoholic beverages, the excises on fuels are mildly progressive, since the lower income deciles rely more on public transportation, with more administered pricing.

⁵⁶ This finding is limited by the fact that the CEQ does not have data on place of purchase and cannot capture the impact of informality (which reduces the VAT burden, and thus, improves the progressivity of the VAT). Given Armenia's large share of informal economy and its high VAT threshold, it is likely that this missing effect is significant (see Bachas et al., 2020).

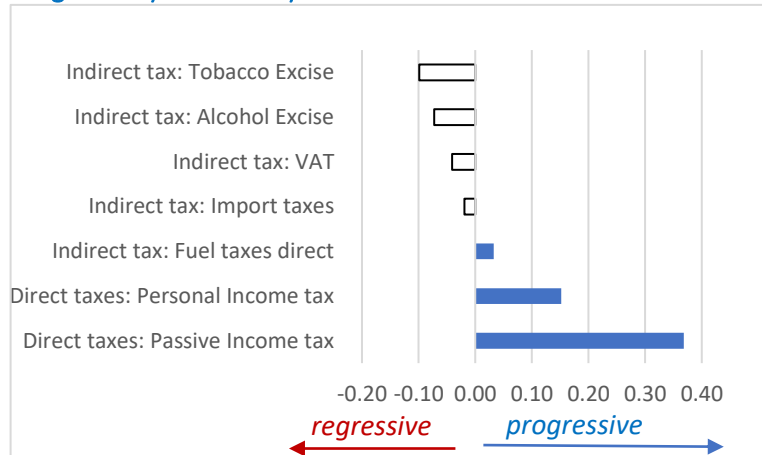
⁵⁷ Tax incidence analysis is used to understand who bears the burden of a given tax. A progressive tax means that higher tax rates imply for those with higher income or more wealth.

⁵⁸ World Bank, 2017.

53. **The tax on formal income is regressive.** When considering formal income only, Armenia’s tax wedge is regressive. PIT is proportional to income along different taxable income levels (when only formal income sources are considered), however the marginal effect to redistribution is not significant. Initially, the targeted social payments (TSP) are progressive, but after the contribution ceiling is applied, it becomes regressive. Passive income taxes, such as those on property income, show the highest progressivity.

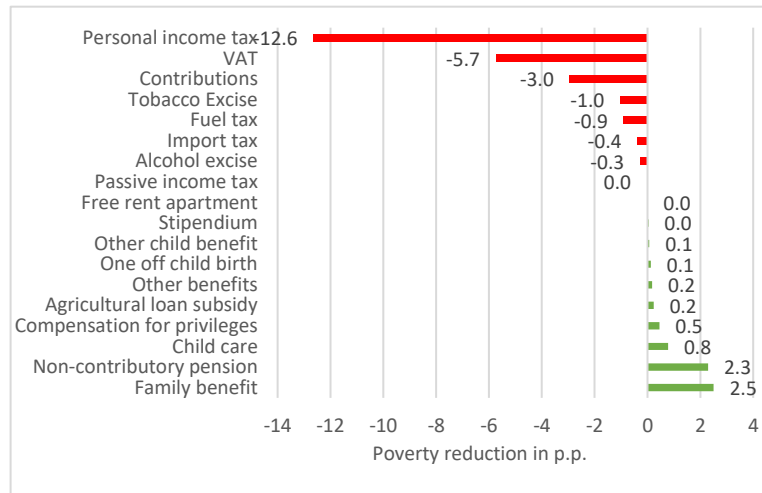
54. **PIT becomes progressive when both formal and informal income are considered.**⁶⁰ This is due to the impact of the micro tax regime exemption and the presence of the informal economy. PIT payments are more concentrated in top-income deciles because informal wages are more common amongst employees who have low incomes. Given the recent change in rules regarding the application of the standard PIT on employees in the micro regime, this progressive feature of the PIT regime might decrease.

Figure 23. Armenia: Incidence of Taxes Progressivity of Taxes by the Kakwani Index ⁵⁹



Source: WB staff calculations based on the 2021 ILCS and the CEQ methodology.

Figure 24. Effect of Taxes on Poverty Reduction



Source: WB staff calculations based on the 2021 ILCS and the CEQ methodology.

⁵⁹ The Kakwani index is used by social scientists, statisticians, and economists to measure the progressivity of social interventions using the Gini framework. It is equal to the difference between the Gini index for incomes before and after the social policy interventions. Theoretically, the Kakwani index score can vary between -1 to 1. The larger the index result, the more progressive the social intervention.

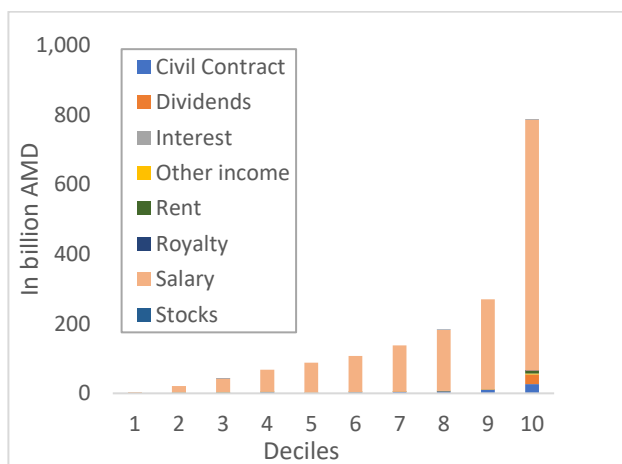
⁶⁰ This exercise does not account for the income tax refund for mortgages. That was discussed in section 1.4.2 on Findings from Micro-Level Tax Administration Data.

55. **Taxes are found to exacerbate poverty.** The net impact of taxes and social direct transfers on national poverty was negative, with national poverty increasing by 11.7 percentage points (from 21.2 at market income plus pensions to 32.9 at consumable income level). Both direct and indirect taxes contribute to increases in poverty, with the highest impact coming from PIT (12.4 percentage points) followed by VAT (Figure 24).⁶¹ While taxes financed pro-poor spending including family benefits, childcare benefits, and non-contributory pensions, the poverty-reduction from these programs was insufficient to compensate for the poverty-increasing effects of taxes.

1.4.2 Findings from Micro-Level Tax Administration Data

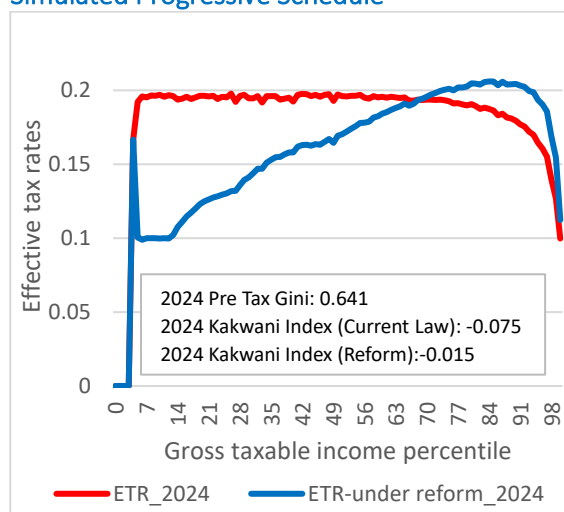
56. **A microanalysis of Armenia’s PIT using micro-level tax administrative data provides additional insights on the distributional implications of the PIT and enables modeling of reform scenarios.** This section draws on a model that uses an anonymized sample of the data of 770,428 unique taxpayers for 2021. Annex 11 gives the descriptive statistics of the data.

Figure 25. Structure of Total Income (2021)



Source: WB staff calculations based on the tax administrative data and WB tax microsimulation model.

Figure 26. Effective Tax Rates by Percentile in Simulated Progressive Schedule



Source: WB staff calculation based on the tax administrative data and WB tax microsimulation model.

57. **The model finds that labor and passive income are concentrated in the richest decile.** The distribution of gross income by type, across decile groups shows that the most dominant source of income is labor income, which accounts for 97.3 percent of total income (Figure 25). This labor income consists of salary and income from civil contracts, which represent 93.6 percent and 3.7 percent, respectively. The share of passive income in the entire structure is much smaller (2.7 percent). However, a unique feature of passive income is that it is predominantly concentrated in the richest decile, which accounts for 93 percent of the total share.

⁶¹ It is worth noting that the CEQ analysis does not capture long-term effects of taxes. In the case of health taxes, the CEQ analysis potentially underestimates the gains to poverty reduction that result from a lower disease-adjusted life years (DALYs) lost through lower tobacco and alcohol consumption from higher health taxes.

58. **The PIT is found to be regressive due to a combination of the flat tax and the impact of the income tax refund program on mortgages.** The red line in [Figure 26](#) shows ETRs in 2024 across the income distribution based on the current tax code. The Kakwani index for the current law is negative (-0.075), as the tax effective rates for the highest income percentiles are much lower, which is a reflection of the fact that they benefit the most from measures such as the income tax refund program on mortgages.

59. **Introducing a progressive rate schedule raises revenue and reduces regressivity of the PIT.** A simulation is run to estimate the revenue impact of changes in the rate schedule. The simulation is not intended as a specific policy recommendation on how to redesign the rate schedule, but as a useful tool to understand the potential impact of such a reform. The actual impact would depend on the specific design features as well as the revenue administration's capacity to implement the policy change. In this simulation, four marginal brackets were introduced for 2024:

- 1) A rate of 10 percent for the first marginal income bracket (AMD 0 – 250,000)
- 2) A rate of 15 percent for the marginal income bracket (AMD 250,001 – 750,000)
- 3) A rate of 20 percent for the marginal income bracket (AMD 750,001 – 1,500,000)
- 4) A rate of 25 percent for income above AMD 1,500,000.

60. **The simulated reform on introducing progressive rate schedule would result in an estimated revenue gain of AMD 26.47 billion (0.3 percent of GDP).** This revenue gain would come from taxpayers earning above AMD 1,500,000 who would be subject to a higher maximum marginal rate (MMR) of 25 percent. In contrast, taxpayers earning less than AMD 250,000 would have a lower MMR of 10 percent. With fewer brackets and higher income tax rates, the system would become more progressive.

61. **While the proposed changes would reduce the tax burden on the lowest-income deciles and increase the tax contribution of the highest-income deciles, it might require stronger tax administration.** The contribution of richest taxpayers with incomes above AMD 5 million would increase from 49 percent to 54 percent, which is an increase of about 10 percent. Similarly, the contribution of taxpayer group having income between AMD 0 and 1 million would decrease from 5 percent to 3 percent, which is a reduction of 38 percent. As a result, the ETRs would increase with increases in income levels, and would improve the tax system's progressivity. This is corroborated by the increase in Kakwani index from -0.075 under the current regime to -0.015 under the reform scenario. The negative Kakwani index under the reform scenario indicates the system remains regressive, but to a lesser extent. One caveat of the introduction of progressive tax brackets is that it may require stronger administration and lead to increased administrative costs and, potentially, some underreporting. Thus, additional analysis would be required prior to undertaking such reform.

Section 1.5 Tax and Sustainable Growth

62. **Another secondary objective of the tax system is its role in supporting the transition to a low-carbon economy, in which adequate carbon pricing is critical.** Carbon pricing enables governments to provide a crucial signal to markets of the societal cost associated with greenhouse gas (GHG) emissions, helping firms and households to become more energy-efficient and to switch from high-carbon to low-carbon goods and services.

63. **Carbon pricing takes different forms.** Positive carbon pricing is most efficiently implemented through “upstream” carbon taxes (defined as direct or explicit carbon pricing), but may also be partly achieved through fuel excises (indirect or implicit carbon pricing). “Upstream” here refers to the application of the carbon tax upstream in the energy supply chain, for example, by imposing it on the importers of natural gas and oil products in Armenia. This has the benefit of being the simplest means of administrating the tax (because it requires the fewest number of entities to register and pay). It is generally economically the most efficient way of introducing this carbon tax, because it covers both the formal and informal economy and avoids tax distortions that are likely to arise if the tax is applied downstream/partially to only specific sectors and/or firm types/sizes. Other forms of positive carbon pricing include emissions trading systems (ETS) and tradeable performance standards. On the other hand, policies such as fossil fuel subsidies (FFS), VAT, and import duty reduced rates and exemptions, represent examples of negative carbon pricing, weakening the overall price signal.

64. **So-called green tax expenditures (GTEs) and green expenditure subsidies (GESs) can play a complementary role, but must be used with caution as they can be inefficient and ineffective.** As with brown or traditional TEs, the use of GTEs likely generates unintended distortions. The effectiveness of these instruments is also difficult to assess as they interact with positive and negative carbon prices as well as non-fiscal factors that shape the low-carbon transition.⁶² Armenia offers limited GTEs and GESs. Since 2015, there has been a feed-in tariff for solar power. Under this program, vulnerable households are eligible to pay lower tariffs, and the government keeps a record of these allocations on a monthly basis.⁶³

1.5.1 Estimating the Total (Net) Carbon Price

65. **In Armenia the total (net or effective) carbon price (TCP) is driven by energy taxes.** The TCP metric provides an overall price signal for carbon emissions as it combines both the direct forms of carbon pricing in an economy (a carbon tax and/or an emissions trading system) with indirect forms (fossil fuel taxes and subsidies).⁶⁴ The average TCP estimate for the whole economy (all fuels and sectors) in Armenia is around USD 12 per metric ton of CO₂ (2017–2022 average). The only component of TCP is energy taxes (excises described in the previous section), as there are no explicit carbon prices, fossil fuel subsidies (FFS), or VAT deviations in the country.⁶⁵ Large FFS were phased out in 2017, and only some limited support measures to vulnerable families remain in place.

66. **Armenia’s positive TCP in 2022 is largely driven by taxes on kerosene, gasoline, diesel, with natural gas taxed at a lower rate (but no longer subsidized) and coal enjoying a TCP of almost zero.** Differences in TCP by fuel (driven by the current design of energy taxes) do not reflect the carbon content

⁶² The academic and policy literature treats GTEs and GESs as potentially complementary to broad, economy-wide, carbon pricing, but are less preferred than carbon taxes and Emissions Trading Systems (ETSs) as they come with a fiscal cost (which many governments with tight fiscal space cannot afford) and can be both inefficient and ineffective (see More et al., 2023; Casey et al., 2023; Gugler et al., 2021; Zhang et al., 2020; Zhang et al., 2023).

⁶³ OECD, 2018.

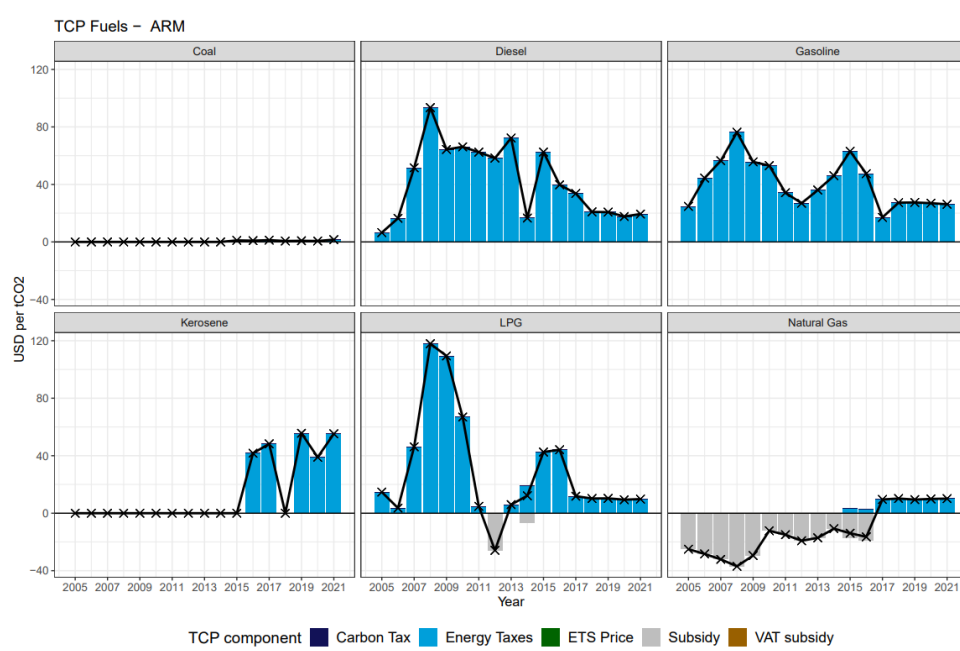
⁶⁴ The methodology used to estimate the TCP is described in Annex 1J and is based on Agnolucci et al. (2023) for methodological details.

⁶⁵ As discussed in Annex 1J, production-side tax expenditures (e.g., different CIT TEs for carbon-intensive vs. low-carbon sectors) are outside the scope of this TCP analysis. VAT deviations refer to VAT exemptions or reduced rates that apply specifically to certain fuels. The implications of Armenia’s VAT threshold and/or exemptions to sectors with differential emissions intensity is not captured by this measure.

of these fuels, which weakens and distorts the carbon price signal in the economy. Coal, which is the most carbon-intensive fuel, for example, faces a near-zero TCP (Figure 27).

67. **Armenia’s TCP is low by international standards and compared to its peers.** An average TCP of USD 12 per metric ton of CO₂ is relatively low compared with the Paris Agreement-aligned levels proposed by the Carbon Pricing Leadership Coalition Report, which are between USD 40 and 80 per metric ton of CO₂ in 2020, and which will increase to between USD 50 and 100 per metric ton of CO₂ in 2030. Armenia’s TCP is also low compared to European countries, which usually have a TCP above USD 150 and direct carbon prices around USD 80 to 90 per metric ton of CO₂. Armenia’s TCP is also lower than select peers. For example, in recent years, Georgia’s TCP was on average around USD 21 per metric ton of CO₂ and Serbia’s TCP was around USD 44 per metric ton of CO₂.

Figure 27. TCP by Fuel Type in USD per tCO₂



Source: WB staff analysis.

The Carbon Border Adjustment Mechanism (CBAM) and potential revenue losses

68. **The TCP signal and direct carbon pricing are elements in the EU’s Carbon Border Adjustment Mechanism (CBAM), recently adopted by the European Union.** The EU has introduced the CBAM to charge for carbon emitted during the production of carbon intensive goods that are entering the EU, and to encourage cleaner industrial production in non-EU countries. The initial impact of CBAM is discussed in

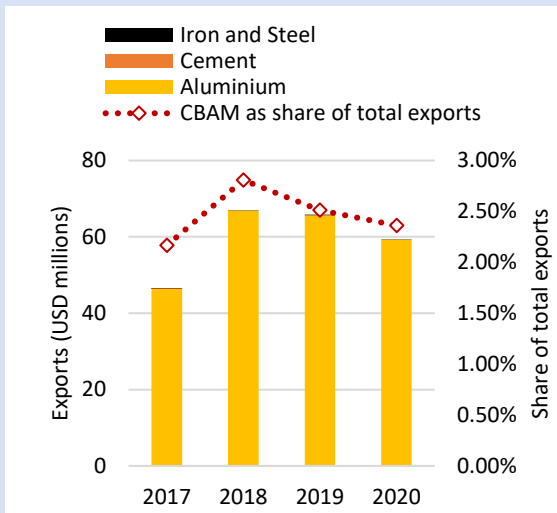
Box 4. The Importance of International Climate Mitigation Policies for Armenia

The CBAM will initially apply to some imports from Armenia starting in 2026. These imports are electricity, aluminum, iron and steel, cement, fertilizers, and hydrogen. The charge will depend on the emission intensities of the affected products and the differential in carbon prices in the European Union and in the country of origin. Because countries will need to either pay to export to the EU or charge for carbon emissions locally, it is important to look at the countries’ exposure to the CBAM regulation in terms of trade.

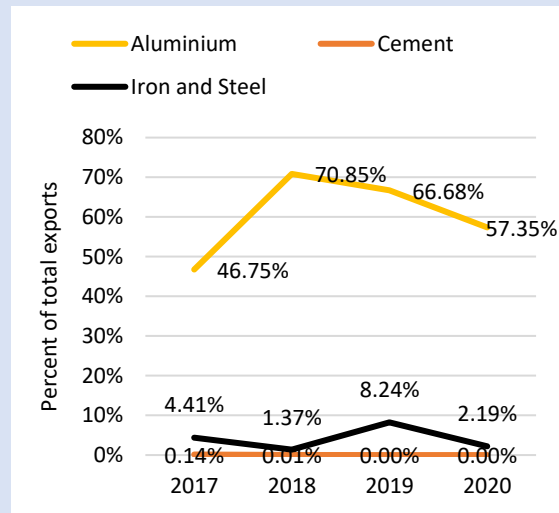
Armenia's exports of aluminum will be impacted by CBAM. Armenia exports aluminum to the EU, which constituted around 2 percent of total exports in 2020 (Figure B4.1). Within total aluminum exports, up to 70 percent of exports went to the European market, depending on the year. Other CBAM products do not represent a risk for Armenia since trade with the EU is limited.

Figure B4.1 CBAM Products Trade to the EU27

A. Armenia's CBAM Exports to EU27 Sector Total Exports



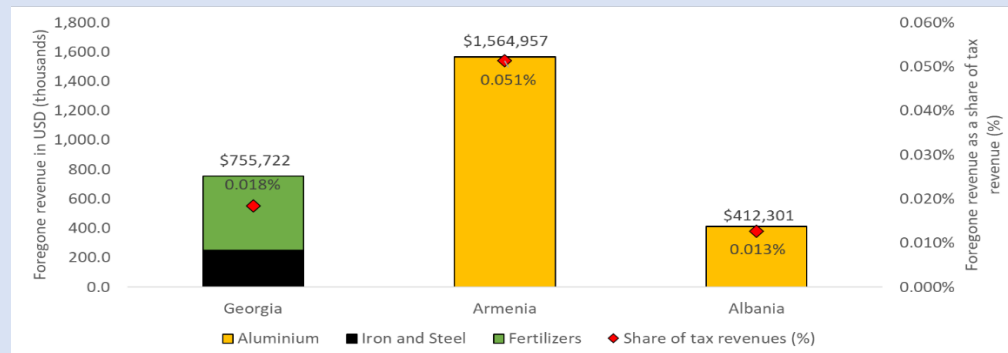
B. Armenia's CBAM Exports to EU27 as A Share of Sector Total Exports



Source: WB staff analysis.

CBAM is likely to have a small revenue impact initially, but this could grow. The country could potentially lose revenues equivalent to 0.051 percent of total revenues, if: (i) trade patterns in 2020 were sustained, (ii) the EU carbon price were USD 90 per metric ton of CO₂, and (iii) no explicit carbon pricing were adopted in Armenia. This loss would be higher than losses in other regional countries (Figure B4.2). Although this estimate is currently small, it only provides a snapshot at a single point in time. Similar initiatives could flourish as seen in the United Kingdom's CBAM, and there is potential for more sectors to be incorporated into the EU's CBAM regulations in the future.⁹ Additionally, Armenian suppliers of commodities that are used in global value chains could be at risk as multinational enterprises are increasingly becoming climate conscious and demanding more stringent mitigation standards.

Figure B4.2. Potential Forgone Revenue Due to CBAM Regulation in the Absence of Local Direct Carbon Pricing



Source: WB staff analysis.

^a See <https://www.gov.uk/government/consultations/addressing-carbon-leakage-risk-to-support-decarbonisation/outcome/factsheet-uk-carbon-border-adjustment-mechanism>.

1.5.2 Modeling the Impact of Raising the Carbon Price

69. **This section presents modeled results from different carbon pricing scenarios that would increase Armenia’s price signal, and analyzes their impact on emissions, GDP, revenue, and household consumption.** This analysis is conducted using the IMF-World Bank Climate Policy Assessment Tool (CPAT).⁶⁶ See Annex 1K for a summary of the methodology and the online documentation for details.⁶⁷

70. **The main assumptions of the scenarios analyzed are presented in Table 2.** The carbon price (CP) is implemented as an upstream carbon tax (applied on the whole economy). The first scenario considers a low carbon price in 2030 and a balanced distribution of revenues. It is assumed that 40 percent of revenues raised from the carbon tax are used to reduce labor taxation, 30 percent channeled to public investments, and 30 percent to targeted cash transfers. The second scenario differs from the first in the carbon price level only (increasing from USD 72 to 83 per metric ton of CO₂ in 2030), the values of which are consistent with meeting the goals established in the Paris Agreement, according to the Carbon Pricing Leadership Coalition Report.

Table 2. Carbon Price Scenarios Assumption on Levels and Revenue Recycling Schemes

Name	Carbon Tax				Revenue Recycling (percent)				
	Start price (USD/tonCO ₂)	Start year	Target level (USD/tonCO ₂)	Target year	Labor taxation	Corporate taxation	Public investment	Current spending	Cash transfers *
Low CP, balanced revenues	14	2024	20	2030	40	0	30	0	30
Paris CP, balanced revenues	72	2024	83	2030	40	0	30	0	30

Note: (*) Cash transfers are directed to the bottom 40 percent of households, assuming a coverage rate of 90 percent (percent of the targeted group that receives the transfer) and a leakage rate of 10 percent (percent of untargeted percentiles that receive transfers).

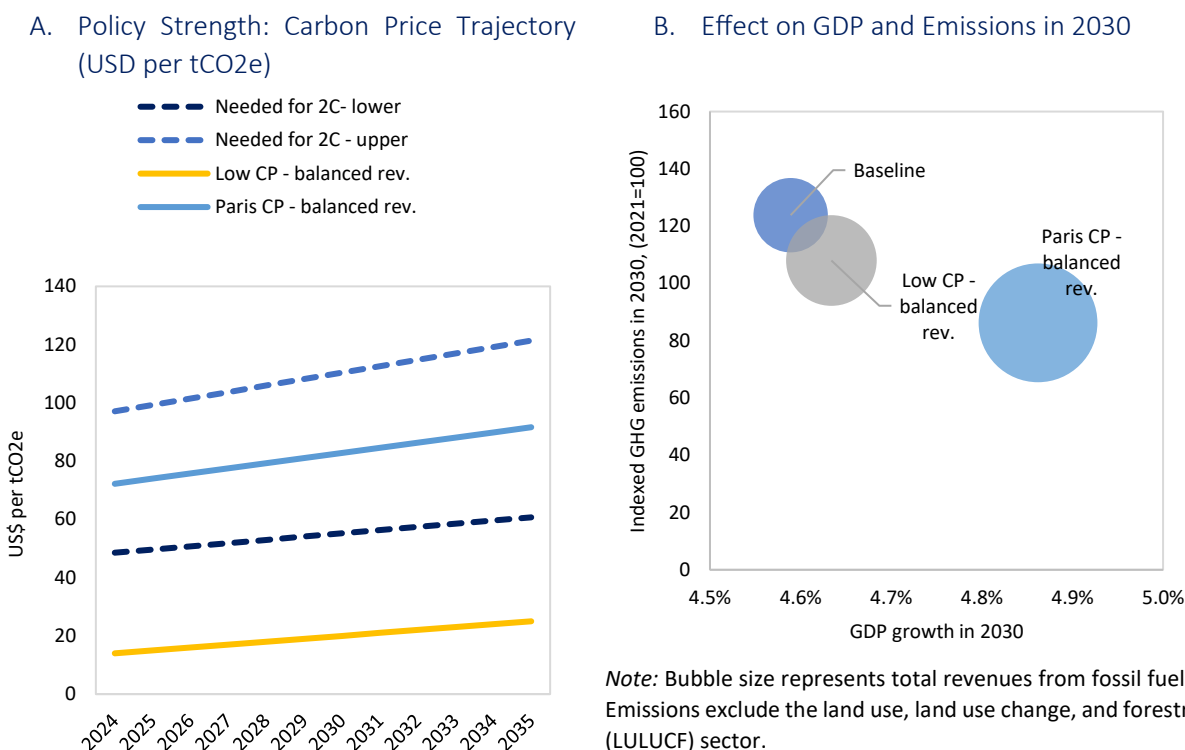
71. **A higher carbon price can help lower emissions and support GDP growth.** Figure 28.A presents the carbon price trajectories over time and the upper and lower ranges from the Carbon Pricing

⁶⁶ CPAT has been jointly developed by IMF and WB staff and evolved from an earlier IMF model. CPAT (and earlier versions of it) have been routinely used in bilateral and multilateral analyses of climate mitigation policies (e.g., Parry, Mylonas, and Vernon, 2021 and Mercer-Blackman, Milivojevic, and Mylonas, 2023). A more detailed description of the model is available within official documentation compiled by the WB’s CPAT team as well as in Black et al. (2023).

⁶⁷ The CPAT scenarios do not constitute a policy proposal. The specific values used for carbon prices or the time horizons assumed as inputs to these model do not necessarily represent suggestions. Instead, they serve to convey a general sense of the range of movements policymakers can expect in response to different carbon pricing scenarios that can, in turn, help inform policy discussions on energy and climate policy.

Leadership Coalition Report. [Figure 28.B](#) presents the total GDP growth rate in 2030 and the indexed emissions to 2021 levels. In the business-as-usual (BAU) baseline scenario, without explicit carbon pricing reform, GDP growth is projected to be 4.59 percent, and emissions indexed to 2021 levels are projected to be 123.8 (i.e., 23.8 percentage points higher than in 2021). Under the carbon tax scenarios, 2030 GDP growth would be higher than in the baseline, with growth rates of 4.63 percent and 4.86 percent in the low CP and Paris CP scenarios, respectively. In the low CP scenario, indexed emissions would be reduced compared to the BAU baseline, but still higher than in 2021 (8 percent higher). In the Paris CP scenario, 2030 emissions would be lower than 2021 levels, with indexed emissions of 86.2, or 13.8 percentage points lower than in 2021.

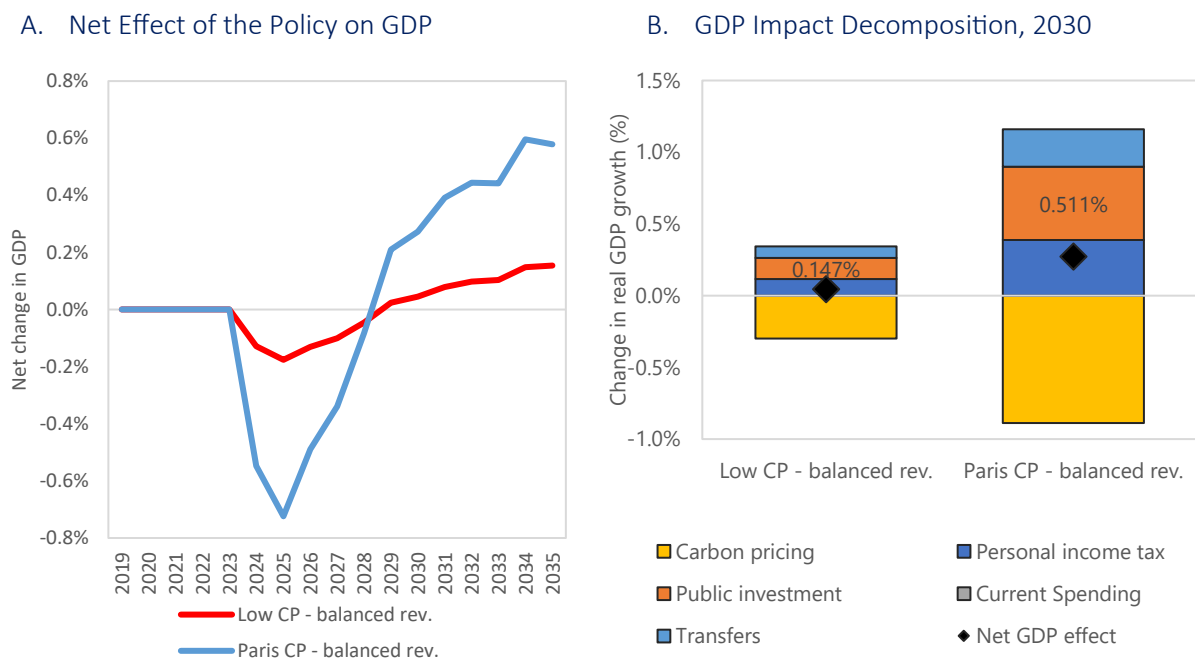
Figure 28. Carbon Price Trajectories and Effects on GDP and Emissions in Armenia



Source: World Bank staff calculations.

72. The impacts from carbon taxes on GDP will depend largely on how the revenues are used. The policy reform package is expected to be contractive in the initial years following the reform, but could have positive growth effects from 2029 onwards ([Figure 29.A](#)). Similar to other taxes, the adoption of carbon taxes would have a negative impact on growth. However, the net effect on GDP will depend on how carbon tax revenues are used and will vary over time ([Figure 29.B](#)). Of the policy options available, recycling some of the revenue in public investment generates the highest growth dividends, followed by reductions in PIT.

Figure 29. Policy Effects on GDP Changes and GDP Impact Decomposition in Armenia



Source: World Bank staff calculations.

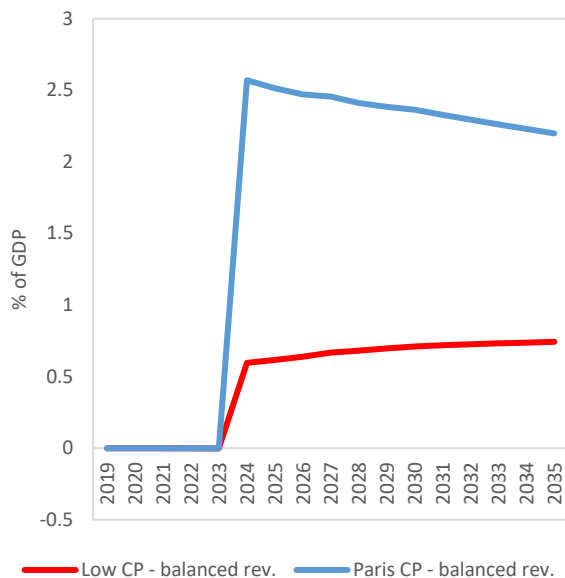
73. **The additional revenue could vary from 0.74 percent to 2.2 percent of GDP in 2035 depending on the level of carbon pricing.** The additional net revenues from the proposed policies could reach up to 0.60 percent of GDP in the low CP scenario in the first year after the reform, rising to 0.74 percent of GDP by 2035. In contrast, with a higher carbon price under the Paris CP scenario, up to 2.6 percent of GDP could be raised in the first year of the reform, falling slightly to 2.2 percent of GDP by 2035 in-line with the economy becoming less carbon-intensive (Figure 30.A).⁶⁸

74. **The simulated reforms increase fuel prices.** Fuel prices would increase according to their carbon content, and because the carbon price is increasing over time, so would the price increases. Figure 30.B shows the price increases for all fuels over time. The most affected fuels in percent terms are coal and natural gas. Price increases in coal, although large, will not have much of an effect on the economy, except by preventing new coal use, but currently, this fuel is barely in use in the country. Natural gas will increase its price compared to the BAU baseline, initially by around 15 percent and up to 29 percent by 2030. This impact will be relevant for consumers, but the policy could be equity enhancing, depending on the design of possible compensation schemes.

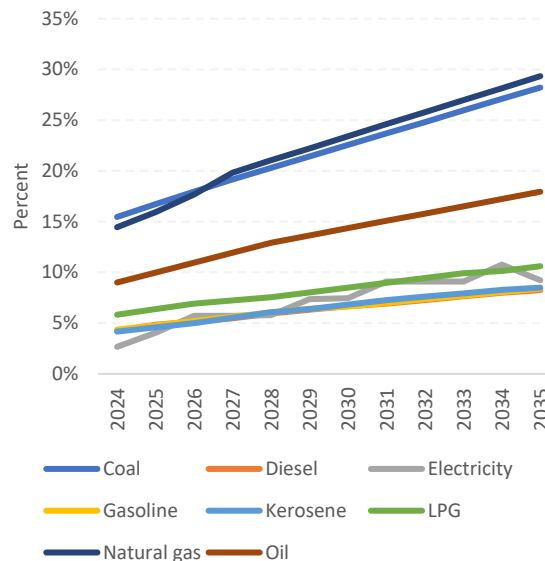
⁶⁸ These revenue estimates take into account the net impact of revenue raised from the carbon tax and the revenue lost from lower fuel excises given reduced fuel consumption (which is generated via estimated elasticities that capture the relationship between price and consumption). Different elasticities would result in different revenue estimates. These estimates also assume that the carbon tax is applied uniformly (with no exemptions) and is perfectly enforced. Relaxing these assumptions (e.g., by allowing for exemptions for certain sectors and/or assuming a share of noncompliance) would result in lower revenue estimates.

Figure 30. Additional Fiscal Revenues and Changes in Fuel Prices Compared to Baseline

A. Additional Fiscal Revenues Raised in Armenia as % of GDP



B. Fuel Price Increase vs. Baseline (Low CP Scenario)

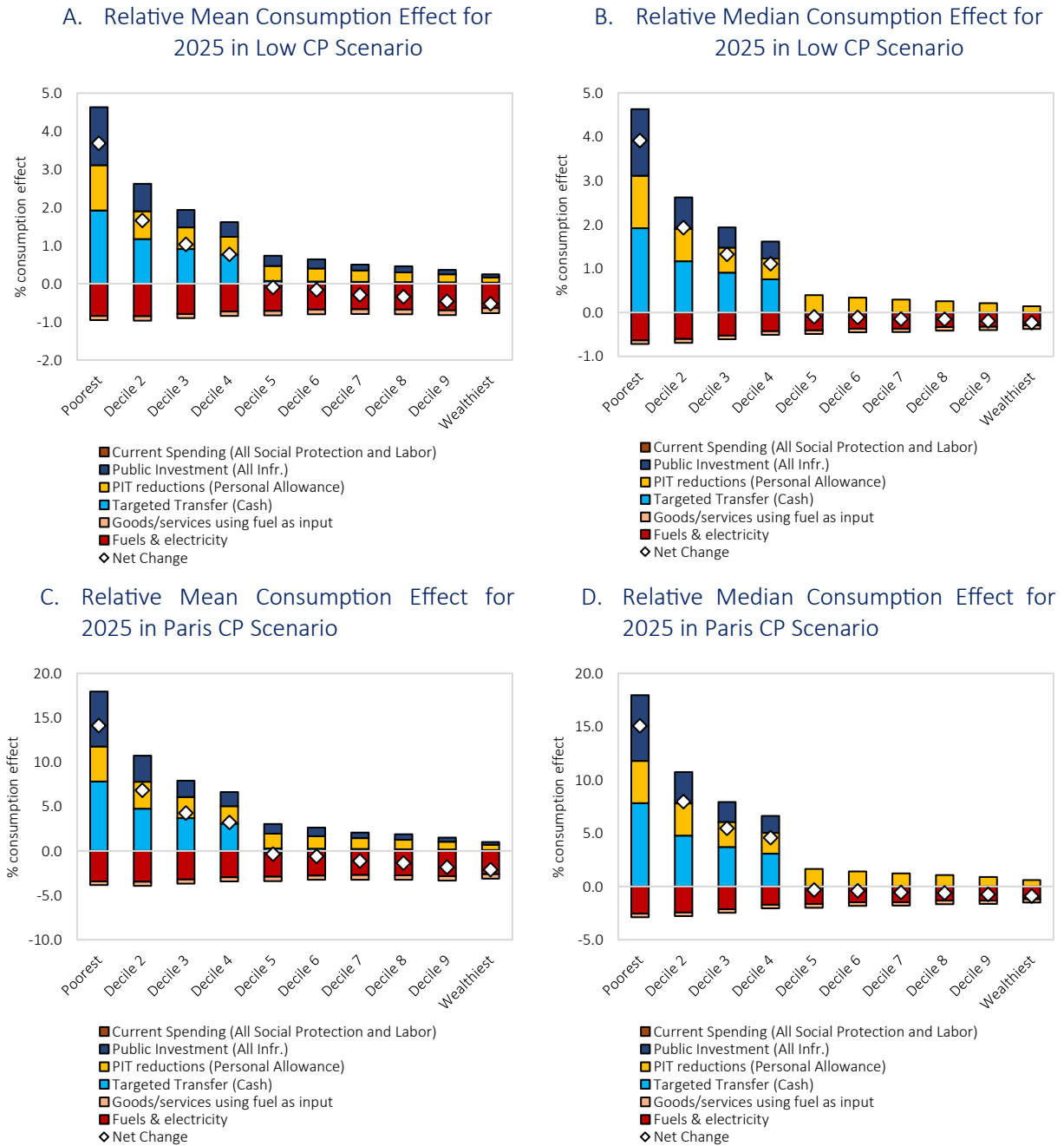


Source: World Bank staff calculations.

75. **The redistributive impact of the reform depends on the size of the carbon pricing increase and how the carbon tax revenues are recycled.** In the low *CP – balanced rev.* scenario, the lowest income decile could see its consumption increase by nearly 4 percent (both mean and median). In contrast, the highest income decile would see its consumption reduced by 0.5 (mean) and 0.23 (median) (Figure 31.A and Figure 31.B). In the Paris *CP -balanced rev.* scenario, the lowest income decile could see its consumption increase by nearly 14 percent (mean) and 15 percent (median). In contrast, the highest income decile would see its consumption reduced by 2.12 (mean) and 0.92 percent (median) (Figure 31.C and Figure 31.D). These results may appear large, but the increase in consumption for low-income deciles is in large due to the substantial amount of revenues that is raised and recycled. Lower deciles are assumed to respond to higher energy and non-energy prices by shifting away from the more expensive energy and non-energy goods/services.⁶⁹

⁶⁹ An important share of low-income households use firewood for energy and may therefore be impacted differentially. Part of the revenue from the higher carbon price can be used to support all vulnerable households.

Figure 31. Simulated Household Consumption Effects for 2025 after Targeted Cash Transfers



Source: World Bank staff calculations.

Note: Cash transfers are directed to the bottom 40 percent of households, assuming a coverage rate of 90 percent (percent of targeted group that receives the transfer), and a leakage rate of 10 percent (percent of untargeted percentiles that receive transfers).

76. **Different revenue recycling mixes can have very different impacts on GDP and equity.** To illustrate the importance of different uses of revenue from the carbon tax on GDP and distributional impacts, additional scenarios were run in Annex 1L. A scenario where all the revenues would be used to

increase public investment (e.g., to expand public transport, etc.) would be the most favorable in terms of economic growth. Household consumption impacts are similarly affected by the revenue recycling mix. The channels to improve households' welfare do not only include cash transfers, but also PIT reductions, public investments, and increased spending (which includes existing social programs). Because households with higher incomes have higher carbon consumption, all policy mixes are progressive. Nevertheless, a targeted transfer to households with income in the bottom 40 percent would be the most progressive and pro-poor means of recycling the carbon tax revenue. Other policy mixes could include feebates in specific sectors to encourage firms and households to transition quickly to fuel-efficient technologies while mitigating the costs of this transition. The fee in the feebate may be levied as a surcharge on polluting machines, vehicles, etc., which are then recycled to pay for rebates which are granted on the purchase of more efficient machines, vehicles, etc. Thus far, feebates have been used and/or proposed primarily in the transport sector, often tied to vehicle taxes and other regulations that seek to incentivize a shift to fuel-efficient vehicles.⁷⁰

Section 1.6 Improving the Quality of Taxation: Modeling A Reform Package

77. This chapter has argued that there is scope to improve the quality of taxation by strengthening tax efficiency, sustainability, and equity. It suggests: (i) streamlining taxes to reduce distortions and support business expansion and formalizing the economy; (ii) making income tax more progressive to enhance equity; and (iii) strengthening carbon pricing for better sustainability. To assess the impact of this type of reform package, an extension of the MANAGE-WB computable general equilibrium (CGE) is used (for methodology see Annex 1M).⁷¹

78. A deficit-neutral reform scenario was run that mirrors the broad policy recommendations outlined in this chapter. The scenario introduces a gradual increase in a carbon (CO₂) tax compared to BAU baseline, with the carbon price rising to USD 30 per metric ton of CO₂ by 2040. This results in a tax-to-GDP increase of 0.62 percentage points. The revenue generated from this tax is allocated across three main initiatives: (i) 40 percent of the generated revenue is allocated to relieve the PIT burden for low-income earners, which means that overall, the net tax-to-GDP increase from the policy package is reduced to 0.31 percentage points; (ii) 30 percent of this additional revenue is recycled for increased public investment; and (iii) the remaining 30 percent is recycled for general financial transfers to households. As with the CPAT scenarios, these simulations do not constitute a policy proposal, but provide useful insights on how different policy mixes may impact the overall economy and the fiscal account.

79. The model finds that the reform package reduces GHG emissions, fosters the formalization of the labor market, and can be beneficial for growth in the long term. Recycling the revenue collected from the carbon tax can stimulate growth through three main channels: (i) lowering the PIT for low-earning income groups promotes a shift to formal employment, which, in turn, raises labor productivity;

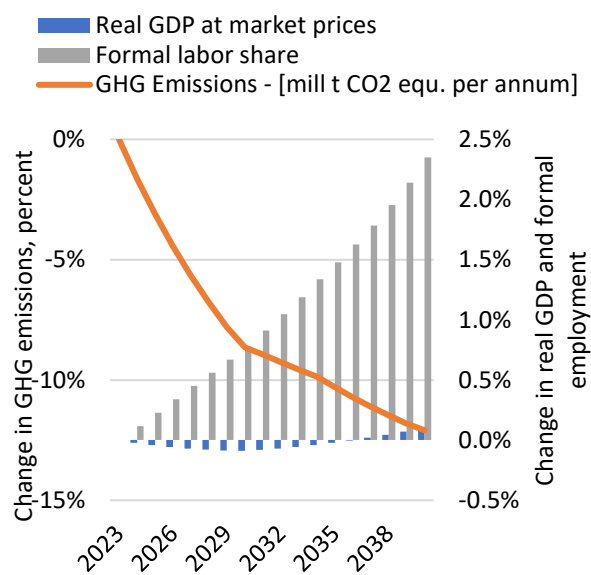
⁷⁰ Feebates have mainly been used in the European Union. For a discussion on use in the transport sector, see Zachariadis and Cleridis (2015). For discussion of Sweden's nitrogen oxide feebate, see Johnson (2005).

⁷¹ MANAGE-WB is a single-country recursive-dynamic model that relies on neoclassical growth specifications and market-clearing wages in the labor market. MANAGE-WB has been extended to include an alternative wage-setting mechanism based on search frictions, which is utilized to model the duality of the labor market in Armenia. Annex 1M provides a technical description of the World Bank MANAGE-WB CGE model and how it has been modified to enable modeling of informality in this chapter.

(ii) boosting public investment accelerates the accumulation of capital within the economy; and (iii) increasing disposable household income by general financial transfers stimulates demand for goods and services. In contrast, while implementing a carbon tax contributes to the reduction of greenhouse gas emissions, it may also result in an adverse economic impact due to increased energy prices, with the extent of the impact varying based on the carbon intensity of energy. In the short term, the negative impact prevails, overshadowing the channels that could lead to economic growth, as energy production is relatively carbon intensive. Compared to the BAU, this results in slightly lower growth in the medium term. However, with a gradual expansion of renewable energy sources in the BAU, the adverse effects driven by an increase in energy prices diminish. This transition, along with the impact of higher public investment, paves the way for a modest economic upturn in the long term (Figure 32).

80. **The growth dividends depicted here are likely an underestimate as the model assumes that Armenia’s trading partners do not increase their climate action over this period.** Importantly, the model assumes that Armenia’s trading partners do not increase the carbon price they impose in their economies over this period, an unlikely assumption given countries stated Nationally Determined Contribution (NDCs.) Due to this stringent assumption, Armenia’s energy-intensive exports lose competitiveness with the higher energy prices that arise from its carbon tax, which results in lower GDP growth. Thus, relaxing this assumption would likely result in higher growth dividends from this reform package. More broadly, both positive and negative effects estimated here from the modeled policy interventions may change in response to different factors. For example, if public investment is more (less) efficient and effective, and/or firms adapt more (less) quickly to higher energy prices (for example, by undertaking efficiency-enhancing investments), the net growth dividends of the policy reform package would increase (decrease).

Figure 32. Effects of the Reform Package on Informality and GHG Emissions Compared to BAU Scenario

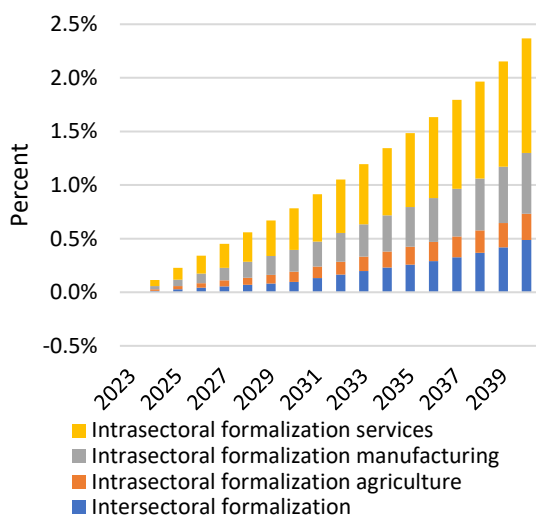


Source: WB staff analysis based on a modified version of the WB’s MANAGE CGE model.

81. **Reducing the tax burden for formal employment as a part of the policy package leads to a formalization of the economy.** The formalization of the labor market can be decomposed into two main drivers: (i) the intrasectoral effect, which occurs when lower taxes on formal employment make them more cost-effective within a sector, and (ii) the intersectoral effect, which arises when workers move between sectors due to the varying impacts of the policy package on each sector. The simulation outcome shows that the formalization of the labor market is mainly driven by the intrasectoral formalization effect, with the service sector experiencing a particularly significant effect. Additionally, by lowering the costs associated with formal labor, sectors with a high level of formalization, such as services, gain a competitive advantage over more informal sectors, such as agriculture (Figure 33). This encourages labor to move across sectors, further contributing to the overall formalization trend.

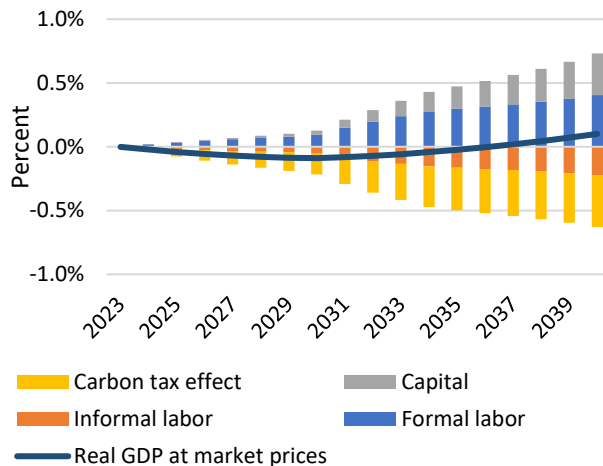
82. **Enhanced labor productivity, along with additional public investment, drives economic growth.** Decomposing the change in GDP in market prices into the contribution from the different production factors for real value added and the carbon tax effect reveals the drivers of growth. While the reform increases real value added by up to 0.51 percentage points compared to BAU, economic growth is tempered by the higher energy costs associated with the carbon tax. In the short run, this dampening effect is predominant, while an increase in real value added largely stems from the formalization of the labor force. Employees shifting from informal to formal employment causes a rise in labor productivity due to the productivity differential between formal and informal employment. In the medium to long term, the increase in real value added, driven by the formalization effect and an acceleration of the growth contribution from capital accumulation due to additional public investment, surpasses the economic costs through higher energy costs, leading to net economic growth (Figure 34).

Figure 33. Decomposition of Drivers of Formalization (intrasectoral vs. intersectoral)



Source: WB staff analysis based off modified version of the WB's MANAGE CGE model.

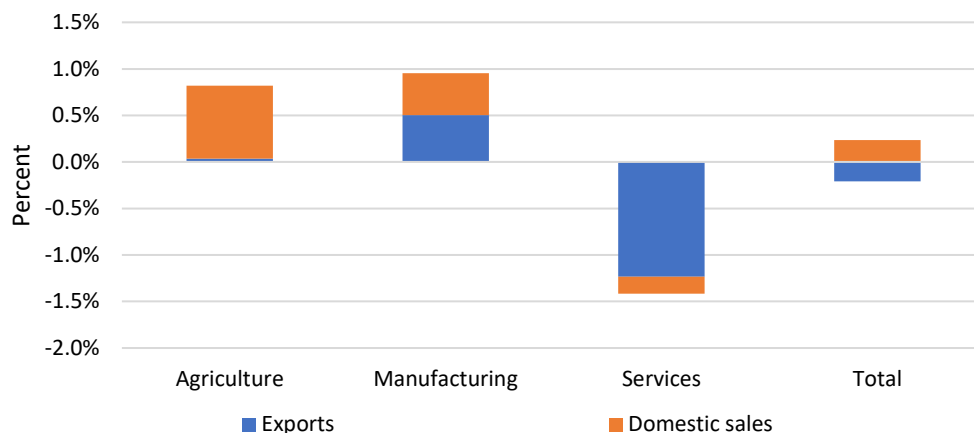
Figure 34. Decomposition of Drivers of GDP Growth by Production Factors and Tax Wedges (Relative to BAU Scenario)



Source: WB staff analysis based off modified version of the WB's MANAGE CGE model.

83. **Assuming trading partners do not enhance their climate action efforts, this reform package would likely nudge the economy into a structural change from exports toward more domestic consumption.** Recycling tax revenue towards cash transfers to households increases domestic production, which raises domestic demand, especially for agricultural products (Figure 35). The rise in household consumption is also fueled by higher disposable income following the reduction in PIT. Further, the formalization effect increases labor productivity, which boosts exports and domestic output in manufacturing and non-energy-intensive services. However, the introduction of carbon pricing can lead to increased energy costs, which may adversely affect the competitiveness of sectors with high energy consumption. This is particularly evident in the service sector that includes transport, which could experience a decrease in production, primarily due to a reduction in exports. This effect could be mitigated if Armenia's trading partners strengthen their climate action efforts or if Armenia receives a competitive advantage relative to trading partners through preferential treatment in trade due to CBAM (Carbon Border Adjustment Mechanism).

Figure 35. Change in Demand and Sectors as the Result of Reform Package



Source: WB staff analysis based off modified version of the WB's MANAGE CGE model.

Section 1.7 Policy Recommendations

84. This Section concludes the chapter by summarizing the key policy recommendations made based on the assessment of the Armenian tax system in terms of its key policy objectives of revenue adequacy, efficiency, equity, and sustainability. As part of this discussion, the MoF's 2024 Tax Policy Reform Plan is also briefly addressed where relevant.

A. To raise additional revenue in an efficient manner:

- i. **Raise additional revenue by rationalizing inefficient and regressive VAT exemptions and lowering the VAT threshold.** VAT tax expenditures (TEs) represent the largest type of TEs and are largely found to be inefficient and/or regressive. Rationalizing VAT expenditures alone would be sufficient for the government to meet its target of collecting tax-to-GDP ratio of at least 25 percent by 2026. This could be achieved by lowering the VAT threshold (broadening the regular regime) and removing selected VAT exemptions on specific goods and services. For example, VAT exemptions on the sale of fertilizers and other agriculture related TEs may be rationalized, with alternative expenditure support measures adopted instead.⁷²

B. To ensure firms are taxed fairly:

- ii. **Broaden the regular regime, including by implementing MoF's plan to narrow the use of the turnover tax system.** MoF's 2024 Tax Policy Reform Plan includes an objective to remove lotteries, notarial services, and activities from the turnover system. This reform is consistent with best practice and could be broadened to ensure all professional services with the skills to maintain bookkeeping are phased out of the turnover regime. Rationalizing income tax expenditures could also be prioritized. Some of these TEs are both costly and regressive as has been shown with the

⁷² International experience finds that many VAT TEs on agriculture are often ineffective and regressive, and this is particularly the case with fertilizer subsidies. Alternative support measures to agriculture that are more effective often include government expenditure on general services, including research and development.

income tax refund program on mortgages (which is currently being phased out in Yerevan). Moreover, additional revenue within the regular regime could be collected by modernizing VAT and CIT rules to ensure that they apply on the digital economy, both online sales of digital goods and services and online sales of low-value physical goods (in-line with the latest emerging standards and negotiated solutions).⁷³ Finally, strengthening anti-tax avoidance rules and other international tax rules will be important to ensure that the base of the CIT and PIT is not eroded through aggressive tax planning and other forms of tax avoidance and evasion.

- iii. **Prioritize compliance improvements within the turnover tax regime (instead of focusing on increasing rates).** This chapter has found evidence suggesting that AETBs may already be higher in the turnover regime compared to the regular regime for most sectors. It has also cited recent research, which found that tackling non-compliance (mainly the underreporting of income) is critical to reducing taxpayer bunching below the IFRS and tax registration thresholds. Combined, these findings suggest that increasing turnover taxes may not be the priority reform for encouraging more firms to enter the regular regime. Instead, administrative measures may be more critical, including: (i) utilizing third-party data for enhanced compliance management, and (ii) clarifying and implementing legal provisions on artificial separation of trade, so that firms are not allowed to split in order to remain below tax thresholds for the regular regime.
- iv. **Close policy and compliance gaps within the regular CIT regime.** This chapter has found evidence of large disparities in AETBs within the regular CIT regime. These disparities may be due to policy gaps (CIT TEs) and/or compliance gaps. Together, they undermine the fairness of the tax system and impact firm competition as resources in the economy (investment and jobs) may be channeled to inefficient firms that can survive in the marketplace due to gaining advantageous tax treatment compared to more productive but higher-taxed competitors.
- v. **Retain the CIT, avoiding special treatment of specific sectors and, if necessary, consider instead lowering the statutory CIT rate for all sectors.** MoF's 2024 Tax Policy Reform Plan proposes shifting the high-tech industry to a system of taxing distributed profits (DPT) instead of taxing corporate income. Applying different tax regimes for different sectors is inconsistent with tax efficiency and equity principles and has historically resulted in unintended distortions in countries that have pursued such policies. The CIT is consistently found to be the tax handle with the highest short-run and long-run tax buoyancy, meaning it plays an important role in stabilizing the economy during the business cycle and supports long-term fiscal sustainability. Moreover, AETRs within the regular regime are often significantly lower than the CIT statutory rate, making it unlikely that the CIT is a binding constraint for increased investment. Countries that have recently shifted from the CIT to the DPT have seen a marked fall in revenue from this handle (both Estonia and Georgia collect much lower revenue from the DPT than Armenia and peers collect from CIT). It has yet to be determined whether the DPT results in a substantial increase in productivity-enhancing investment. There is a risk that it is mainly used by firms to lower their tax burden without undertaking additional investment in the domestic real economy.⁷⁴ Moreover, given the profit tax's statutory rate was reduced by 2 percentage points from 20 percent to 18 percent from 2020, it seems unlikely that a further general rate reduction is the priority reform needed to

⁷³ These include the OECD-led framework for imposing VAT on low-value imported goods, VAT on cross-border digital goods and services, and the OECD/G20 proposed Two Pillar Solution with respect to direct taxation.

⁷⁴ For example, firms may use their profits to invest in financial products to reduce distributed profits and dividends, thereby lowering their tax liability without undertaking any additional investment in their core business.

unlock higher investment rates. Nevertheless, if an in-depth study of the business environment reveals the tax burden remains a binding constraint to additional investment, then a reform package that reduces the CIT statutory rate further (for example, by 1 percentage point) for all sectors combined with base broadening measures (including the phase out of ineffective tax expenditures) is likely to be a more effective and efficient reform than the alternative reform presently being considered. Additional analysis of this package reform can estimate the net revenue and economic impacts of different design elements.⁷⁵

- vi. **Close opportunities for tax evasion and avoidance at the top end by strengthening international tax rules.** Completing implementation of international tax reforms that reduce risks from base erosion and profit shifting and that improve transparency will help close policy and compliance gaps within the income tax regime that disproportionately favor large businesses and high-net-worth individuals.

C. To improve the progressivity of the tax system:

Introduce progressivity in the PIT system focused on the bottom 40 percent to support formalization of the labor force. Simulations show that introducing a progressive rate schedule raises revenue and reduces the tax burden on the lowest-income deciles and increases the tax contribution of the highest-income deciles. However, one caveat of the introduction of progressive tax brackets is that it may lead to increased administrative costs and, potentially, some underreporting and/or tax avoidance at the top end. Given Armenia's fiscal system is able to achieve good outcomes on redistribution through expenditure policies (pensions and direct transfers), the main motivation of the proposed PIT reform is to facilitate further formalization of the labor force (which, over the medium term, is associated with higher productivity and higher wages for these workers). In this context, progressivity focused on the bottom 40 percent can be achieved by lowering PIT rates and/or offering deductions and relief for low-wage labor. An example of deductions is allowing the bottom 40 percent to reduce their tax liability by deducting a certain percentage equivalent of out-of-pocket health expenditure (up to the full amount of the tax liability for the very lowest wage decile). Such reforms would lower the (effective) tax wedge on low-wage formal labor, thereby facilitating more and faster formalization.

- vii. **Raise the income tax rate on passive income.** The reduced rates on passive income (including capital gains exemptions) are regressive and distortive. The government can consider raising these rates and removing current exemptions (on capital gains taxes) to match the tax rate on labor income, or alternatively, adopting a broader definition of income that includes both active and passive income. The effective implementation of the recently introduced universal income declaration system⁷⁶ of individuals and the ongoing phase out of the income tax refund program on mortgages could serve as first steps in this broader reform. Additional analysis on the fiscal and economic impacts of reform can help determine the optimal design of passive income taxes, including the most appropriate rate structure.

⁷⁵ A static microsimulation model can estimate the net revenue impact of lowering the statutory rate and rationalizing tax expenditures, but cannot estimate the dynamic effects. Estimating the elasticity of taxable income (the response of firm sales/profits to changes in tax rates) can be approximated by looking at historical responses to previous tax rate changes.

⁷⁶ The design of income declaration includes also refund of expenses on health care and education up to annual AMD 50,000 and 100,000 AMD, respectively.

- viii. **Ensure full implementation of ongoing reform of property taxation.** Another efficient, progressive means of mobilizing revenue is by raising more from property taxes through the full implementation of the government’s ongoing plan to introduce higher rates and more robust administration to improve compliance.

D. To facilitate sustainable growth:

- ix. **Consider introducing an explicit carbon price through an upstream tax and a scale up of existing fossil fuel excises.** Armenia’s current environmental taxes do not generate a strong enough market price signal on carbon to accelerate the economy’s transition to a low-carbon economy. Introducing an upstream carbon tax would be an efficient solution that has low administrative costs and generates additional state revenue. Alternatively, an emissions trading system (ETS) with a price-stability mechanism and allowance auctioning may be considered, but this requires higher administrative costs to design, implement, and run. As a short-term first step, Armenia may also increase indirect carbon pricing by scaling up existing fossil fuel excises. However, current excises are not as efficient as a carbon tax and are inconsistent with CBAM, which will result in revenue losses (that will grow as more countries adopt similar CBAs and as the EU’s CBAM coverage expands). Hence, over the medium term, introducing an upstream carbon tax is more advantageous.
- x. **Carbon pricing revenues should not be earmarked, but some revenue recycling can help provide support to the vulnerable.** A share of the revenue from the higher carbon tax could be directed towards compensating households affected by price increases in natural gas by increasing social protection spending and/or reducing the PIT burden on the bottom 40 percent of the labor force by introducing the progressive PIT schedule. This approach incentivizes efficient fossil fuel consumption while simultaneously ensuring that a green fiscal reform remains socially (and politically) acceptable. Moreover, other measures could be investigated that mitigate costs on vulnerable firms and sectors. For example, implementing a feebate mechanism in some sectors could address social concerns while ensuring effectiveness.

E. A pro-growth, progressive, green policy reform package

- 85. **In sum, Armenia can improve the efficiency, equity, and sustainability of its tax system through a revenue-positive tax policy reform package.** The first component of the reform could entail an increase in tax collection through reducing tax expenditures. The second component of the reform achieved by making the PIT progressive could be revenue-negative (if, for example, revenue lost from lowering the PIT on the bottom 40 percent of the labor force is not fully compensated by higher passive income tax rates/PIT rates on the top income deciles). The third component of the reform could prioritize an increase in carbon pricing, with a share of the revenue used to compensate for revenue losses from the PIT reform and a share used to support vulnerable households and sectors. [Table 3](#) summarizes the policy recommendations and specify the fiscal impact, along with efficiency and equity gains.

Table 3. Policy Recommendations to Improve the Efficiency and Equity of the Tax System

Policy Challenge	Reform Action	Fiscal Impact	Efficiency	Equity
Armenia relies more on direct taxes than indirect taxes. Within indirect taxes, VAT is lower than peers due to policy and compliance gaps, including from a high VAT threshold and VAT exemptions. Excises are lower than peers in part due to lower tax rates.	(i) Raise additional revenue in an efficient manner, by rationalizing VAT exemptions and lowering the VAT threshold	High	Medium	Low
The effective tax burden varies significantly within and across sector and firm size due to the presence of the three-tiered regime (micro, turnover, and regular), tax exemptions, and compliance gaps.	(ii) Broaden the regular regime, including by implementing the newly-enacted Law on revision of the turnover tax rate and coverage.	Medium	High	Medium
	(iii) Prioritize compliance improvements within the turnover regime (instead of focusing on increasing rates)	Medium	Medium	Medium
	(iv) Close policy and compliance gaps within the regular CIT regime and avoid special treatment of specific sectors.	Medium	Medium	Medium
	(v) Only if shown to be necessary, consider lowering the statutory CIT rate for all sectors instead (with revenue loss compensated by the base broadening measures outlined in items ii-iv)	N/A or Negative	Medium	N/A or Low
	(vi) Close opportunities for tax evasion and avoidance at the top end by strengthening international tax rules	Medium	Medium	High
There is much higher taxation of formal labor than other income (from sole proprietors or passive income). A high tax wedge on formal, low wages contributes to labor informality.	(vii) Introduce progressivity in the PIT system focused on the bottom 40 percent	Negative	High	High
	(viii) Raise the income tax rate on passive income (and remove exemptions on capital gains)	High	Medium	High
	(ix) Ensure full implementation of the ongoing property tax reform	Medium	Medium	High
Carbon pricing is weak because of limited energy taxes, slowing Armenia’s progress on the green transition.	(x) Consider introducing an explicit carbon price through an upstream tax, and scale up existing fossil fuel excises	Medium	Medium	Low
	(xi) Carbon pricing revenues should not be earmarked, but some revenue recycling can help provide support to the vulnerable	N/A or Negative	N/A	High

Note: The expected impact of reforms is expressed as “high”, “medium”, “low”, “N/A” (not applicable), or “negative” along four dimensions of assessment: fiscal impact, efficiency, equity, and climate change.

***Chapter 2: Improving the Allocative and
Technical Efficiencies and Equity of
Education Spending***

Chapter 2 Improving Equity and the Allocative and Technical Efficiencies of Education Spending

Section 2.1 Introduction

2.1.1 Motivation

86. **Despite Armenia’s notable progress in enhancing its human capital over the past twenty-five years, there remains a considerable gap towards achieving its full potential.**⁷⁷ Armenia’s score on the 2020 human capital index (HCI) revealed that a child born in Armenia today will be 58 percent as productive when she grows up as she could be if she enjoyed complete education and full health. This performance is not only below the EU average (73 percent), but also those of upper-middle-income countries (UMIC) in the Europe and Central Asia (ECA) region (62 percent) and Armenia’s peers⁷⁸ (61 percent).

87. **The declining trend in Armenia’s population demands an increase in skilled labor participation and productivity-focused jobs to address the aging demographic.** Between 1990 and 2022, Armenia’s population decreased from approximately 3.5 million to 2.8 million, a trend primarily driven by outmigration and reduced fertility rates. This demographic shift has nearly halved the number of children (ages 0–14) from 1.1 million to 569,378 and decreased the working-age population (ages 15–64) from 2.3 to 1.8 million within the same timeframe. Concurrently, the old-age dependency rate has increased from 9 to 20 percent, highlighting a demographic shift towards an older population. Moreover, Armenia’s education system has failed to fulfil the modern skills required by emerging industries, such as analytical thinking, soft and practical skills demanded by employers. These trends underline the critical need for strategic investments in education and skills development aimed at enhancing the productivity of the current workforce and fostering the creation of high-productivity jobs to support sustainable economic growth.

88. **Despite good progress on enrollment rates in Armenia, learning outcomes could be improved.** In 2022, net enrollment rates among primary and lower secondary school children reached approximately 91 percent and net enrollment rate for upper secondary education is slightly lower at 84.1 percent. Despite notable improvements in learning outcomes over recent decades, Armenia continues to face a persistent learning gap. This discrepancy is quantified as a 3.3-year gap when comparing the actual duration of the education system (11.3 years) against the estimated effective learning-adjusted years of schooling (LAYS), which stands at 8 years. This figure not only highlights the inefficiencies within the education system, but also positions Armenia below the average LAYS of its peers, which is 8.9 years, emphasizing the need for targeted interventions to close this gap. Furthermore, the limited availability of high-quality pre-primary education has led to students commencing primary education without essential foundational skills, critically affecting overall education outcomes —with a net enrollment rate of 63 percent for children aged 3-5 years.

⁷⁷ The World Bank’s Human Capital Index 2020 Update defines human capital as the combination of “knowledge, skills, and health that people invest in and accumulate throughout their lives, enabling them to realize their potential as productive members of society.”

⁷⁸ This report includes peers (both aspirational and structural) such as Bosnia and Herzegovina, Albania, Estonia, Georgia, Moldova, and Tunisia (see Annex 1A for benchmarking and definition of peer countries).

89. **Armenia’s education expenditure is comparatively low and lacks efficiency and equity, yet it has the potential to improve educational outcomes.** In 2022, education expenditure accounted for 2.3 percent of GDP and 8.3 percent of the total general government expenditure, a figure that is below the average for developing countries. Despite this, Armenia has the capacity to enhance its learning-adjusted years of schooling (LAYS) by 14 percent with the existing levels of spending. Furthermore, the country faces challenges in equitable access to education, especially in pre-primary, upper secondary, and higher education, with significant disparities in academic achievement between different economic groups. While the poorest segments have greater access to free education at the general and vocational levels, they remain underrepresented. Household spending in Armenia is particularly significant in higher education, with 73 percent of the total expenditure contributed by households.

90. **This chapter aims to explore the efficiency and equity of public spending on education in Armenia, reflecting on national and international benchmarks, alongside the country's educational ambitions and challenges.** Adhering to World Bank guidelines, the analysis incorporates data from key government institutions including the Ministry of Finance (MoF), Ministry of Education, Science, Culture, and Sport (MoESCS), Ministry of Territorial Administration and Infrastructure (MoTAI), National Statistical Service (ArmStat), and National Center for Education Technology (NaCET). Government policies, programs, and regulations related to education are analyzed. To position Armenia's performance in a global context, international databases such as UNESCO's Institute for Statistics (UIS) and the World Development Indicators (WDI) are utilized. This examination spans the decade from 2012 to 2022, with a focus on recent trends and encompasses all educational levels from pre-primary through to higher education.

2.1.2 Current Status and Challenges in Armenia’s Education System

Access to education

91. **In Armenia, the education system encompasses various levels, including pre-primary, general (primary and secondary), vocational, and higher education.** Pre-primary education, targeting children ages 0–6 years, is optional. General education, which is compulsory, is divided into primary education (grades 1–4, ages 6–9), lower secondary education (grades 5–9, ages 10–14), and upper secondary education (grades 10–12, ages 15–17). Vocational education is an alternative educational track offered after grade 9, and higher education includes bachelor’s degrees, master’s degrees, specialist diplomas, advanced vocational training, and doctoral degrees, none of which are compulsory.

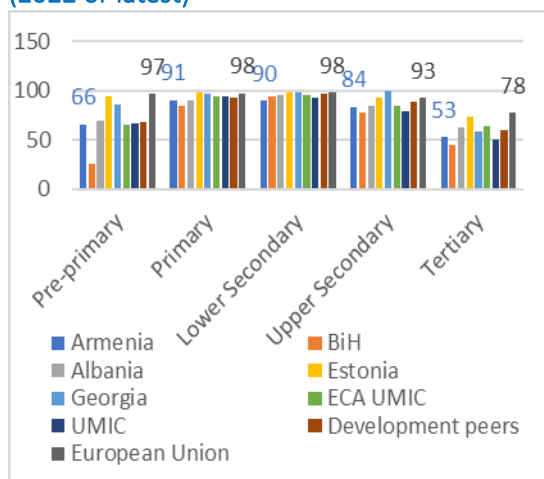
92. **Yerevan, the capital city, accounts for a large share of education system in Armenia, especially in vocational and higher education.** In 2022, Armenia’s formal education system, encompassing all levels including both public and private sectors, accommodated 593,535 students, representing 21 percent of the total population, with 53,859 teachers and instructors across 2,624 institutions. Notably, Yerevan accounted for 42 percent of the total student body across all educational levels, 43 percent of teachers or instructors, and 24 percent of all educational facilities. Yerevan also hosts 56 percent of vocational education enrollment and 88 percent of higher education enrollment (and Table 2 in Annex 2A).

93. **Education is predominantly provided in public educational institutions.** The vast majority of students —about 97 percent at the pre-primary and general education levels, 94 percent in vocational

education, and 83 percent in higher education— are enrolled in these public institutions. Enrollment rates in private educational institutions are in line with those of UMIC in ECA, with the exception of pre-primary education, but are lower than those observed among peers and the European Union (EU) (Table 3 in Annex 2A).

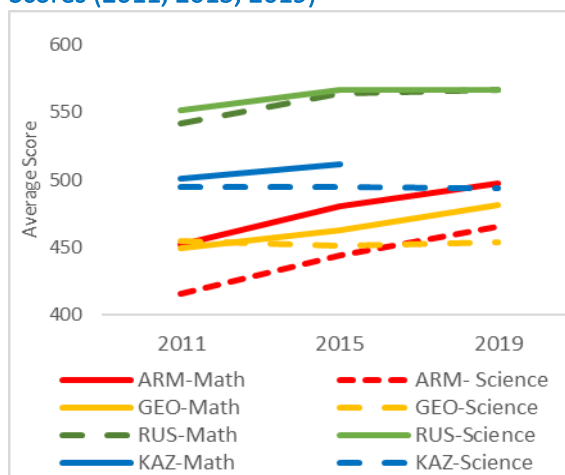
94. **Armenia has been able to attain high levels of primary and secondary enrollment rates, but universal education has not been achieved.**⁷⁹ In 2022, the net enrollment rates for primary and lower secondary education reached 91.4 percent and 90 percent, respectively.⁸⁰ In comparison, primary and lower secondary net enrollment rates in ECA UMIC were 95 percent and 96 percent, while in the EU they were close to 98 percent at both levels (Figure 36). In Armenia, the enrollment in primary and lower secondary education is evenly distributed across various regions, genders, and economic groups, showing no significant disparities. The net enrollment rate for upper secondary education (84.1 percent) is notably lower compared to the other levels of education.⁸¹ This is close to the levels of ECA UMIC at 85 percent, but lower than the EU at 93 percent. While the rate of enrollment in general education is high, gross enrollment remains low for pre-primary education, at 66.3 percent.⁸²

Figure 36. Enrollment Rates by Level of Education (2022 or latest)



Source: Authors’ calculations using WDI (latest) for peer countries and 2023 ArmStat data for Armenia. Note: Gross enrollment rates used for pre-primary (3-5 years old) and tertiary education, and net enrollment for primary and secondary education.

Figure 37. TIMSS Average Mathematics and Science Scores (2011, 2015, 2019)



Source: TIMSS 2019 Report.

Learning outcomes

95. **Although learning outcomes in Armenia have improved in recent years, they remain low and unevenly distributed, undermining the education system's efficiency.** A child starting formal education

⁷⁹ For net and gross enrollment rates see Box 1 on “Definition of Key Concepts”.

⁸⁰ ArmStat, 2022.

⁸¹ Authors’ calculations based on the 2022 Household’s Integrated Living Conditions Survey.

⁸² Authors’ calculations based on 2022 data from ArmStat and World Population Prospects.

at age 4 in Armenia is expected to complete 11.3 years of education by the age of 18. However, actual learning outcomes suggest an effective education span of only 8 years, indicating a learning gap of 3.3 years. Moreover, over a quarter of Armenian children lack reading proficiency at age 10, according to reports from the World Bank.⁸³ Despite this, advancements in educational outcomes have been noted over the last decade, as evidenced by Armenia's scores on the 2019 Trends in International Mathematics and Science Study (TIMSS) in mathematics (498 points) and science (466 points) were close to the international average of 500 points (Figure 37). While Armenia outperforms several peers, it falls behind the average scores ECA countries, including Russia and Kazakhstan. An analysis of the scores shows the most pronounced learning disparities within the country are linked to socio-economic status, with significant advantages observed for students in more affluent urban areas, especially in fourth-grade math scores. The 2012 Public Expenditure Review (PER) underscored the need for enhanced learning in rural areas to improve efficiency, a focus that continues to be relevant.

96. Low pre-primary enrollment has a significant impact on the foundations of education, subsequently influencing learning outcomes in primary and secondary levels. Currently, there is limited availability of high-quality pre-primary education, even in urban areas. In 2022, only 63 percent of children ages 3–5 were enrolled in pre-primary education, meaning that about 40 percent of the children in that age group are not receiving the benefits of pre-primary education that can support them in preparing to start primary school.⁸⁴ The gross enrollment rate for pre-primary in 2022 was 66.3 percent, which is below peers such as Estonia and Georgia and the EU average. A study conducted under the Armenia Education Improvement Project revealed that children enrolled for one year in pre-primary institutions demonstrated significant progress in basic math knowledge, logic and thinking, as well as early literacy, approximately 0.26 standard deviations higher than children not enrolled in pre-primary institutions.⁸⁵

Job skills development

97. Overall, Armenia faces a significant gap between the skills offered by its education system and the requirements of its labor market. The education system struggles to provide graduates with the necessary modern skills that are in high demand in emerging industries, such as analytical thinking and problem-solving abilities. This is concerning because as the demand for these skills continues to increase, there is a risk that the gap between education and industry needs will widen further. Currently, employers express dissatisfaction with the current education systems, highlighting the inadequacy of delivered skills, which is among the top four constraints in the business environment. Additionally, hiring firms report difficulty in finding workers with the required skills. Surprisingly, one in five workers feels over-educated and mismatched for available jobs, underscoring weaknesses in the quality and labor market relevance of Armenia's skills development system. The lack of effective mechanisms for identifying and forecasting the demand for skills in the labor market further exacerbates the issue. The current system, including the methodology for distributing admission places in vocational and higher education, faces challenges due to the absence of effective tools for identifying demand. Addressing these issues necessitates a closer collaboration with employers, an aspect that remains insufficient in Armenia.

98. Vocational Education and Training (VET) in Armenia currently faces significant challenges, primarily stemming from its underdevelopment. In 2022, only 9 percent of secondary students attended

⁸³ World Bank, 2020b; UNICEF, 2022b.

⁸⁴ Authors' calculations using 2021 Household's Integrated Living Conditions Survey.

⁸⁵ World Bank, 2022.

vocational programs in Armenia compared to an average 17 percent in ECA and peer countries.⁸⁶ In addition, the inadequacy in the VET sector in Armenia has led to an insufficient supply of graduates who possess the specialized skills and knowledge required for many jobs. Combined with persistent mismatches between qualifications and job requirements, this leads to the misallocation of talent within the labor market and, subsequently, lower productivity. Moreover, VET enrollment rates are particularly low in rural areas, where access to modern skills training is limited. As a result, crucial sectors like manufacturing, agriculture, and services suffer from a shortage of skilled workers, hindering the country's economic growth and development. Additionally, the list of professions and the associated training covered by VET requires a substantial revision so that it is better aligned with the current trends in economic development.⁸⁷

99. **Higher education (HE) is perceived as falling short in providing the necessary skills for the job market and HE enrollment lags behind that of its peers.** The gross HE enrollment rate in 2022 was 53.4 percent,⁸⁸ which is below the 60 percent average of its peers. The net HE enrollment rate⁸⁹ was only 32 percent, which may in part be attributed to the view that HE have obsolete curricula, inadequate infrastructure, demotivating environments, and low-quality faculty. Furthermore around two-thirds of students believe that HE in Armenia does not adequately equip them with the practical skills demanded by employers.⁹⁰ While there is a relatively high enrollment in STEM fields (30 percent of new HEI students are enrolled in STEM fields), HE in Armenia fails to provide the modern skills required by emerging industries, and the overall quality of education needs improvement to rectify the mismatch between the current educational specializations and the demands of the labor market.⁹¹

2.1.3 Policy Recommendations from the 2012 PER and Current Status of Progress

100. **The 2012 PER was conducted in the context of the need for fiscal consolidation following the 2008-2009 global financial crisis and concluded that education spending in Armenia was inefficient, with rural schools producing inferior results at a higher cost.** In particular, an overly generous fixed base component for each school as part of the funding formula for the allocation of central government funds to schools meant that many small schools (less than 100 total students) were operational despite having the worst educational outcomes. The 2012 PER made several recommendations to address this issue (Table 4). By 2023, however, the situation of small schools had still not improved. In order to address this challenge, 47 state general education institutions were closed between 2012 and 2022, of which 9 were in Yerevan, 26 in other urban areas, and 12 in rural areas. However, while a quarter of Armenia's schools fell into the small school category in the 2009/10 academic year, in 2022/23, this share had increased to 31 percent. The average number of students per school in rural areas has also declined (Figure 38).

⁸⁶ UNESCO UIS, 2024.

⁸⁷ RA National Assembly, 2022.

⁸⁸ ArmStat, 2022.

⁸⁹ Calculated as the percentage of 17 to 21 year olds attending higher education.

⁹⁰ Armenia 2041 foundation, 2021.

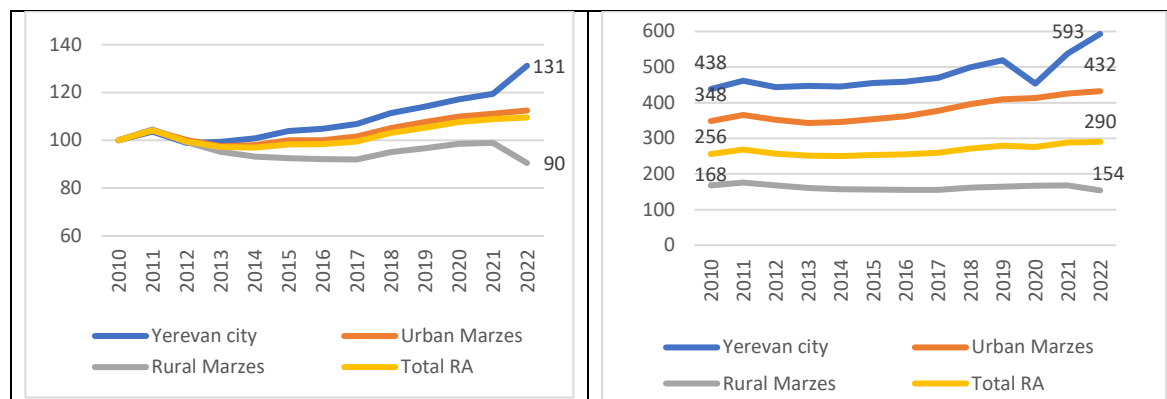
⁹¹ In comparison, the average enrollment in STEM across 37 OECD countries is 23.7 percent. Additionally, in 2022, HE students enrolled in STEM fields received 43 percent of all scholarships (see Figure A1 in Annex I).

Table 4. Progress on Key Recommendations of the 2012 PER for Education

Recommendation	Progress and Current Status
<p>Reduce the fixed base component of the financing formula</p>	<ul style="list-style-type: none"> • The financing formula was adjusted in 2020: for small schools, the formula considered the number of students and the average annual number of classes while for larger schools, the formula considered primarily the number of students. • Another revision was made in 2023: for larger schools, the formula considers the number of classes, and no longer the number of students. The new funding model was implemented in around 989 out of 1,400 schools starting in September 2023. However, for small schools, Funds are allocated based on the previous model plus certain additional fees.
<p>Consolidate small rural schools into hub schools</p>	<ul style="list-style-type: none"> • In 2017, the government of Armenia (GoA) initiated the merging of 6 schools in Yerevan and 9 in the regions. • In 2018, a qualitative study was conducted in which the restructuring process and outcomes of each closed school were studied. Semi-structured interviews were held with principals, teachers, and parents of students from reorganized schools as well as with principals, vice-principals of successor schools and indicated several challenges posed by school mergers • The recent education strategy suggests expanding school levels and functions to serve as community centers, providing cultural, sports, and entertainment facilities. • MoESCS is piloting new school governance models by establishing a network of schools, in which the necessary infrastructure will be located in two or three settlements close to each other, uniting them under one school. • The remuneration for teachers is currently under review.
<p>Address the low quality of teaching in rural areas</p>	<ul style="list-style-type: none"> • Monetary assistance is allocated to teachers assigned to public schools in remote, border, mountainous, and high-mountain areas. The incentives (a 30 percent salary supplement, and stipends to cover transportation, housing rent, and utilities) appears to be insufficient in attracting teachers to understaffed schools. • Initiatives from non-profit organizations such as Teach for Armenia provide opportunities for professional development in rural areas.
<p>Analyze the impact of private spending on student performance</p>	<ul style="list-style-type: none"> • Private tutoring continues to be one key cost driver of education expenditure in upper secondary education, especially among the more affluent population.
<p>Increase non-salary recurrent and capital spending to improve quality of education</p>	<ul style="list-style-type: none"> • While the share going to non-recurrent spending is on par with peers, the low overall spending on education suggests that the expenditure on this category is still low. There have been, however, recent efforts to improve the infrastructure conditions of school buildings.

Figure 38. Evolution in the Average Number of Students and Average School Size in General Schools (2010–2022)

A. Average Number of Students Indexed to 2010 Base Year (2010=100). B. Average Number of Students



Source: Authors' calculations using ArmStat.

Section 2.2 Level and Composition of Education Expenditures

101. Armenia's education financing and governance structure entails a collaborative effort between the central and local governments. The budgetary framework consists of two tiers – the state budget and local community budgets collectively form the consolidated education budget. There is no intermediate level (e.g., regional) in Armenia's budget system. In terms of governance, the central government is responsible for supervising education, setting standards and policies, and providing financial support to public schools, vocational, and higher education institutions. Regional authorities operate under the central government, implementing policies set by the central government, but lack autonomy to establish their own budgets or set taxes and fees. Meanwhile, communities and the municipality of Yerevan are primarily responsible for pre-school education and extracurricular activities and also they should assist in the implementation of state educational policy within their territories, ensuring the enrollment of school-age children.⁹²

102. Armenia has allocated about 2.5 percent of GDP and 8.9 percent of total government expenditure to education on average between 2018 and 2022, which is low as compared with its peers. Over the 2012–2022 decade, the general government consolidated expenditure on education (includes State and Community budgets) has decreased from 2.8 to 2.3 percent of GDP.⁹³ Armenia's general government expenditure on education as a percentage of total general government expenditure has likewise decreased over time dropping from 11.7 to 8.3 percent over the same period.⁹⁴ The expenditure as a percentage of GDP and total government expenditure is currently below that of all peer countries (Figure 39).

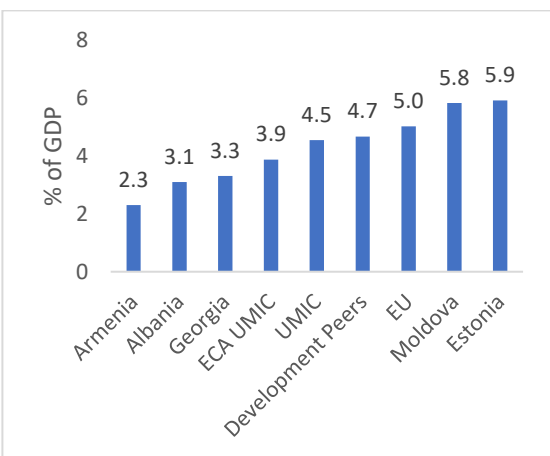
⁹² Aghabekyan, 2015; Ministry of Justice, 2009.

⁹³ For this analysis, expenditure on education includes programs that directly contribute to education and excludes sport, culture and science (see Table A4 in Annex I). The former Ministry of Education and Science, the Ministry of Culture, and the Ministry of Youth Affairs and Sports were merged into MoESCS in 2019.

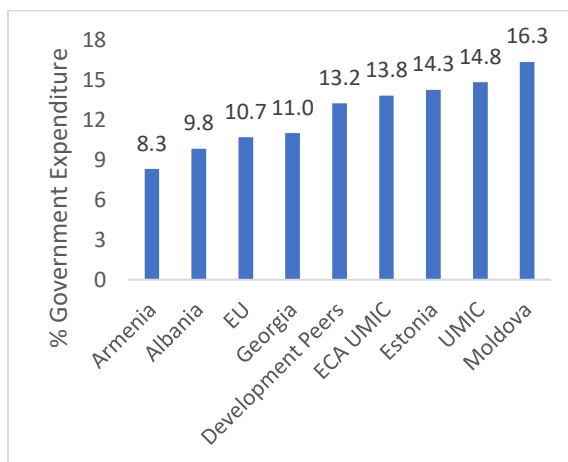
⁹⁴ WDI (2012–2022).

Figure 39. Education Expenditure in Armenia and Peer Countries as Percent of GDP and Government Expenditure (2022 or latest)

A. As Percent of GDP



B. As Percent of Government Expenditure

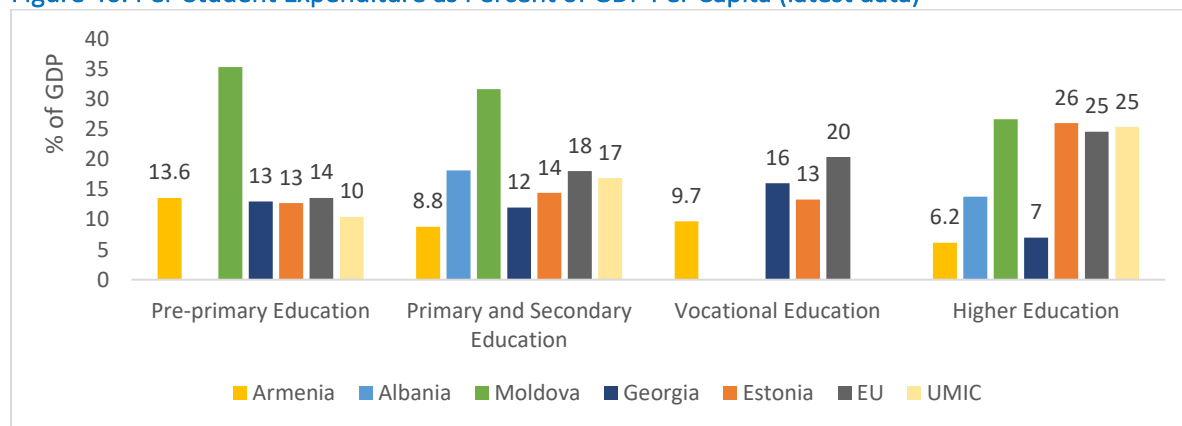


Source: Authors' calculations using 2023 data from WDI and Armenia's MoF.

103. **While the consolidated education expenditure has declined as a share of GDP and total government expenditure, it has increased by 16.8 percent in real terms since 2012, with communities substantially increasing their education budget over time.** The community education budget has grown by 63.9 percent in real terms, accounting for 9.9 percentage points of the total 16.8 percent increase in the consolidated education budget. On the other hand, the state education budget has increased by 8.1 percent, contributing 6.8 percentage points to the overall real increase in the consolidated budget.

104. **The per-student expenditure is only on par with peers in pre-primary (which is mainly financed by communities) but lower than that of comparators in the other levels.** The per-student government expenditure on primary and secondary education (general education) as a share of the GDP per capita in Armenia (9 percent in 2022) is below that of peers, the EU and other UMIC. In HE, the per-student expenditure is only 6 percent of the GDP per capita, the lowest among its peers. In pre-primary education, the per-student expenditure was 14 percent, closer to its regional peers (Figure 40).⁹⁵

Figure 40. Per-Student Expenditure as Percent of GDP Per Capita (latest data)



⁹⁵ World Development Indicators (2023) for primary, secondary and higher education. World Bank calculations based on (UNICEF, 2022b) for pre-primary education.

Source: Authors' calculations using data from MoF (2022), UNESCO (UIS) and OECD.Stat.
 Note: Data for Armenia is from 2022. Latest data available is used for other countries.

2.2.1 Functional Classification

105. **The distribution of consolidated expenditure reflects a distinct division of responsibilities in educational funding between the state and local governments** (Table 5, Box 5, and Table 5 in Annex 2A). The state budget predominantly supports general education (66 percent of state education budget) and to a lesser extent higher and vocational education (8.3 and 7.2 percent of total education budget, respectively). In contrast, the community budget plays a significant role in funding pre-primary education and extracurricular education. Pre-primary education accounts for 65.3 percent of the total community budget in education (excluding intergovernmental fiscal transfers in education), followed by extracurricular education, at 26.5 percent. Support services to education, which includes programs that cannot be classified by level of education, takes up 14.6 percent of the state education budget.

Table 5. General Government Expenditure on Education by Functional Classification (2022)

	State Budget	Community Budget ^a	Consolidat. Budget	State Budget	Community Budget	Consolidat. Budget
	in billion AMD			share in total spending		
Pre-primary and primary general education	35.8	27.7	63.5	23.6	65.6	32.8
Pre-primary education	1.6	27.6	29.2	1.0	65.3	15.1
Primary education	34.3	0.2	34.5	22.6	0.4	17.8
Secondary general education	63.7	0.1	63.8	42.0	0.3	32.9
Lower secondary education	44.5	0.0	44.5	29.4	0.1	23.0
Upper secondary education	19.2	0.1	19.3	12.7	0.2	10.0
Vocational education	11.0	0.0	11.0	7.2	0.1	5.7
Higher education	12.5	0.1	12.6	8.3	0.2	6.5
Ungraded education	4.5	11.2	15.7	3.0	26.5	8.1
Extracurricular education ^b	4.5	11.2	15.7	3.0	26.5	8.1
Support services to education^c	22.2	3.0	25.2	14.6	7.2	13.0
Education (n.e.c.)^d	1.8	0.1	1.9	1.2	0.2	1.0
Grand Total	151.6	42.2	193.8	100.0	100.0	100.0

Source: Authors' calculation using 2022 data from MoF.

Note: ^a Community budgets exclude transfers from the state for education for the municipality of Yerevan for general schools, but may include other unconditional transfers not designated for education. ^b Youth arts centers, music, sports, etc. ^c Transport, food, summer vacations, school Olympiads, etc. ^d Management of general education policies and budgets.

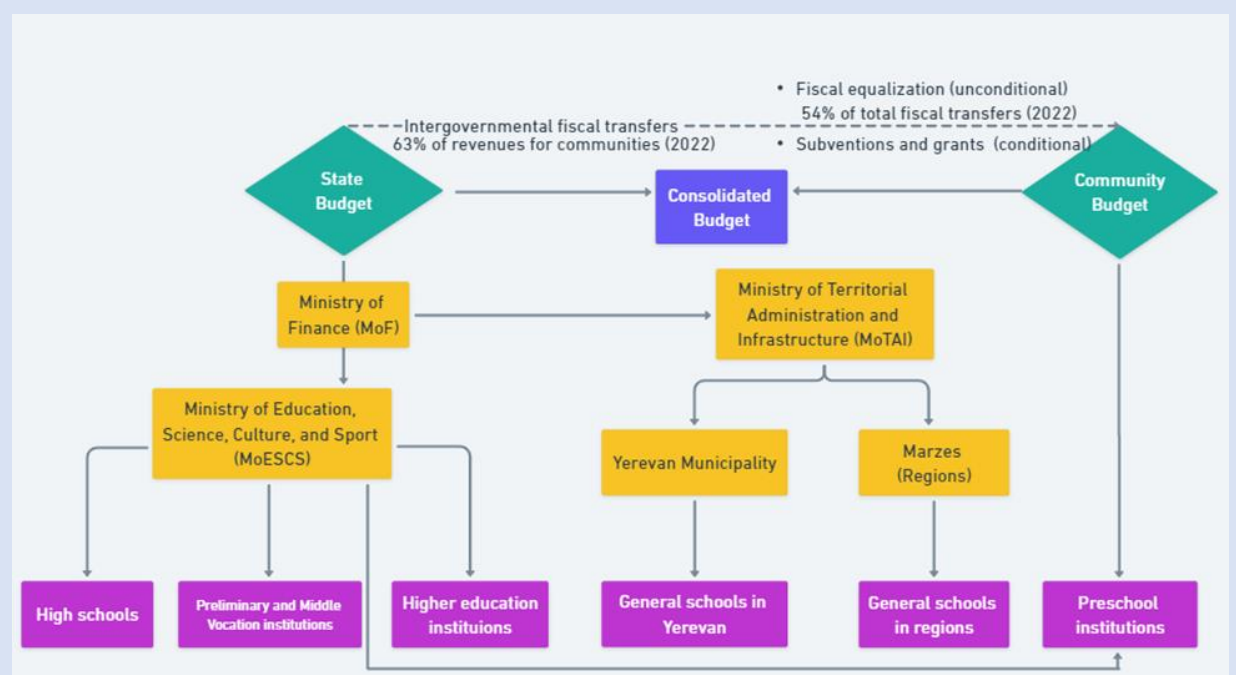
Box 5. Governance Structure in Education Financing and Expenditures in Armenia

Pre-primary institutions in Armenia are funded through community budgets, which raise resources from local taxes and transfers from the state. In 2022, approximately 63 percent of community revenues came from transfers and other allocations for delegated tasks from the state, 54 percent of which were in the form of subsidies (dotation) based on the principle of financial equalization (unconditional transfers not earmarked). The allocation of funding for pre-primary institutions is determined by the community government and their individual sectoral priorities, and is not centrally regulated. In Yerevan, for example, pre-primary education is provided free of charge, while fees are typically required in the regions and communities despite being heavily subsidized.^a State funds for pre-primary education is limited and provided to children if they have special needs, are socioeconomically

vulnerable, or come from military families. The state also has the capacity to establish and directly finance pre-primary educational institutions. Among the total number of pre-primary institutions in 2022, 912 were municipally-funded, 9 were state-funded and 60 were privately-funded.^b

General education in Armenia is financed and overseen by multiple authorities. Public schools in the country receive funding from the state in the form of subsidies. The Ministry of Finance (MoF) channels these funds through the Ministry of Education, Science, Culture, and Sport (MoESCS) and the Ministry of Territorial Administration and Infrastructure (MoTAI). MoTAI receives and channels the funding to the Municipality of Yerevan and ten regional governments which, in turn, distributes and coordinates the expenditure of funds in general education schools (Figure B5). Communities in the regions do not receive funds for general schools; this funding allocation is exclusive to Yerevan. The fragmented financing and oversight by multiple authorities present challenges to the universal implementation of educational policies in Armenia, leading to inconsistencies in achieving the universal implementation of sectoral policies.

Figure B5. Flow of Funds in the Education Sector



Source: Authors' illustration.

vocational education and training (VET)¹ financing relies predominantly on the state budget. The governance of VET in Armenia is centralized, with MoESCS holding significant influence. While budget planning involves collaborative efforts between the MoESCS and MoF, VET institutions have some autonomy in resource allocation.^c The financing of VET primarily depends on the state budget, and funding in public institutions is allocated on a per capita basis, determined by the number of state-approved, free-of-charge seats by profession. In 2022, 90.4 percent of preliminary VET students in state educational institutions were enrolled for free, while 9.6 percent paid fees. In contrast, only 61.6 percent of middle VET students were enrolled for free while 38.4 percent paid fees.^d Middle VET institutions often secure private funding through enrollment fees and international donor support.

University funding heavily depends on tuition fees (80 to 85 percent of funding), and is supplemented by state funds that are allocated on a per-student basis. MoF is responsible for approving and directing financing to MoESCS, which then reallocates the funds to universities. Government funds primarily support tuition waivers and merit-based scholarships, with limited provisions for students in financial need. In 2022, only 17 percent of students in state HEIs received state scholarships, with the remaining 83 percent paying^e (ArmStat, 2022; World Bank, 2019). 82.1 percent of those who receive state scholarships, are also eligible for small monthly stipends (approximately USD 15). Tuition fees are only fully covered for students undertaking studies in majors defined as

priority by the state, and 79 percent of these students are entitled to receive state scholarships for accommodation, food and transportation.

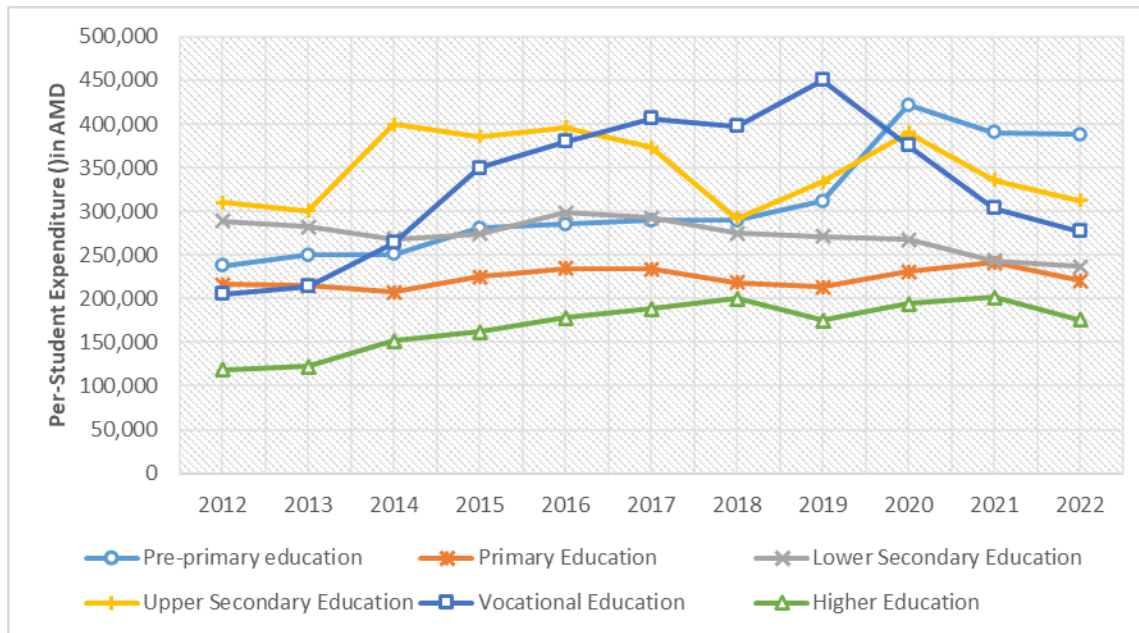
Note: ^a UNICEF, 2022b. ^b ArmStat, 2022. ^c ETF, 2019. ^d ArmStat, 2022. ^e ArmStat, 2022, World Bank 2019.

1/ The system of formal vocational education and training (VET) in Armenia has two levels: preliminary vocational – craftsmanship – education (one to three years), and middle vocational education (two to five years).

106. **Most education expenditure is directed towards general education programs, with a growing emphasis on pre-primary education.** As of 2022, approximately 15 percent of the education consolidated budget was allocated to pre-primary education, 18 percent to primary education, 23 percent to lower secondary education, and 10 percent to upper secondary education. Additionally, 13 percent of the total expenditure was given to VET and HE toward programs supporting the acquisition of job-specific skills. Over the last decade, pre-primary education in particular has experienced increased funding (up from 10 percent of total consolidated education budget to 15 percent), reflecting the growth in the community budget.

107. **Over the last decade, the average per-student expenditure increased in real terms for pre-primary, vocational, and higher education, remained stable for primary and upper secondary education, and decreased for lower secondary education.** These changes were influenced by various factors, including changes in education expenditure and fluctuations in student populations. Per-student expenditure in pre-primary education increased by 63 percent in real terms due to the total education spending growing at a higher rate than enrollment. Per-student expenditure in lower secondary education, however, experienced an 18 percent decrease as the expenditure did not increase in proportion to the increase in student numbers. In vocational education, there was a 35 percent increase in per-student expenditure, while higher education expenditures increased by 48 percent due to a decline in student numbers and an overall increase in spending ([Figure 41](#) and [Figure 42](#)).

Figure 41. Per-Student Expenditure in Armenian Drams (2012–2022)

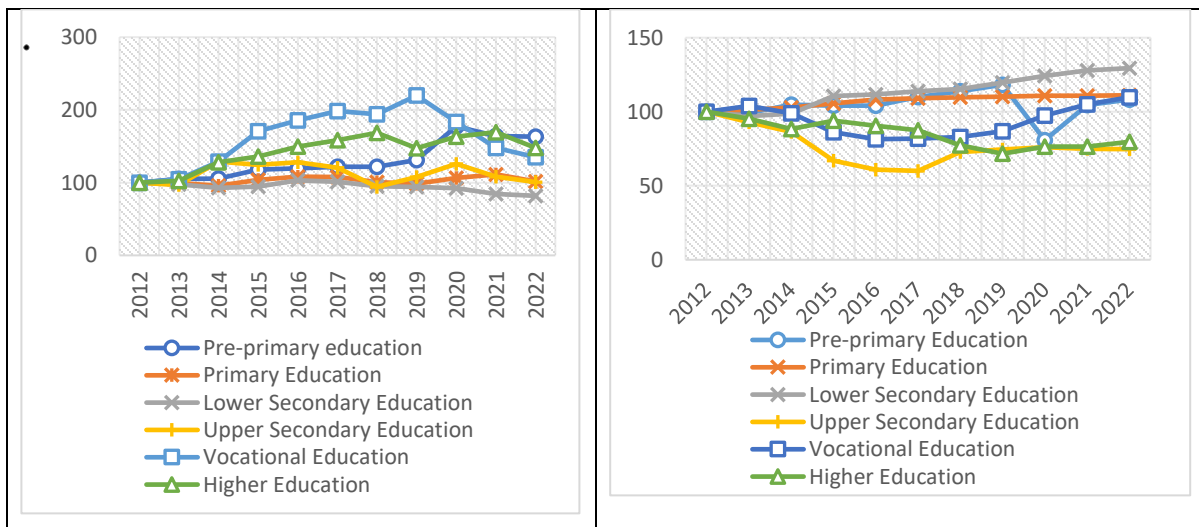


Source: Authors' calculations based on 2023 data from MoF.

Note: Expenditure was calculated as the total expenditure by level of education and the total number of students in both state and non-state educational institutions, based on UNESCO's methodology.

Figure 42. Evolution in Total Expenditure and Enrollment by Level of Education (2012–2022)

A. Evolution in Total Expenditure (2012=100) B. Evolution in Enrollment (2012=100)



Source: World Bank based on 2023 data from MoF and MoESCS.

108. **Support services to education notably increased in 2022 due to higher expenditures in school infrastructure under the Safe Schools program.** The government's five-year Safe School program (2021–2026) committed to build, overhaul, or renovate at least 300 schools to create safe, protected, and child-centered learning environments. In 2022, the Safe School Program accounted for 46.7 percent of support services for education in the state budget, compared to 26.7 percent in 2021. Other subprograms that

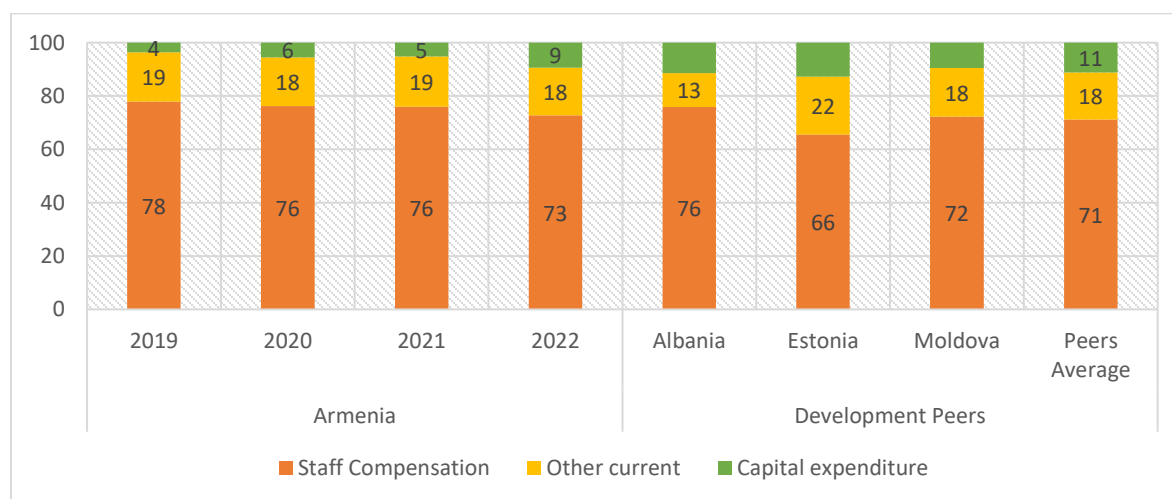
contributed to the increase in support services expenditure include the new voluntary certification system for teachers and infrastructure improvements in the Tavush region (Table 5 in Annex 2A).

2.2.2 Economic Classification of the State Budget

109. **A significant portion of the education expenditure from the state budget is allocated in the form of subsidies, social benefits, and grants.** This requires effective accountability mechanisms to ensure transparent and responsible utilization of funds. In 2022, a total of 66.9 percent of the state budget allocated for education was disbursed in the form of subsidies to state non-commercial organizations (SNCOs), primarily general education schools. Additionally, 14.2 percent was allocated to cover social benefits in the form of allowances for vocational schools and higher education students. Grants to other levels of government in the public sector accounted for 6.9 percent of the total education budget (Table 5 in Annex 2A).

110. **The remuneration of school personnel, particularly teachers and school administrators, constitutes the most significant expense in the education budget.** Most expenditures within educational institutions are directed towards staff compensation. In 2022, staff compensation accounted for 73 percent of the total expenditure in educational institutions, a slight decrease from previous years where it represented over 78 percent, while remaining higher than in peers (Figure 43). In Armenia, about 66 percent of the total expenditure in staff compensation is allocated to teachers, and the remaining 34 percent is allocated to non-teaching staff.⁹⁶

Figure 43. Distribution of the Expenditure in Public Education Institutions by Economic Classification (2019–2022)



Source: Authors' calculations using data from MoF (2023) and UNESCO UIS (2023).

Note: State budget only for Armenia. This figure further desegregates the expenditure in subsidies for NCOs.

111. **Teacher compensation in Armenia is below the average salary of workers with similar education levels and are, moreover, lower than the national average salary.** In 2021, teachers in Armenia ranked among the lowest-paid professionals, earning only 75 percent of the **median** wage of tertiary-educated

⁹⁶ Authors' calculations using 2022 data from UNESCO UIS.

workers (70 percent for mean average).⁹⁷ By comparison, the average teachers' salaries at pre-primary, primary, and secondary levels of education typically range from 80 to 94 percent of the earnings of tertiary-educated workers in OECD countries.⁹⁸ The overall low expenditure on education in Armenia significantly contributes to the inadequate levels of teacher compensation, as does the system of payment based on workload. Teachers of public educational institutions are paid according to the rate (minimum salary) and number of teaching hours. Currently, 62 percent of teachers have a workload of less than the full-time requirement (22 lessons per week). To supplement their income, teachers often engage in private tutoring.

112. The government in 2021 has introduced a program aimed at increasing teachers' salaries to match or even surpass the current average salary. However, this raise only applies to those who successfully undergo a voluntary certification (known as teacher attestation process).⁹⁹ After three years of implementation, a total of 5,179 teachers (approximately 17 percent of all teachers in general education) received salary increases.¹⁰⁰ The minimum monthly salary rate for a teacher who passes the certification process is AMD 200,000 (about USD 500 at the 2023 average exchange rate). Teachers with a score above 70 percent receive an additional bonus of 30-50 percent of the minimum wage, reaching a salary of AMD 260,000 (about USD 650), close to the average monthly nominal wage for the economy in 2023 (AMD 269,994). In parallel, the allocation formulas to schools have also been adjusted to address low teacher salaries. In the amended allocation formulas of 2020, a minimum monthly salary rate for teacher salaries was introduced, set at AMD 108,800 (about USD 220 with 2020 average exchange rate) for a full workload. Under the new financing procedure starting in 2023, this minimum monthly salary rate has been increased and is now set at more than AMD 119,000 (about USD 300 with 2023 average exchange rate). The new funding procedure has already been implemented in around 989 out of 1,400 schools since September 2023. However, since the introduction of the minimum rate in 2020, it has only been adjusted in 2023 and if the minimum rates are not adjusted regularly, teacher salaries will fall behind those of other professionals in the medium term.

113. Expenditure on capital expenses has traditionally been low, but it increased in recent years, reaching proportions similar to those observed among peers. Previously, the expenditure on capital expenses accounted for a relatively low percentage of the total expenditure, ranging from 4 to 6 percent (2019–2021). However, in 2022, the expenditure increased to 9 percent of total expenditures, which is closer to that of its peers (11 percent). Currently, only 40 percent of general schools in Armenia have adequate building conditions, while 27 percent require ongoing maintenance, and the remaining 33 percent are in need of significant renovations. Additionally, over half of the schools in Armenia are exposed to high seismic risk.¹⁰¹

114. Work is already underway to significantly increase investments in capital expenses. The government's five-year program (2021–2026) outlined plans to: (i) construct or extensively renovate a minimum of 300 schools and 500 kindergartens, and (ii) establish modern natural science and engineering laboratories in all 1,400 schools by 2026. At the end of 2023, construction and renovation works have

⁹⁷ It was not possible to disaggregate the information for teacher salaries by level of instruction, as the labor force survey did not provide the level of disaggregation required for the occupations.

⁹⁸ According to OECD Indicator D3, teacher salaries as compared to tertiary-educated workers stand at 80 percent for early childhood educators, 85 percent for primary education teachers, 89 percent for lower secondary teachers, and 95 percent for upper secondary teachers.

⁹⁹ UNICEF, 2022b.

¹⁰⁰ MoESCS, 2023.

¹⁰¹ UNICEF, 2022.

already been completed in 122 kindergartens (mostly in rural areas), and work will be completed in another 100 kindergartens in 2024.¹⁰² As for general education schools, in 2023, work was completed in 30 institutions and was underway in 39 schools. Construction of another 168 schools will start in 2024.¹⁰³ In addition to the five-year program, the government’s Education Strategy 2030 envisions investing 800 million in the establishment of an academic city consisting of campus clusters designed to foster collaboration among educational institutions, scientific organizations, and production entities.

2.2.3 Private Spending

115. **The contribution of households to education (as a share of GDP) in Armenia is lower than the average of peer countries, but higher than in the EU.** The latest data on household expenditure on education (excluding pre-primary education) shows that it was equivalent to 0.95 percent of GDP in Armenia compared to average of 1.3 percent in peers but only 0.6 percent in the EU. Household spending in Armenia was particularly significant in higher education, with 73 percent of the total expenditure contributed by households to cover tuition, meals, transportation, and lodging. The main cost-driver for households in general education is uniforms and other clothing. Household contributions to private tutoring for upper secondary students is also notably high (Table 6 and Figure 2A.2 in Annex 2A).

Table 6. Annual Per-Student Expenditure by Government and Households in AMD (2021)

	Government	Household	Total	Household (% of total)
Pre-primary	358,884			
Primary education	222,029	46,495	268,524	17
Lower secondary education	224,259	63,233	287,492	22
Upper secondary education	309,000	120,473	429,473	28
Vocational education	279,166	129,237	408,403	32
Higher education	185,535	512,939	698,474	73

Source: Authors’ calculations using 2021 Household’s Integrated Living Conditions Survey and MoF.

Section 2.3 Efficiency of Armenia’s Education Expenditures

2.3.1 Allocative Efficiency of Education Expenditures

116. **The education unit cost in Armenia is higher at lowest levels of education.** Regional developmental peers like Moldova and Georgia show a similar relative cost structure across levels of education, with a higher unit cost for the lowest levels of education. However, this relationship is inverted for aspirational peers, such as Estonia and UMIC, as well as the EU, where the highest per-student costs are observed in HE, and the lowest, in pre-primary education (Table 7).

¹⁰² MoESCS. (2023). The budget of the MoESCS increased by 38 percent compared to last year. Retrieved from Ministry of Education, Science, Culture and Sport: <https://escs.am/am/news/18932>.

¹⁰³ MoESCS. (2023). 2023 summary report of the field of general education. Retrieved from Ministry of Education, Science, Culture and Sport: <https://escs.am/am/news/19813>.

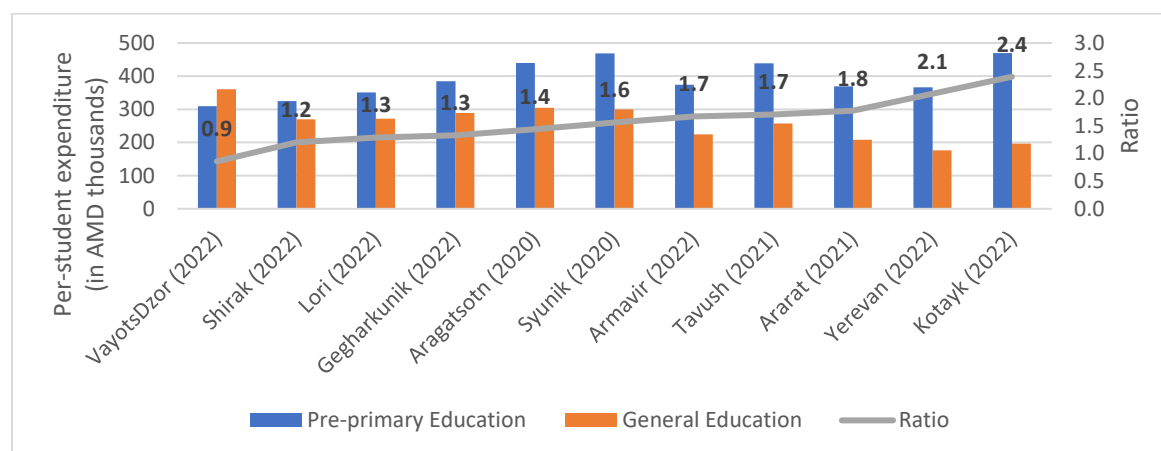
Table 7. Per-Student Expenditure by Level of Education (Relative to Per-Student Expenditure in General Education)

	Armenia				Albania	Moldova	Georgia	Estonia	UMIC	EU
	2019	2020	2021	2022						
Pre-primary	1.17	1.51	1.47	1.55		1.12	1.08	0.88	0.62	0.75
General	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Vocational	1.69	1.35	1.14	1.10			1.33	0.92		1.13
Higher education	0.66	0.70	0.76	0.70	0.76	0.84	0.58	1.81	1.51	1.36

Source: World Bank based on Ministry of Finance, UNESCO UIS and OECD.Stat.

117. **There has been a significant increase in per-student expenditure in pre-primary education between 2019 and 2022 (Table 7).** This can be attributed to both a decline in net enrollment rate caused by the COVID-19 pandemic and an increase in total expenditures.¹⁰⁴ With the exception of Vayats Dzor, the higher unit cost pattern in pre-primary education is also typical in all regions. (Figure 44).

Figure 44. Per-Student Expenditure in Pre-Primary Education Relative to Per-Student Expenditure in General Education (2020 or latest)



Source: Authors' calculations using data from MoTAI, MoF (budget reports for non-commercial organizations) and ArmStat, 2023. Note: (i) Expenditures for pre-primary education by regions are from the community budget only and exclude allocations from the State Budget which comprise 5.5 percent of the total consolidated education budget. (ii) Per-student expenditure in general education is extracted through transfers from the state budget to non-commercial state organizations. About 96 percent of expenditures in general programs are transferred to those organizations, mainly general schools.

118. **The primary factors driving higher unit costs in Armenia's pre-primary education are salaries and food.** While salaries usually took a big chunk of the education budgets, salaries in pre-primary are 35 percent higher per student than in primary and secondary due to smaller group sizes (11.4 students per teacher vs. 13.7). School meals, while beneficial for access to education, cost 2.7 percent of GDP per capita from community budgets, higher than in similar income countries at 1 percent. The unit cost of the state's Sustainable School Meals program is also 1 percent of GDP per capita,¹⁰⁵ suggesting room for expanding pre-primary enrollment and food programs without substantially increasing community spending.

¹⁰⁴ UNICEF, 2022. The decline in the net enrollment rate suggests that the decrease is not primarily attributable to a demographic shift.

¹⁰⁵ The Sustainable School Meals program targets state general educational institutions with pre-primary and primary classes (grades 1-4) located in regions (excluding Yerevan).

119. **Between 2019 and 2022 VET has experienced reductions in spending, despite being an underdeveloped sector (Table 7).** In 2019, the expenditure on vocational education appeared to be high compared to general education programs, but it has since decreased to be on par with what is observed in the EU. This decline can be largely attributed to reductions in expenditures on scholarships and student allowances, which had been consistently increasing before the COVID-19 pandemic. While 97.9 percent of students in preliminary vocational education received free education in 2019, this percentage dropped to 90.4 percent in 2022. Similarly, in middle vocational education, the proportion of students receiving free education decreased from 87.7 percent to 61.6 percent over the same period.

120. **Additionally, government expenditure in HE is low compared to UMIC and the EU (Table 7).** In Armenia, the expenditure on HE is 30 percent lower than that on general education. This can be attributed to the fact that tuition fees are the main source of funding of public universities. In 2022, 83 percent of students in state HEIs paid tuition fees. Given the relatively low HE enrollment rates in comparison with developmental peers, additional investment in HE in Armenia could be potentially beneficial, particularly in the context of recent improvements to general education which will inevitably increase demand for higher quality HE.

121. **Overall, there is limited room for the central government to reallocate resources across different levels of education in the short term.** The highest per-student expenditure is observed in pre-primary education, which is mainly funded by the community budget rather than the state budget.¹⁰⁶ Also, when compared to peer country averages, the per-student pre-primary expenditure is not high enough for reallocation. Also, resources allocated to skills development (vocational and higher education) are relatively low, while the general education sector faces significant challenges including overall low quality.

122. **In the medium to long term, population trends provide an opportunity to reallocate resources from the general education sector to skills development in vocational and higher education.** The number of individuals of primary education age is projected to decrease by 22 percent between 2023 and 2030.¹⁰⁷ Conversely, the population is expected to increase by 28 percent among 15- to 17-year-olds (upper secondary education age) and by a 16 percent among 18- to 22-year-olds (higher education age) (Figure 45). This shift in population demographics suggests an imminent increase in the demand for skills development programs and reduced demands for primary education.

123. **Additionally, there is a need for better geographical resource allocation within the country.** The school-age population (ages 6–17) is projected to experience an 11.2 percent increase in Yerevan, while facing a respective decrease of 16.8 percent and 13.2 percent in both urban and rural communities in the regions.¹⁰⁸ This scenario presents potential for resource reallocation in the medium to long term towards more effective planning of school resources, such as teacher reallocation, increased capacity in Yerevan, and school reorganization in the regions.

124. **Given the demographic changes, geographical resource reallocations and educational challenges, some impactful interventions are needed to improve performance.** In the short term, the priority is to address the immediate needs of the general education sector by investing in the adoption of a competency-based curriculum across all grades (discussed in next subsection), which requires

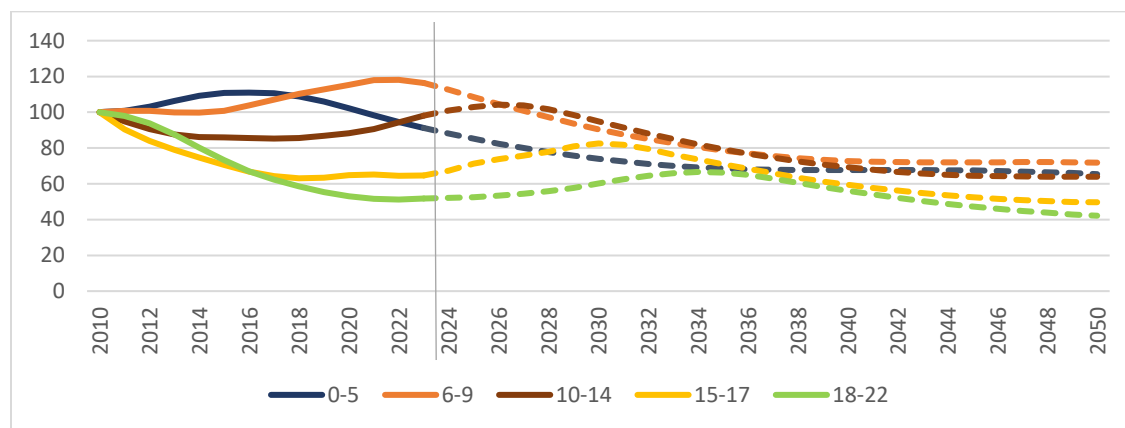
¹⁰⁶ The state budget only covers special needs, socially vulnerable children, and children from military families in pre-primary education.

¹⁰⁷ This decline has been slightly offset by refugee children who have registered in the education system in Armenia since September 2023.

¹⁰⁸ UNICEF, 2022b.

investments in teachers, school consolidation, management, adequate resources, and student assessments. With regard to pre-primary education, potential efficiency gains can be achieved, thus supporting increased access to this level of education. In the medium to long term, as the population of primary education-age children decreases and the demand for upper secondary and higher education increases, the freed resources may be strategically redirected towards expanding access to vocational training and higher education programs. This shift aims to align with the projected demographic changes, ensuring that the education system meets the increasing need for skills development. Additionally, better geographical resource allocation should be implemented, with a focus on reallocating teachers, increasing capacity in high-demand areas, and reorganizing small schools in regions with declining populations to more effective schools.

Figure 45. Population Trend Estimates and Medium Fertility Variant (2010–2050, 2010=100)



Source: Authors' calculations using 2022 data from United Nations Department of Economic and Social Affairs, Population Division.

2.3.2 Technical Efficiency of Education Expenditures

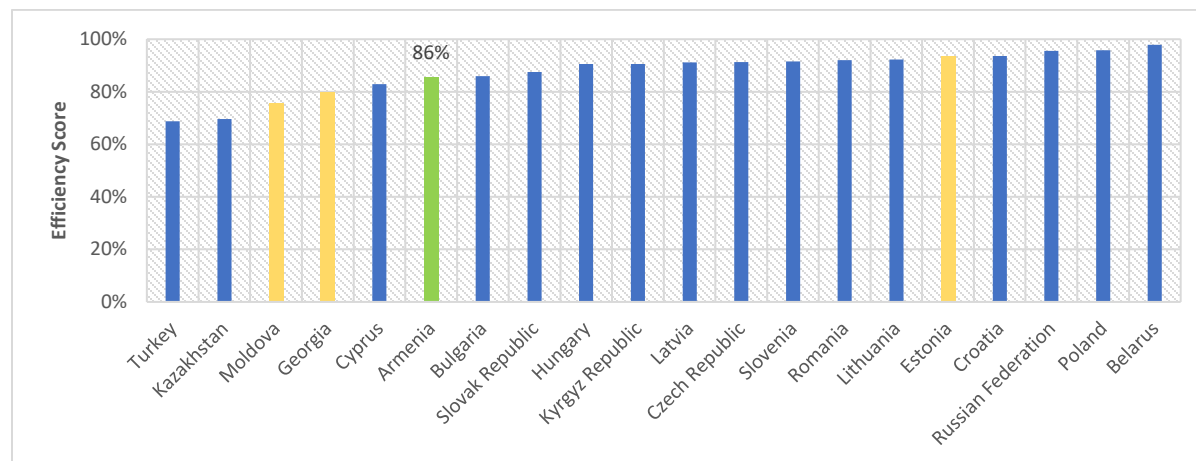
125. This section assesses the efficiency with which spending translates into outcomes using a Data Envelopment Analysis (DEA) methodology at the country and school level (Annex 2B). In this context, a country or an educational institution is efficient if by using the given inputs, it can achieve the maximum possible output or if for a given level of output, it uses the minimum possible inputs.

Where does Armenia stand in comparison to other countries in the region?

126. **Armenia can improve its educational outcomes even at the current level of expenditures by improving spending efficiency.** Using learning-adjusted years of schooling (LAYS) as an educational outcome measure across countries, a cross-country DEA suggests that while Armenia is doing better than regional neighbors, Armenia remains below the efficiency frontier (Figure 46). Armenia can increase its LAYS (8 years) by 14 percent with its current expenditure levels. This is a substantial increase that

translates into 9.1 LAYS, which is above the average of ECA UMIC countries (8.9 years) (Figure 2A.3 in Annex 2A).¹⁰⁹

Figure 46. DEA Efficiency Scores of Armenia and Regional Peers



Source: Authors' calculations based on Human Capital project (HCP) and WDI (2022). Expenditure data spans 2010 to 2020. A DEA analysis was conducted for all countries in which information was available.

Note: Countries with an efficiency score close to 100 percent are the most efficient. Yellow bars represent developmental peers with available information.

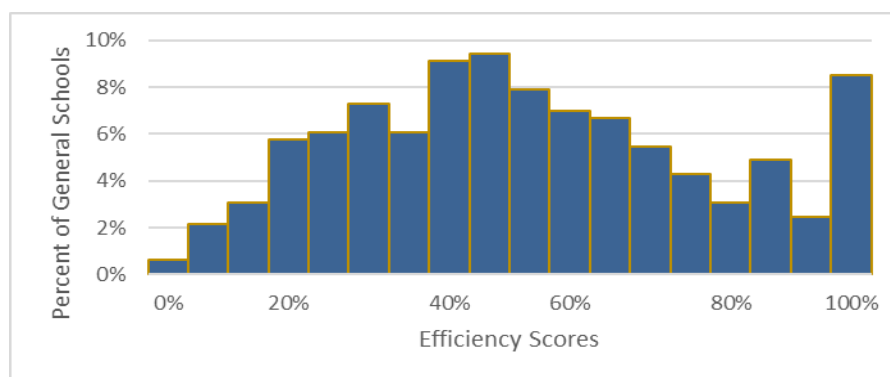
How is efficiency distributed among schools across Armenia?

127. **There is substantial variation in school efficiency across general schools in Armenia, suggesting that improvements can be achieved with the current level of school expenditures.** A DEA at the school level was conducted to provide insight into the capacity of general schools to generate maximum output (academic achievement) given the quantity of inputs they use.¹¹⁰ The results show that the average school has an efficiency score of 53 percent, while schools in the 20th and 80th percentile had respective efficiency scores of 29 percent and 75 percent. This distribution of efficiency scores suggests large variation in technical efficiency within Armenia (Figure 47).

¹⁰⁹ A regression was used for this DEA to identify the factors correlated with years of schooling at the country level. The statistically significant factors included expenditure on education as a share of GDP, the level of development (measured as GDP per capita), and the population structure (population under the age of 14) (Table A8).

¹¹⁰ For this analysis, the variables include per-student expenditure, the total number of students, and the location of the schools, including fixed effects of regions. A similar analysis across other levels of education was not possible due to the lack of available student performance data. This analysis uses item-response theory scores for assessments in both mathematics and a science subject for Grades 3, 4, 8, and 9 conducted through standardized examinations in all schools in Tavush, Lori, Shirak and a random sample of schools in Yerevan.

Figure 47. Distribution of Efficiency Scores of General Schools in Armenia (2022)



Source: Authors' calculations using data from the EU4Innovation Trust Fund Evaluation Report.

128. **The most efficient schools spend approximately 30 percent more than the least efficient schools, but host twice as many students meaning their overall per-student spending is lower.** On average, general schools in the top quintile of efficiency account for 21 percent of the total expenditure, while those at the bottom spend 16 percent of expenditures. At the same time, schools at the top account for 25 percent of the total enrollment, while those at the bottom account for only 13 percent. This percentages are similar for staff compensation and other current expenses. However, most efficient schools tend to account for a much larger share of total capital expenses (Table 8).

Table 8. Percentage of Schools of Expenditure and Enrollment Explained by the Most Efficient and Most Inefficient Schools (2022)

	Top quintile of the distribution	Bottom quintile of the distribution
Share of total expenditure	20.7	15.9
Share of total expenditure in staff compensation	20.8	16.1
Share of total expenditure in capital expenses	28.9	10.8
Share of total expenditure in other current expenses	20.3	15.5
Share of total enrolment	25.2	12.5

Source: Authors' calculations using data from the EU4Innovation Trust Fund Evaluation Report and MoF.

What factors are related to school efficiency?

129. **There are several factors that could be related to school efficiency in both the extensive margin and the intensive margin.** Extensive margin factors, such as school size and location (urban or rural) as well as number of teachers, deal with the overall scale or quantity of inputs in the education system, while intensive margin factors, such as the quality of principal and teacher inputs, deal with the depth or quality of specific inputs.

School consolidation:

130. **Schools located in cities and schools that are large are more likely to be among the most efficient, regardless of region.** Schools that are urban, large, have a high student-teacher ratios (STRs), or high average class size are more likely to be in the top quintile of efficiency. Conversely, schools that are rural,

small, have a low STR, or low average class size are more likely to be in the bottom quintile of efficiency. It is also worth noting that while schools from all regions are represented in the top quintile of efficiency, only 2.9 percent of schools in the bottom quintile of efficiency are located in Yerevan (Table 9).

Table 9. Percentage of Schools in the Most and Least Efficient Quintiles by Characteristic (2022)

	Most Efficient (Top 20%)	Least Efficient (Bottom 20%)
Geographical Location		
Urban	64.7	10.1
Rural	35.3	89.9
Shifts		
Double	7.4	7.3
Single	92.7	92.8
Average School Size (number of students) (by quintile)		
0-80	17.7	29.0
81-130	17.7	18.8
130-230	13.2	27.5
231-420	19.1	21.7
421+	32.4	2.9
Student-Teacher Ratio (by quintile)		
Below 4.5	19.1	29.0
4.5-6.5	14.7	21.7
6.5-9.5	14.7	24.6
9.5-12.5	20.6	20.3
12.5+	30.9	4.4
Average Class Size (number of students) (by quintile)		
Below 6.7	17.7	29.0
6.7-12	13.2	23.2
12-20	11.8	26.1
20-24	22.1	17.4
24+	35.3	4.4
Region		
Lori	29.4	31.9
Shirak	27.9	55.1
Tavush	22.1	10.1
Yerevan	20.6	2.9

Source: Authors' calculations using 2022 data from the EU4Innovation Trust Fund Evaluation Report and MoESCS.

131. **A sizable share of small schools (schools with 100 or fewer students), especially in rural areas, have higher average expenditures per student.** Nearly a third of schools in Armenia are considered small. While these small schools only enroll 5.3 percent of the total number students in Armenia, they employ 16.4 percent of the total number of teachers, whose salaries account for 14.8 percent of total school expenditure. In contrast, 16.8 percent of schools in Armenia have over 500 students and enroll nearly nine times as many students as small schools while employing only twice as many teachers as small schools (Table 10). The inverse per-student expenditure and school size relationship is attributable to larger schools having larger average class sizes and higher STRs (Figure 48). This means that fixed costs like staff salaries and building maintenance can be efficiently spread across a higher number of students.

Table 10. Distributions of Schools, Students, and Teachers by School Size in Public General Schools (2022–2023)

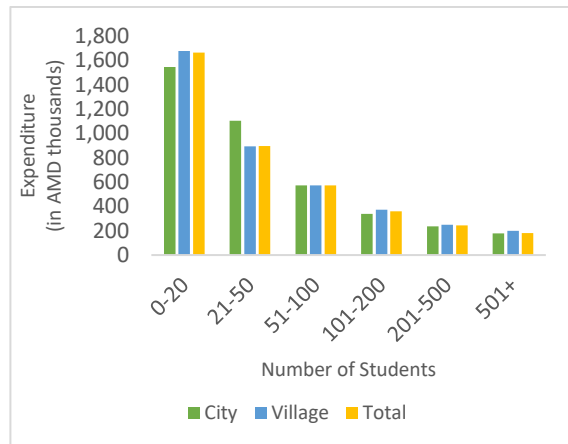
School Size (number of students)	% of Total Schools	% of Urban Schools	% of Rural Schools	% of Total Students	% of Total Teachers	Average Class Size	Average STR	% of Total School Expenditure
0-20	6.6	0.9	10	0.3	1.9	1.9	1.6	1.8
21-50	10.6	2.3	16	1.3	5.2	3.9	2.7	4.6
51-100	14.1	6	19	3.7	9.3	7.1	4.7	8.4
101-200	19.4	15	22	9.9	15.3	13.6	6.9	14.3
201-500	32.6	39	29	36.8	35.6	21.6	11	36
501+	16.8	37	4	48.1	32.7	27	15.6	34.9
Total (%)	100	100	100	100	100			
Total (Number)	1,400	542	858	402,951	38,143			

Source: Authors' calculations using data from MoESCS.

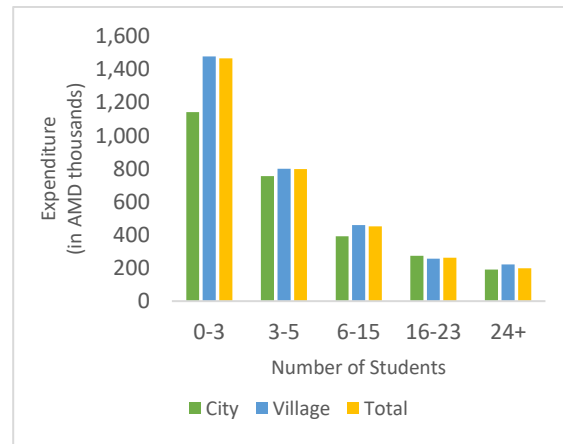
Note: The classification of schools by size was conducted using a quintile distribution approach. The first quintile was further disaggregated.

Figure 48. Per-Student Expenditure by School Size and Class Size in General Education (2022)

A. School Size



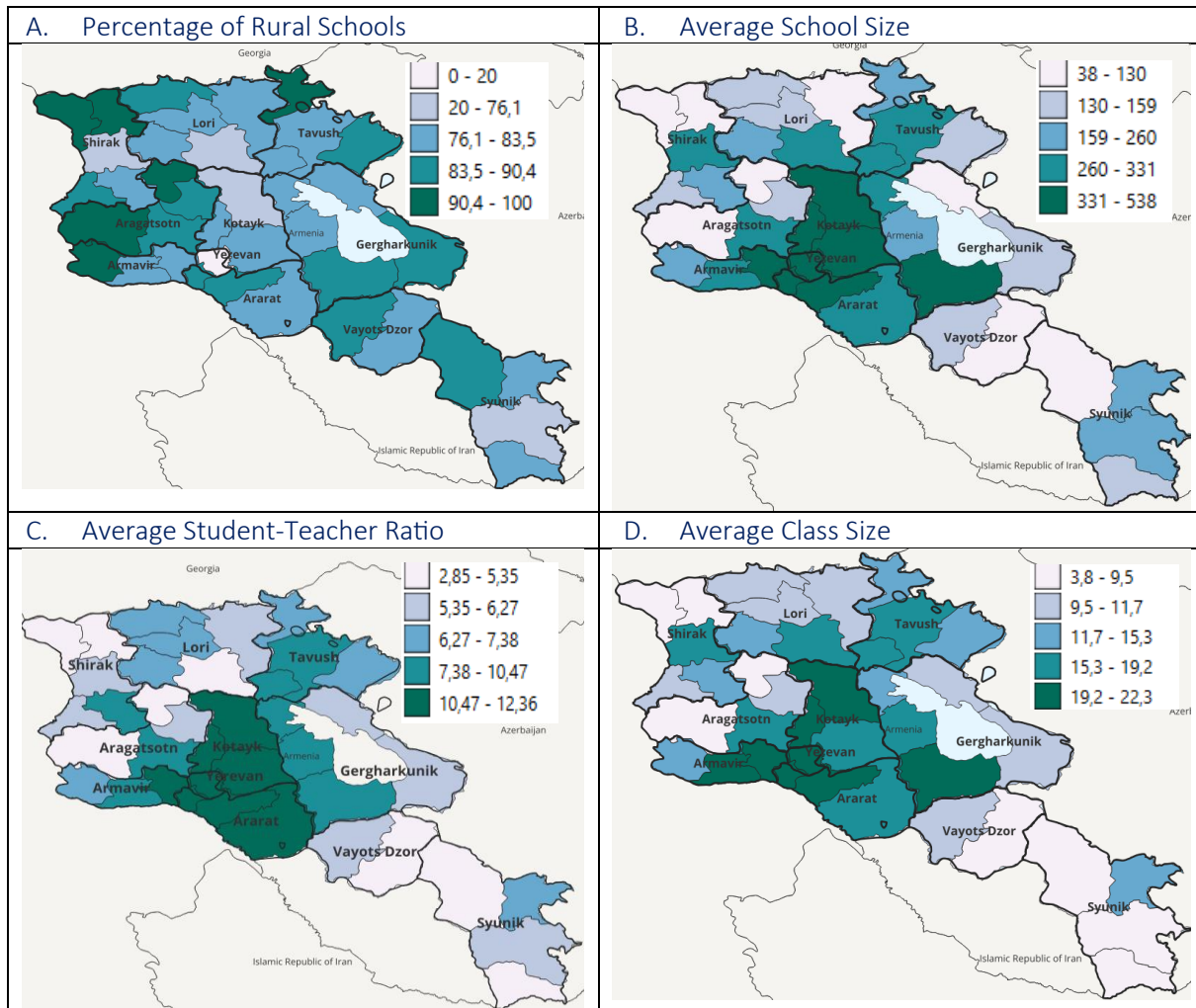
B. Class Size



Source: Authors' calculations using data from MoESCS and MoF.

132. **Geographical factors show that the least efficient schools are concentrated in the northwest and in the southeast.** Vayots Dzor and Syunik (in southeast), as well as Shirak, Lori, and Aragatsotn (in the northwest), tend to have low student-teacher ratios, low average class sizes, and low average school sizes, which translates to lower efficiency (Figure 49). In contrast, schools located in the central-west part of the country, including regions around Yerevan, appear to be more efficient. There is, however, substantial variation within regions.

Figure 49. Geographical Distribution of Factors Related to Efficiency by Region (2022)



Source: Authors' calculations based on MoESCS (2023).

133. **School consolidation is key for the successful implementation of the new curriculum.** Students in small, rural schools would be better integrated with students from other schools and have access to more teaching and learning resources, better prepared teachers and better facilities that would support their acquisition of the skills and competencies that are part of the new curriculum introduced starting in 2021. Competency-based learning and the acquisition of core life skills, such as collaboration, communication, leadership, require critical mass of students and teachers to enable extensive interactions. This is important for small schools as they face challenges in recruiting and retaining high-quality teachers and principals, fostering robust learning environments, and maintaining adequate school infrastructure. However, school consolidation also requires considering other strategic aspects, such as availability of schools in borderline, mountainous, and hard-to-reach areas. **Box 6** summarizes the results of a pilot of the curriculum reform in Tavush region.

Box 6. Improving Learning through Curriculum Reform

Armenia's STEM curriculum reform, which was initiated in 2018, aspires to transition the education system to one that is competency-based, through a focus on student-centered, inquiry-based, and outcome-oriented teaching, learning, and assessment. With financial support from the European Union, the World Bank partnered with the Ministry of Education, Science, Culture, and Sport of Armenia in designing a new STEM curriculum for grades 1 to 12 and piloting its adoption in selected grades in Tavush in the first year. The government continues its implementation in the second year.

A robust evaluation of the pilot in Tavush was conducted, exploiting variation in the regions and grades affected and not affected by the pilot implementation following a differences-in-differences approach. The evaluation found that the adoption of the new STEM curriculum had a positive and sizeable impact on student achievement in math and science subjects, equivalent to an additional six months of learning over the two years of implementation. Importantly, the impact of the reform was larger in the first year of implementation, when additional financial support was provided to strengthen teacher and school principal training and ongoing mentoring. There was a 30 percent reduction in the magnitude of the effect by the second year. The implementation of the curriculum reform in Tavush seems to have had a positive impact across students, teachers, and principals with different characteristics.

Source: World Bank, 2024

134. A new financing formula allocates resources across general schools based on number of classes, which might encourage schools to maintain smaller class sizes. In the new scheme, which took effect on September 1, 2023, the number of classes and number of full-time teachers per class replace the previous per-capita financing based on the number of students in the school (Box 2A.1). While this approach directly tackles lack of funding, especially in small schools, and schools must comply with the rules for class formation (which may prevent schools creating extra classes), it may not encourage schools to make efforts to increase class sizes and, consequently, does not promote efficiency.¹¹¹ It is important to note that while excessively small classes can decrease efficiency, this message does not suggest large classes across the board. It is important to consider that schools have diverse needs, such as different ratios of student with special educational needs (SEN), that should be considered.

135. Demographic shifts along with the introduction of admission examinations in private institutions and accreditation processes have led to the consolidation of HEIs. The sector has experienced contraction and consolidation. Over the 2009 to 2018 period, the student population in the HE sector decreased by 31 percent primarily due to population decline and high levels of outmigration. The government's introduction of admission examinations for private university applicants in 2010 also contributed to this decrease. Additionally, the failure to fulfill licensing requirements that were part of new accreditation processes resulted in the closure of several universities. All these factors led to the closure of 16 universities out of the total 77 between 2009 and 2018.

Number and quality of teachers:

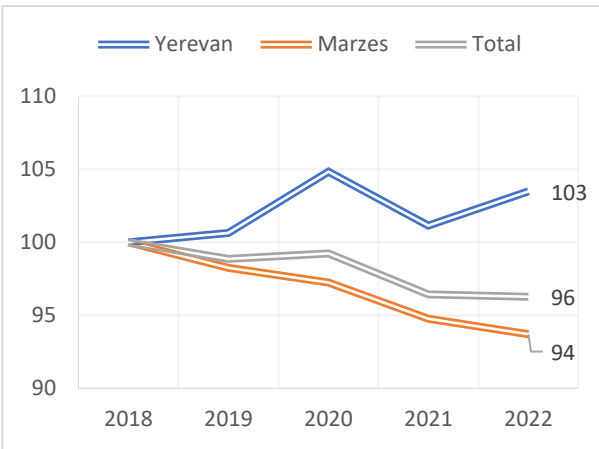
136. The number of teachers in Armenia has slightly decreased, with STRs above the EU average. Between 2018 and 2022, the number of teachers in general education dropped by 47 percent in Armenia, mostly driven by the reduction in the marzes. In the marzes, the decline was about 6 percent during the same period, contrasting with Yerevan where the number of teachers increased by 3 percent. In general, the STR for general education was 13.7 in 2022 in Armenia, while the average STR in the EU countries was 12.1 in 2021.¹¹² (Figure 50).

¹¹¹ The main cost of schools are teacher salaries. The number of employed, full-time equivalent (FTE) teachers depends on the number of classes in the school.

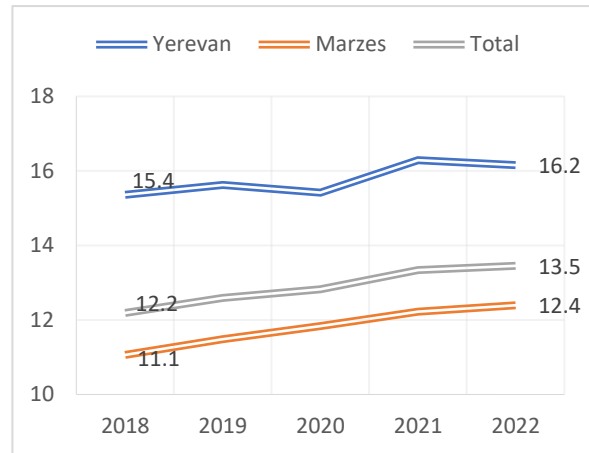
¹¹² ArmStat, 2022; EuroStat, 2021.

Figure 50. Evolution in Number of Teachers and Student-Teacher Ratio (2018–2022)

A. Number of Teachers (100=2018)



B. Student-Teacher Ratio

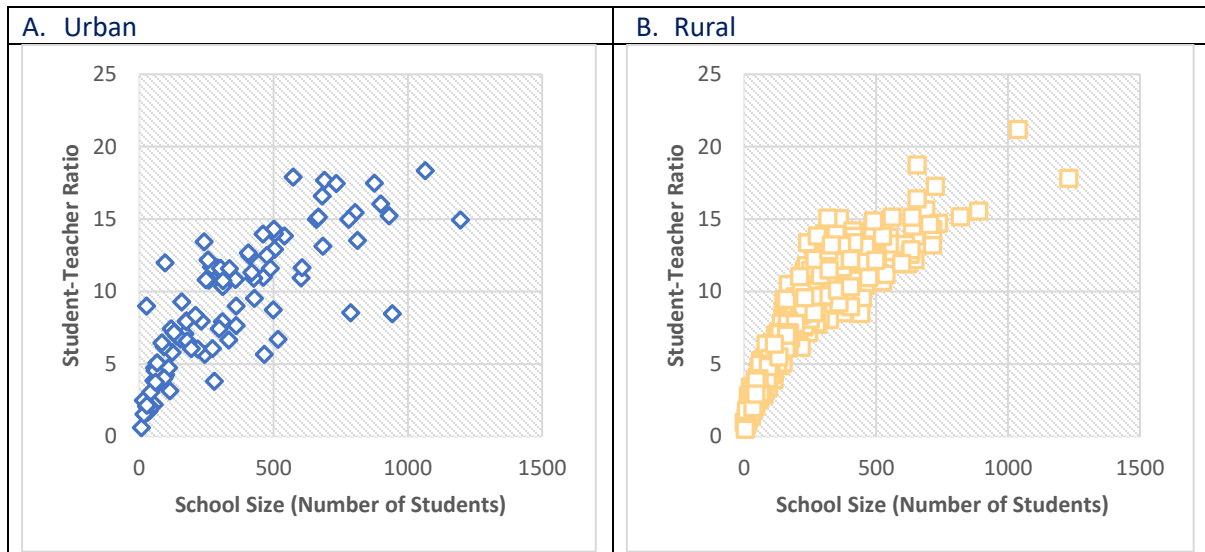


Source: Authors' calculations based on ArmStat (2023).

137. **There are significant disparities in STR among general schools with an important challenge recruiting high quality staff to small, rural schools.** The fact that schools with similar location and size characteristics have marked differences in the number of teachers indicates that there may be room to improve the balance of teacher deployment (Figure 51). Despite current incentives for recruitment in hard-to-staff schools, especially in rural areas, these schools fail to attract high quality teachers and principals.¹¹³

¹¹³ Incentives include a 30 percent salary supplement, stipends for: (i) transportation (for teachers and their families); (ii) rent (10,000–24,000 AMD for rural areas; 13,000–34,000 AMD for urban areas); and (iii) utilities (10,200 AMD per month). According to the Education Strategy, there are currently 600–700 teacher vacancies registered annually, which either remain unfilled or are filled with considerable difficulty. This challenge is relevant in both rural and urban schools. Principals of city schools also express the difficulty in finding qualified teachers. Intermediate solutions, such as improving the organization of teachers' business trips, enhancing compensation conditions for transportation services, or filling the absence of teachers through e-learning, cannot be considered systemic solutions that adequately address the problem. It is evident that there is an urgent need for improvements in pedagogical education and for making the teaching profession more attractive to young people.

Figure 51. School Size and Student-Teacher Ratio by Schools in Urban and Rural Areas (2022)



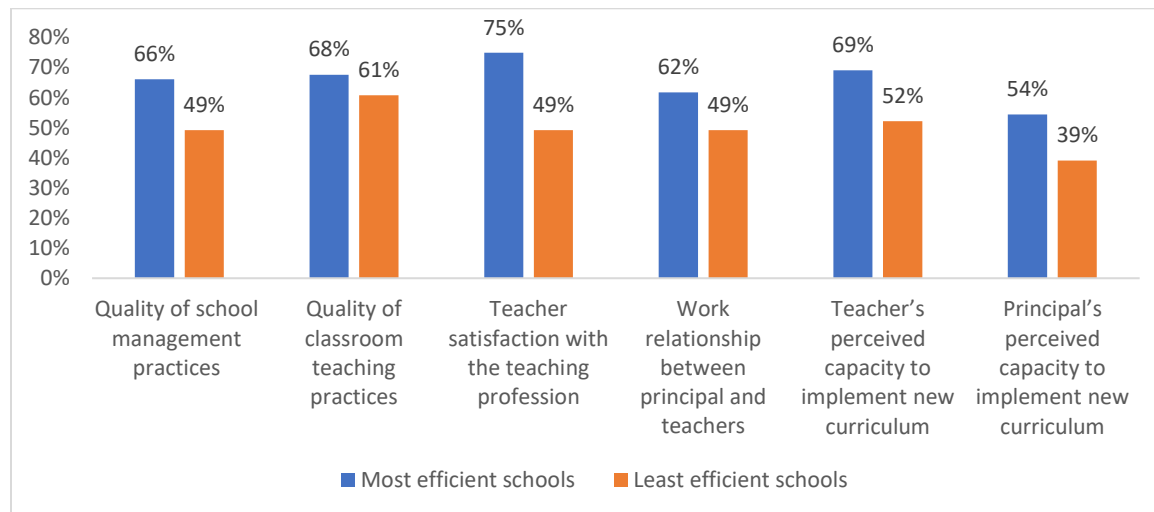
Source: Authors' calculations using data from MoESCS.

138. **Making the teaching profession more attractive for the younger generation could help address teacher shortages moving forward.** The current number of individuals entering the teaching profession is significantly smaller than the number leaving the system, making the proportion of older teachers in Armenia notably higher in comparison to EU and OECD averages.¹¹⁴ The average age of general education teachers is 46.8, and a substantial 20 percent are above 60 years old, while merely 11 percent are below 30. This pattern is largely explained by the fact that a large proportion of teachers reaching retirement age and that the profession does not appeal to younger generations. A new HE scholarship program is expected to contribute to increasing the attractiveness of the teaching profession. Students studying educational programs receive a scholarship of up to AMD 70,000 a year (AMD 50,000 in other fields). This has already led to the doubling of the number of students studying these specializations in the master's degree.

139. **The quality of teacher and principal inputs are higher on average in a large percentage of the most efficient schools in comparison to the least efficient ones (Figure 52).** Several indices were constructed to explore whether the quality of teacher and principal inputs was related to school efficiency based on self-reported responses of teachers and principals in selected schools in Tavush, Lori, Shirak, and Yerevan (Annex 2C).

¹¹⁴ World Bank, 2021.

Figure 52. Percentage of Schools with Above Average Quality of Teacher and Principal Inputs, Most Efficient vs. Least Efficient Schools (2023)



Source: Authors' calculations using data from the "Curriculum and Learning: Towards a competency-based STEM curriculum in Armenia" report.

Note: Most efficient (top 20 percent) and most inefficient (bottom 20 percent)

140. **Improvements to the recruitment, pre-service, and in-service training for professions in education in Armenia can lead to improved quality of teacher and principal inputs and consequently increased efficiency across both the most and least efficient schools.** Armenian teacher trainees lack practical readiness in pre-service, and not all those entering the profession are highly talented. While they gain practical experience in assigned schools during pre-service education, they lack adequate preparation for actual teaching. The absence of formal induction programs adds to this challenge. Limited senior staff availability in smaller schools hampers new teacher support. The lack of a structured probationary period prevents thorough assessment of teaching skills. Armenia lacks a standardized approach for assessing and ensuring new teachers' competence, highlighting the need for comprehensive support mechanisms.¹¹⁵

141. **Furthermore, Armenian educators lack consistent access to high-quality professional development, impacting their performance, motivation, effort, and peer relationships.** Training sessions are predominantly delivered through lectures instead of interactive methods, without being very effective.¹¹⁶ Implementing the learned techniques remains a challenge because of time constraints and the inadequate comprehension of application methods. As there are neither career growth opportunities nor higher pay grades (no incentives) linked to professional development, participation in professional development programs solely rely on teachers' motivation.¹¹⁷ **Box 7** outlines five key principles aimed at improving teaching quality and student learning outcomes.

¹¹⁵ UNICEF, 2022a.

¹¹⁶ Findings of a self-administered questionnaire that was applied to over three hundred teachers across Armenia in 2020 shows that about 30-35 percent of teachers cited that participation in professional development was restricted by lack of incentives, low relevance of the programs and the high cost.

¹¹⁷ UNICEF, 2022a.

Box 7. Enhancing the Teaching Profession to Improve Student Learning Outcomes

Extensive research consistently shows that the quality of teaching is the most important factor in improving student learning outcomes (WDR, 2018). Essential components for high-quality teaching—such as professional development, initial training, induction, recruitment and compensation, deployment, and ongoing support—are fundamental to achieving higher educational outcomes.

The World Bank's policy document, "Successful Teachers, Successful Students," offers a research-supported framework for enhancing the teaching profession through five fundamental principles.

PRINCIPLE 1: Make teaching an attractive profession by improving its status, compensation policies, and career progression structures. This principle emphasizes enhancing the attractiveness of the teaching profession through several measures. These include improving the social status of teachers, offering competitive compensation, and creating clear, appealing career progression opportunities. The goal is to draw high-quality candidates to the profession, recognizing the complex and impactful nature of teaching.

PRINCIPLE 2: Ensure pre-service education includes a strong practicum component to ensure teachers are well-equipped to transition and perform effectively in the classroom. Pre-service education should integrate extensive practical training to better prepare teachers for the realities of the classroom. This hands-on experience is crucial for bridging the gap between theoretical knowledge and practical application, ensuring that new teachers can effectively manage and educate their students from the start.

PRINCIPLE 3: Promote meritocratic selection of teachers, followed by a probationary period, to improve the quality of the teaching force. This principle advocates for a merit-based selection process for recruiting teachers, followed by a probationary period that assesses their effectiveness. Such measures aim to enhance the overall quality of teaching by ensuring that only the most capable and effective educators remain in the system.

PRINCIPLE 4: Provide continuous support and motivation, in the form of high-quality in-service training and strong school leadership, to allow teachers to continually improve. Ongoing professional development and strong leadership are vital for sustaining teacher motivation and effectiveness. Continuous learning opportunities, coupled with supportive school leadership, enable teachers to evolve their practices and adapt to new educational challenges and standards.

PRINCIPLE 5: Use technology wisely to enhance the ability of teachers to reach every student, considering their areas of strength and development. Effective integration of technology in education can significantly enhance teaching and learning. This principle suggests using technology strategically to support teachers in addressing the diverse needs of their students, enabling personalized learning experiences that cater to individual strengths and areas for development.

Source: Bêteille & Evans, 2019

142. **The quality of teachers is also impacted by the lack of performance-related incentives (monetary and non-monetary) and consequences.** The currently available incentives encompass social packages, basic health insurance, qualification categories, and voluntary attestation, which in part contribute to teacher retention. However, as there is no mandatory teacher performance evaluation mechanism, good performance is not linked to any compensation or bonus.¹¹⁸ Although the existing attestation process does connect salary increases to performance evaluations, it may not fully capitalize on the potential to continuously motivate teachers to improve their performance.

¹¹⁸ UNICEF, 2022a.

143. **Drawing on global evidence, it is clear that structured and transparent performance-based compensation systems can lead to significant improvements in teacher quality and student outcomes.** Countries that have implemented clear, achievable, and well-communicated incentive systems often see more sustained improvements in educational quality. For Armenia, building on the existing attestation model to develop a more comprehensive performance evaluation mechanism based on standardized learning outcomes could provide a more sustainable and effective approach to continuously encourage teachers to improve their skills. Such a system could include both rewards for high performance and professional development opportunities to support ongoing teacher growth. **Box 8** provides some global evidence using examples from various countries that have implemented performance-based compensation systems for teachers.

Box 8. The Impact of Performance-Based Compensation on Teacher Effectiveness and Student Outcomes

Performance-based compensation programs for teachers have demonstrated varied effectiveness across different settings, and their success largely depends on the specific design and implementation of each program. A study from Wisconsin, where school districts were given the autonomy to redesign teacher pay schemes, found that districts that paid high-quality teachers more, experienced improvements in teacher quality. This was due to high-quality teachers migrating towards districts with better pay and putting in greater effort due to the competitive pay structure (Biasi, 2018).

Experimental evidence from Rwanda on the recruitment, effort and retention effects of pay-for-performance (P4P) contracts compared to fixed-wage (FW) contracts in primary schools highlighted that teachers operating under P4P contracts were found to show higher levels of effort as evidenced by improved student performance outcomes. Specifically, the within-year effect of P4P was 0.16 standard deviations in student learning, increasing to 0.20 standard deviations when accounting for selection effects (Leaver, et. al 2021).

In the United States, the IMPACT teacher evaluation system introduced in the District of Columbia Public Schools utilized a high-stakes model that combined potential dismissals for low-performing teachers with financial rewards for high performers. This approach increased the voluntary attrition of low-performing teachers by 11 percentage points (i.e., more than 50 percent) and improved the performance of teachers who remained by 0.27 of a teacher-level standard deviation. The authors also found evidence that financial incentives further improved the performance of high-performing teachers (effect size = 0.24) (Dee and Wyckoff, 2013).

Long-term benefits of comprehensive performance pay programs in high-need schools have also been documented. For example, programs that offer incentives based not only on student performance but also on professional development have shown promising outcomes such as increased educational attainment, reduced criminal activity, and lower reliance on government assistance among students. These benefits indicate that well-designed performance pay systems can extend beyond immediate educational outcomes to foster broader societal benefits.

Other considerations for improving monitoring and accountability of spending efficiency

144. **The fragmented oversight on financial and economic activities of education institutions has hampered effective monitoring.** Pre-primary institutions are controlled by the municipalities, and their expenditure data is only available internally.¹¹⁹ General educational institutions, on the other hand, are obliged to prepare and submit quarterly and annual reports to their authorized bodies (MoESCS and regional governments), and subsequently to MoF. State HEIs are required to undergo external audits, with the board of trustees selecting audit firms. HEIs submit their financial reports to the State Revenue

¹¹⁹ IMF, 2019.

Committee and make them publicly accessible online along with the annual independent audit reports and board meeting minutes. These rules do not, however, extend to private HEIs or HEIs offering programs abroad in partnership with international HEIs, which typically do not disclose their financial documents.¹²⁰ In addition to the fragmentation of financial monitoring, there are ambiguous roles and duplications in MoESCS and regional and community administrations in the overall governance structure of the education sector, particularly in the context of community consolidation.¹²¹

145. The incomplete data on key characteristics of educational institutions is another obstacle in improving school efficiency. In 2024, MoESCS approved a national student assessment framework that provided guidelines for the implementation of external standardized evaluations. These evaluations, once implemented, will provide learning data across grades and subjects on a yearly basis, and can be used to measure school performance and inform policy to support the least efficient schools. In order to process this data, it will be necessary to make significant upgrades to the current educational management information system (EMIS) that will improve functionality and prevent data loss. Additionally, the interoperability of EMIS between different agencies (i.e., the National Center for Educational Technologies, the Assessment and Testing Center, etc.), is needed to improve the relevance of data analysis, enhance accountability, and inform targeted investments to support education institutions across the country. It should be noted that operability of data between different levels of education (from preschool to HEI) is also important for enhancing accountability, identification of gaps, and targeted interventions.

Section 2.4 Equity of Armenia’s Education Expenditure

146. Access to education is inequitable among various groups, particularly in pre-primary, upper secondary and higher education. For example, the percentage of students who attend pre-primary, upper secondary, and higher education is significantly lower among the very poor population ([Table 11](#)). Inequities by geographical location also exist in pre-primary and higher education as urban areas have better access to educational facilities compared to rural areas. Women’s attendance to higher education is higher than men.

147. Children with disabilities (CWD) are included under students with Special Education Needs (SEN), yet significant gaps persist in their access to education beyond the 9th grade. Despite the Law on Education mandating 12 years of schooling, many CWD, particularly those with autism or intellectual disabilities, face barriers to continuing in vocational education (VET) and higher education. These challenges highlight the need for more inclusive policies and tailored support to ensure that all children, regardless of disability, can pursue their education and future opportunities.

¹²⁰ World Bank, 2019.

¹²¹ UNICEF, 2022b.

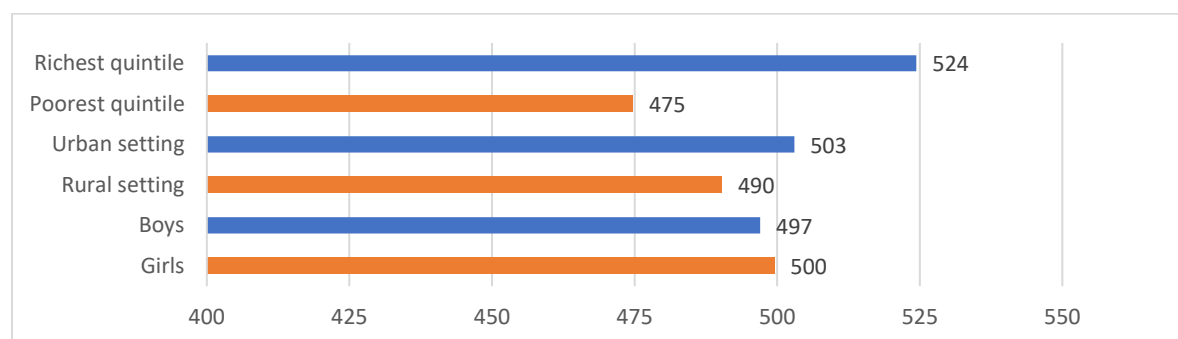
Table 11. Net Attendance Rates (2019–2021 average)¹²²

		Pre-Primary Education	Primary Education	Lower Secondary Education	Upper Secondary Education	Higher Education
Total	Total	52.5	93.4	94.1	84.1	37.3
Sex	Female	55.6	92.4	94.3	85.0	42.3
	Male	49.8	94.3	94.0	83.2	30.3
Poverty	Non-poor	57.5	93.9	94.9	86.4	44.7
	Poor	43.4	92.5	92.4	80.6	17.2
	Very poor	40.5	90.0	92.3	53.7	9.0
Location	Rural	42.0	93.2	93.8	83.6	26.7
	Urban	60.5	93.4	94.4	84.5	45.7

Source: Authors' calculations using 2021 Household's Integrated Living Conditions Survey.

148. **There are also significant disparities in academic achievement among various student groups, with notable distinctions between socioeconomic quintiles and geographic location.** Students from families with higher socioeconomic status generally exhibit higher average scores. The scores of fourth graders on the 2019 TIMSS math assessment revealed a 50-point difference in scores between students from the richest and poorest quintiles, which roughly equates to a two-year gap in educational progress. Higher scores were also clearly correlated with students from urban locations, and were particularly significant in fourth-grade math scores (Figure 53).

Figure 53. Fourth Grade 2019 TIMSS Math Score Differences by Gender, Location, and Socioeconomic Level



Source: Oral Savonitto et al., 2023.

Note: The gap between the richest and poorest quintile and urban and rural is 49.7 points and 12.7 points, respectively and both are statistically significant. The gap between boys and girls is 2.4 points and not statistically significant.

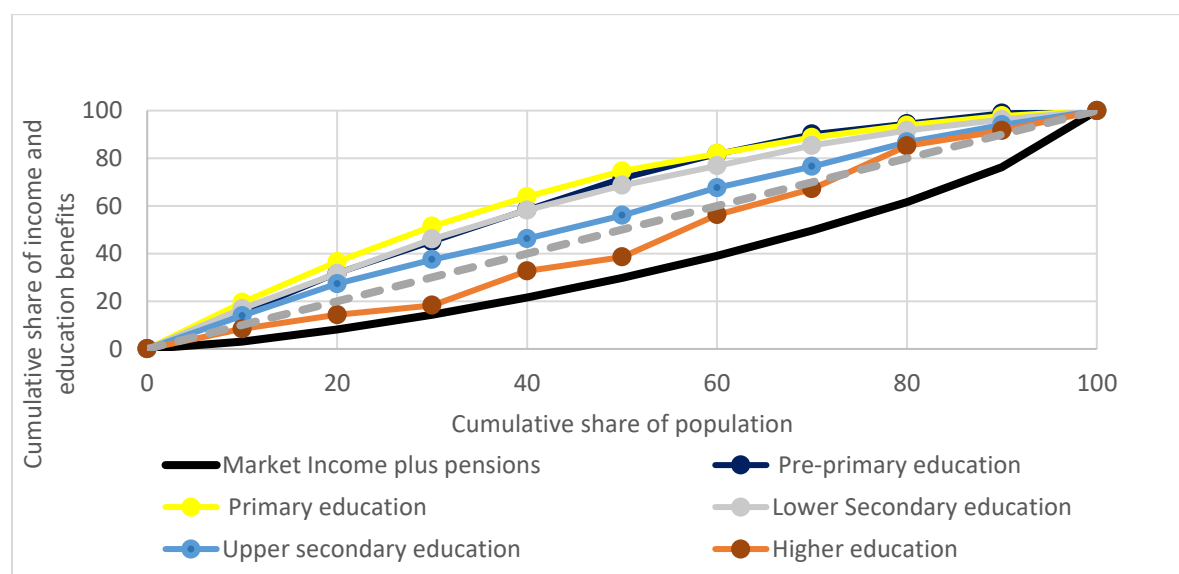
Benefit-Incidence Analysis

149. **Overall, there was a progressive distribution of education benefits across all levels of education in 2021.** However, the distribution of benefits becomes less progressive and pro-rich as the education level increases. The distribution of the public expenditure in education by income deciles shows that a larger share of benefits is allocated to the lower-income groups at the pre-primary, primary, and lower secondary education levels. In contrast, benefits are spread more evenly across income deciles, with a slight skew towards higher-income groups at the middle vocational and higher education levels (Figure 6

¹²² Very poor population defines as people with consumption per adult below lower poverty line, while poor population defines as people with consumption per adult below the average poverty line (average of the lower and upper poverty lines).

and 7 in Annex 2A). The Lorenz curve reveals the same pattern. With the exception of higher education, the concentration curve is above the 45-degree line for all level of education, meaning they are both progressive and pro-poor. The concentration curve for higher education, on the other hand, indicates a pro-rich distribution. However, because the HE curve is above the distribution of market income and pensions, it is still considered progressive, though lower compared to other education levels (education benefits are less concentrated than income) (Figure 54).

Figure 54. Lorenz Curve of the Education Expenditure (2021)



Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

150. **Multiple analyses show that spending on primary and lower secondary education can reduce income inequality, whereas higher education spending may increase it due to benefits favoring higher income levels.** Higher education shows a negative marginal effect on the Gini coefficient (-0.17), suggesting that spending in this level may increase income inequality. In contrast, primary and lower secondary education have significant positive marginal effects (1.26 and 1.27, respectively), underlining their role in reducing income disparities (see Figure 8 in Annex 2A). These findings are complemented by the Kakwani index,¹²³ which shows that primary and lower secondary education are the most progressive levels. While higher education yields a positive Kakwani index (0.25), it is identified as the least progressive among the educational levels. Other levels of education, including preliminary vocational and pre-primary are also progressive, but to a lesser extent than primary education, contributing positively to reducing income inequality (Figure 9 in Annex 2A).

151. **While the distribution of educational benefits among socioeconomic quintiles has a correlation with location, it varies depending on the educational level.** Education benefits of pre-primary and general education target the poorest income quintiles in rural areas, while benefits are more evenly distributed among the lower and middle-income quintiles in urban areas. In higher education, benefits are concentrated in urban areas, accounting 68 percent of all benefits. Upper-income deciles of urban areas

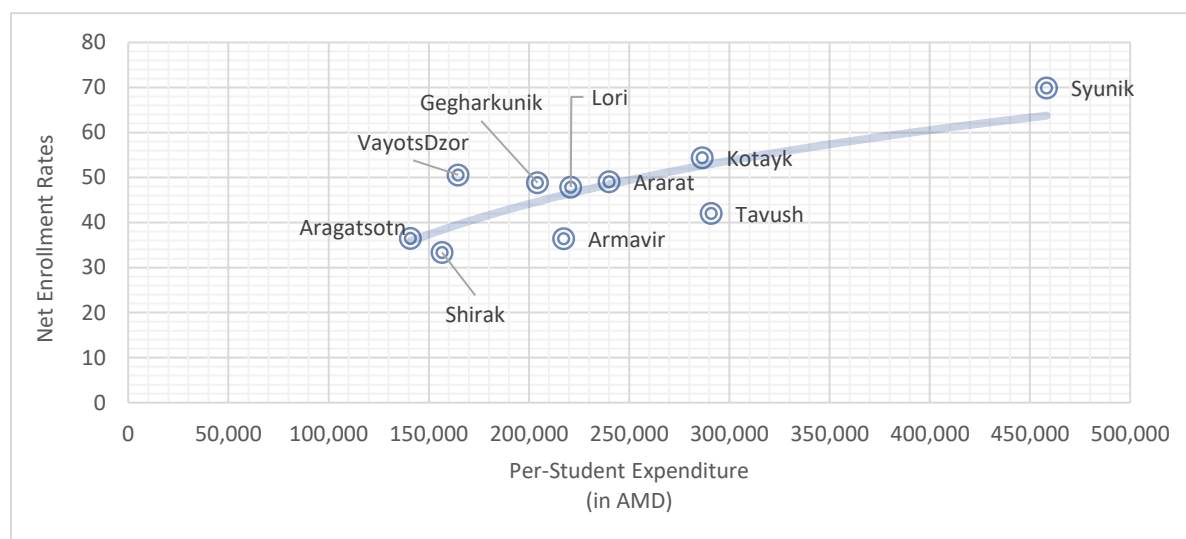
¹²³ Kakwani's index of progressivity is defined as the difference between the concentration coefficient (CT) of the intervention and the Gini coefficient of pre-tax income. Kakwani index ranges from -1 to 0 (neutral) to 1. Positive Kakwani of transfer means it is progressive.

are major beneficiaries of the higher education. Middle vocational education benefits are also concentrated in urban areas, with middle-income students benefiting the most (Figure 10 in Annex 2A).

Pre-primary education

152. **While the overall per-capita expenditure on pre-primary education is high, regions with the highest per-student expenditure tend to have higher enrollment rates.** Pre-primary enrollment rates show a positive correlation with the per-capita expenditure cost across regions. Net attendance rates are lowest in regions such as Aragatsotn and Shirak, which also have the lowest expenditures per student. In contrast, both enrollment rates and per-student expenditure are highest in Syunik (Figure 55). This is an indication that increased financial resources positively impact enrollment rates. However, because pre-primary funding comes from local governments, poor and vulnerable communities are unable to increase their resources, causing inequalities at this level of education.

Figure 55. Net Enrollment Rates and Per-Capita Expenditure in Pre-Primary Education by Region (2020–2022 average)



Source: Authors' calculations using Household's Integrated Living Conditions Survey 2020–2021 and MoF.

Note: Per-capita expenditure is calculated as the expenditure per number of 3- to 5-year-old children in the region.

153. **The low recognition of the returns of pre-primary education and the lack of pre-primary institutions influenced the enrollment rate.** According to the 2018 Household's Integrated Living Conditions Survey, over half of 3- to 5-year-olds did not attend pre-primary education because "the mother does not work", which suggests that the returns of pre-primary education may not have been fully recognized. From the supply side, approximately 13 percent did not attend due to a lack of pre-primary institutions while this share is 24 percent in rural areas (Table 12). In regions like Aragatsotn, Lori, and Armavir, at least 20 percent of 3–5-year-olds do not attend due to lack of facilities (Figure 56). In several rural and border areas, pre-primary institutions are either nonexistent or located at considerable distances from each other. According to the 2018 Household's Integrated Living Conditions Survey, 59.9 percent of rural households responded that a pre-primary institution was located within 1 km, while 5.4 percent indicated it being more than 10 km away.¹²⁴ To address this problem, the State Program for the Development of Education until 2030 has made expanding the network of preschool and early childhood

¹²⁴ <https://www.e-draft.am/ru/projects/3144/justification>

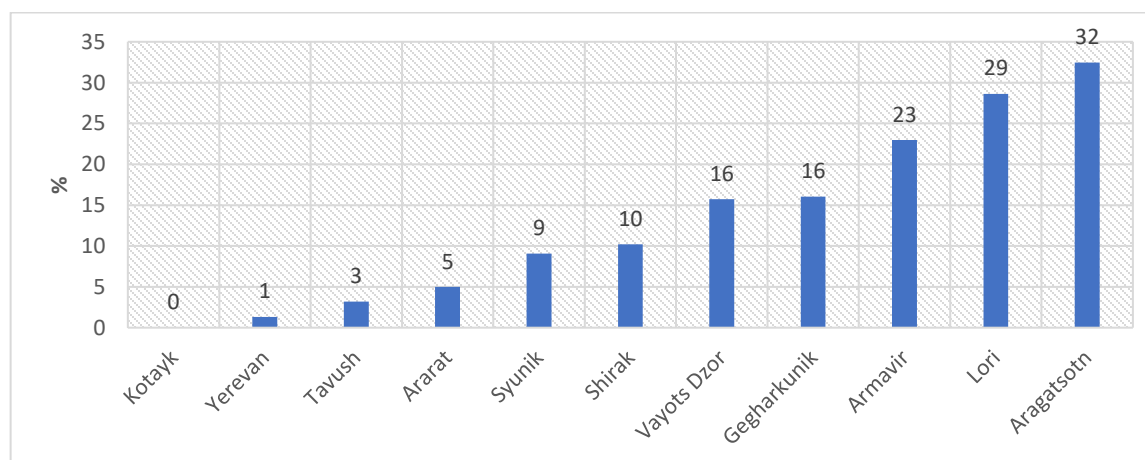
development services in rural communities a priority in the coming years, including through the introduction of alternative early childhood education models.¹²⁵

Table 12. Reasons Why 3 to 5-Year-Olds Do Not Attend Pre-Primary Education (2018)

	Total	Female	Male	Rural	Urban	Non-poor	Poor	Very Poor
Too expensive	3.8	1.8	6.1	1.4	6.4	2.6	6.5	0.0
Bad nutrition	1.3	1.8	0.6	0.5	2.1	1.5	0.9	0.0
Danger of infectious diseases	0.2	0.0	0.5	0.0	0.5	0.4	0.0	0.0
The kindergarten is closed	3.6	3.5	3.8	7.0	0.0	3.1	5.0	0.0
Working hours are not suitable	0.4	0.8	0.0	0.4	0.5	0.7	0.0	0.0
The quality of the service is low	0.8	1.0	0.5	0.0	1.6	0.7	1.1	0.0
The mother does not work	51.6	49.8	53.7	46.8	56.8	49.9	53.8	82.0
There are no kindergartens	13.0	13.1	12.8	24.3	0.7	14.4	10.4	0.0
Already goes to school	1.4	1.5	1.3	0.8	2.1	1.5	1.3	0.0
Other	23.9	26.6	20.7	19.0	29.3	25.3	21.1	18.0

Source: Authors' calculations using the 2018 Household's Integrated Living Conditions Survey, which is the last year this question was asked in the survey.

Figure 56. Percentage of Students Who Do Not Attend Pre-Primary Education Due to Lack of Kindergartens by Region (2018)



Source: Authors' calculations using the 2018 Household's Integrated Living Conditions Survey.

154. **While progress has been made to expand the network in pre-primary education, challenges persist, particularly regarding maintenance costs that sometimes result in the seasonal operation of facilities.** Despite community enlargement and adjustments in the tax system that followed the State Program for the Development of Education until 2030, certain communities still require support, especially in terms of enhancing the remuneration for employees. The government remains committed to addressing these challenges and ensuring the continued improvement of pre-primary services.¹²⁶

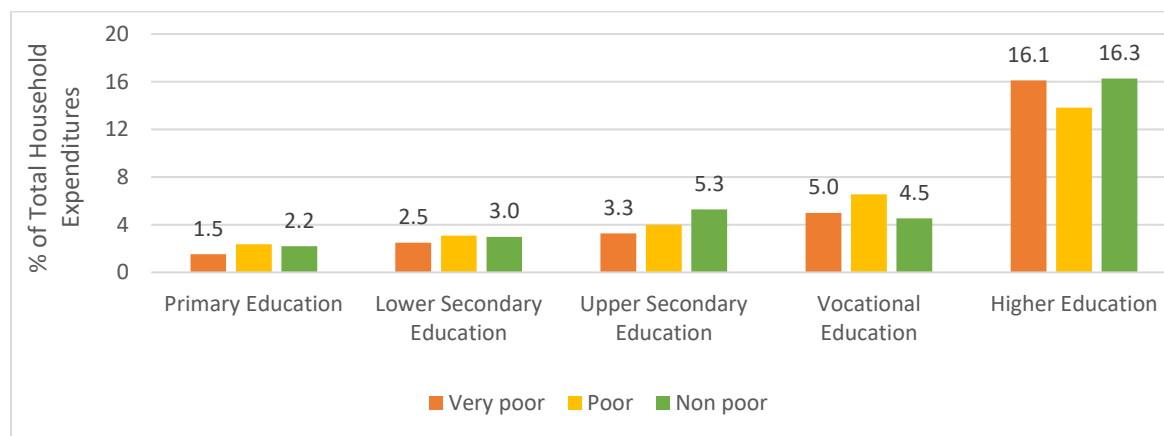
¹²⁵ RA National Assembly, 2022.

¹²⁶ RA National Assembly, 2022.

Higher education

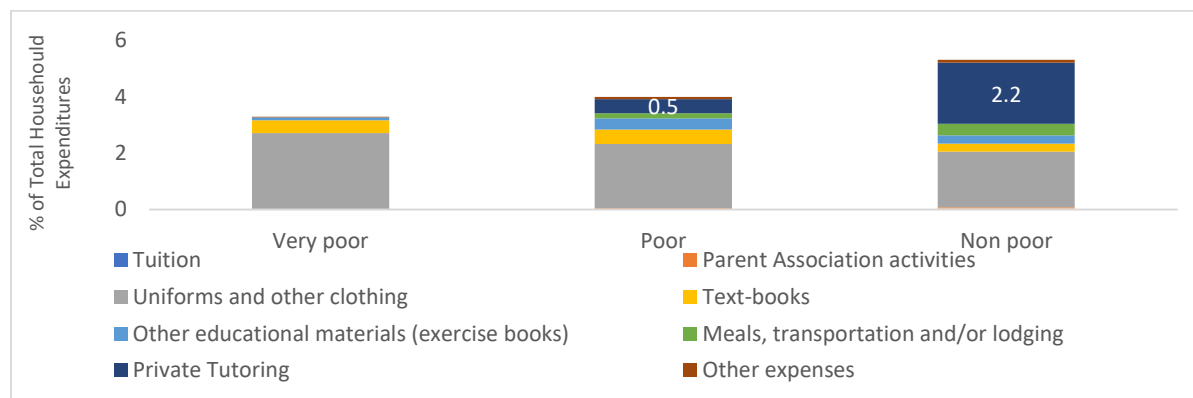
155. **Students from more affluent families are more likely to invest in private tutoring in upper secondary level, contributing to inequities in access to higher education.** Scholarships that allow students to attend HEIs free of charge are dependent on the results of national assessments. Given the overall low quality of education, students often turn to private tutoring to secure one of these scholarships, which puts poorer students at a disadvantage. While 25 percent among the non-poor students engage private tutors, only 7 percent of the poor students do so. Private tutoring remains inaccessible for the very poor.¹²⁷ This largely explains why the current public expenditure on higher education in the form of scholarships is pro-rich (Figure 57 and Figure 58).

Figure 57. Average Per-Student Household Expenditure on Education as a Share of the Total Household Expenditures by Level of Education (2021)



Source: Authors' calculations using the 2021 Household's Integrated Living Conditions Survey.

Figure 58. Average Per-Student Household Expenditure on Upper Secondary Education as a Share of the Total Household Expenditures by Item (2021)



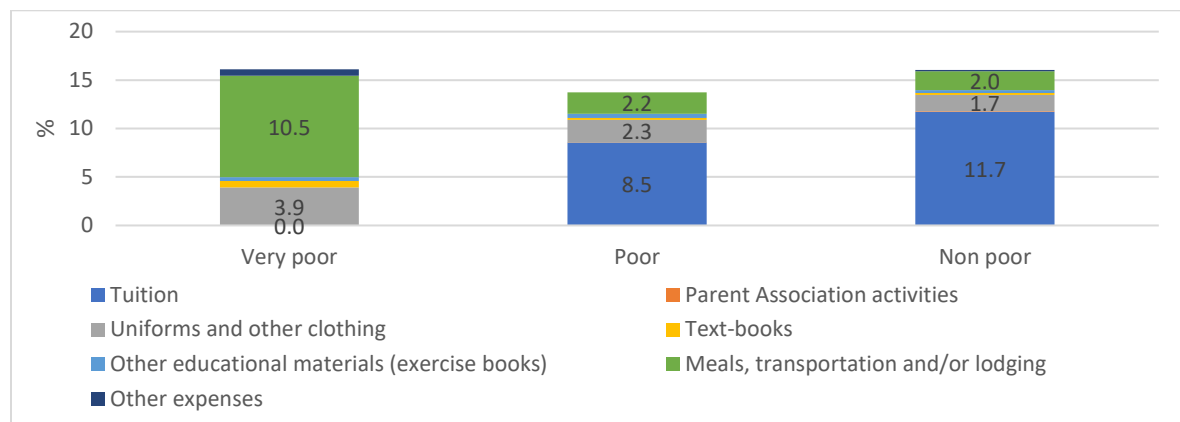
Source: Authors' calculations using the 2021 Household's Integrated Living Conditions Survey.

156. **The composition of the household expenditure on higher education differs by poverty levels, suggesting opportunities for better targeting of state scholarships.** The very poor devote a significant portion of their total expenditures to meals, transportation, and lodging, while this share was five times

¹²⁷ World Bank calculations based on the 2021 Household's Integrated Living Conditions Survey.

lower in the poor and non-poor population in 2021 (Figure 59). The monthly amount of state scholarships for meals, transportation, and other expenses in HE was increased in 2023 from AMD 4,000–5,000 per student to AMD 50,000 per year (AMD 77,000 for programs considered of primary importance to the state) to improve the targeted allocation of state scholarships.

Figure 59. Average per Student Household Expenditure on Higher Education as a Share of the Total Household Expenditures by Items (2021)



Source: Authors' calculations using Household's Integrated Living Conditions Survey (2021).

157. **Regarding HE tuition fees, there are some financial aid programs geared toward students from disadvantaged backgrounds, but they need to be more targeted.** In addition to merit-based scholarships, the state also provides need-based scholarships to fully or partially cover tuition fees for a small proportion of students from low-income families and specific vulnerable groups, such as orphans from birth, disabled individuals, children of fallen service members, and those from border localities, among others. Compared to most EU countries, the portion of students in Armenia receiving state scholarships or financial aid appears significantly lower.¹²⁸ To make universities more accessible to the poor, financial aid needs to become more targeted.

Section 2.5 Policy Recommendations

Considering the analysis conducted in this report, a set of policy recommendations can be made (Table 13).

Table 13. Policy Recommendations to Improve Efficiency of Education Spending

Governance	
There is a fragmented governance structure in financing and oversight, involving multiple authorities and duplication of functions. Additionally, while the regions can reallocate	Short Term (1-2 years (Y)): Empower regional governments to play a more direct role in the allocation and oversight of education funds within their respective regions. Provide regular training and resources to regional authorities and school boards to enhance their capacity for effective financial management and policy implementation. Regional

¹²⁸ Harutyunyan, 2023.

<p>resources among schools within their jurisdiction (for example, from large schools to small schools), this process is not transparent and not straightforward.</p>	<p>governments can also provide support to low-performing schools once the national assessment system is developed and evidence-based decisions can be made.</p> <p>Medium Term (3-5 Y): Consider reforms to streamline the governance structure and clearly define the roles, responsibilities, oversight, and accountability. This may include: (i) defining clear roles and responsibilities for MoESCS, regional governments, and municipalities to avoid duplication of efforts, especially in areas of financial oversight and policy implementation, and (ii) improving the oversight process by creating clear and consistent reporting procedures for all education institutions—pre-primary, general, vocational, higher education—so that financial data is easily accessible to both regional and national authorities.</p>
<p>Pre-primary Education</p>	
<p>Reasons for not attending pre-primary education are related to the perceived low value of participation and the lack of available pre-primary institutions.</p> <p>Access to pre-primary education is relatively low and inequitable, particularly in certain geographical areas.</p> <p>Financing of pre-primary education depends on community budget. While progress has been made to expand the network in pre-primary education with state support, challenges persist, particularly regarding maintenance costs.</p>	<p>Short Term (1-2 Y): Implement low-cost strategies to diffuse information among families about the benefits of investing in pre-primary education. This intervention is considered highly cost-effective and is supported by a strong body of evidence. Such measures are crucial to guarantee that ongoing initiatives aimed at expanding the pre-primary network successfully attain their objective of increasing the provision of pre-primary education.</p> <p>Short Term (1-2 Y): (i) Encourage and develop conditions for higher participation of private providers in the delivery of pre-primary programs. In the EU, enrollment in private institutions accounts for 25 percent of total enrollment, compared to 3 percent in Armenia, suggesting substantial room for private participation. (ii) Explore alternative models for establishing pre-primary institutions at low-cost in a short period of time in collaboration with local communities, such as the model used under the Bank-supported Armenian Education Improvement Project, which have proven to be effective in improving children’s readiness to learn.</p> <p>Short Term (1-2 Y): Implement regulations to standardize the quality of pre-primary education facilities and the allocation of funds. These standards should cover aspects such as the physical infrastructure of educational facilities (to meet licensing requirements) and the educational content delivered. Ensuring a high standard of quality across all pre-primary institutions will support efficiency and lead to increased funding and help maximize the impact of the funds allocated from the community budget.</p> <p>In the medium term, there are three potential options to consider for improving access to pre-primary education, each with its potential benefit and drawback, as outlined below.</p> <p>Option 1-Medium Term (3-5 Y): Make at least one year of pre-primary education compulsory. This aligns with successful examples from other countries, such as Uzbekistan, where compulsory pre-primary education has significantly increased enrollment rates. This legislative</p>

	<p>change would justify and necessitate increased state funding and attention to the pre-primary sector. Additionally, ensuring at least one-year of universal quality pre-primary education, by making it free and compulsory, is the minimum recommendation for all countries to implement SDG Target 4.2. However, it would require increased state funding.</p> <p>Option 2-Medium Term (3-5 Y): Set up incentives for communities to allocate more of their unconditional grants towards pre-primary education. This could include financial incentives tied to achieving specific educational outcomes or improving service delivery in the pre-primary sector. This change could encourage community investment in pre-primary education, promoting local decision-making and aligning with decentralization goal. However, communities with competing priorities may resist reallocating funds, and wealthier regions might benefit more, leading to unequal improvements.</p> <p>Option 3- Medium Term (3-5 Y): Explore the feasibility of directing earmarked support to communities for pre-school education, with a particular focus on critical cost driver components, such as teacher salaries, which constitute a primary cost driver. Consider optimizing state budget resources by reallocating funds from the existing equalization grants to establish dedicated earmarked funds for pre-primary education. Encourage community involvement by allowing flexibility for communities to co-finance additional expenses through their own resources, and supplement any shortfall with equalization grants. However, earmarked funds may reduce local financial autonomy, which is in conflict with decentralization goals.</p>
<p>The per-child expenditure in pre-primary education seems high from the community budget, suggesting room for efficiency gains.</p> <p>The financing of preschool education is not fully regulated.</p>	<p>Short Term (1-2 Y): (i) Consider the establishment of a department dedicated to pre-primary education or a division under the "General education department" within the MoESCS. This unit would focus on shaping pre-primary education policies, ensuring quality, and contributing to the formulation of a legislative framework. (ii) Develop standards and provide support to communities from the policy side in the implementation of pre-primary programs.</p> <p>Short Term (1-2 Y): Conduct a comprehensive assessment on areas where efficiency in the provision of pre-primary education could be enhanced, such as the school feeding program. Prioritize maximizing the increase in enrollment and quality within the current expenditure levels.</p>
<p>General Education</p>	
<p>A new competency-based curriculum has been introduced as a pilot. However, implementation efforts require investments in teachers, managers, resources such as teaching and learning materials, and school consolidation.</p>	<p>Short-term (1-2 years): Ensure sufficient funds for adequate implementation of the curriculum reform in the next 4-5 years to maximize learning gains.</p>

<p>The national student assessment system is underdeveloped and does not provide sufficient data for informing policies</p> <p>The current input-based funding model, which relies on class numbers, fails to incentivize enhancements in school-level learning.</p>	<p>Short Term (1-2 Y): Develop a national assessment system and EMIS would strengthen the evaluation and accountability process, providing crucial data to support the performance-based model and design targeted interventions for improvement.</p> <p>Medium Term (3-5 Y): Introduce performance-based incentives in school funding formulas to motivate schools to enhance learning outcomes. This approach shifts the focus from merely counting inputs, such as the number of classes, to rewarding measurable educational achievements. Under this framework, schools demonstrating significant improvement would be rewarded, while those that are significantly lagging can receive targeted support to help them improve.</p>
<p>There is an inefficient organization of the school system, especially with a significant number of small schools in rural areas as they are more costly to operate.</p>	<p>Short Term (1-2 Y): Consider assessing whether a network of schools, serving two or three communities, would be a more efficient solution in certain areas. In this assessment, consider the delineation of functional areas within Armenia for policy purposes. These functional areas are defined as groups of communities where economic, social, and spatial interactions are closely interconnected. This strategic approach aims to minimize the potential increase in travel time for students, ensuring a more efficient and accessible educational environment. Improved public school transportation system for networks of schools.</p>
<p>Teaching profession is not attractive for the young generation. The number of individuals entering the teaching profession is significantly smaller than the number leaving the system. This pattern is largely explained by a large proportion of teachers reaching retirement age. Additionally, teacher salaries are low.</p> <p>Schools with a similar number of students have varying numbers of teachers, indicating disparities in teacher distribution. Current incentives appear insufficient, and monetary allocations for teachers in hard-to-reach schools are unattractive and decreasing.</p>	<p>Short Term (1-2 Y): While the attestation process will allow teacher salaries to be at par with the average salary of the economy, and minimum salary rates have been introduced, it is important to consider adjusting teacher salaries every year to ensure that teacher salaries do not fall behind those of other professionals, reflect changes in the cost of living, and maintain their competitiveness in the labor market. This should apply to both teachers who pass the attestation process and those who do not</p> <p>Short Term (1-2 Y): Conduct a comprehensive review of existing incentive structures for teachers. Identify gaps and areas for improvement, and adjust incentives to make them more attractive, especially for teachers in hard-to-reach areas.</p> <p>Medium Term (3-5 Y): As the government is committed to increasing teacher salaries, it may be worth considering the introduction of sustainable individual performance-based incentives to encourage and reward teachers who demonstrate excellence in teaching, irrespective of school location; building upon the current attestation process. This could enhance teacher motivation and retention in all schools.</p>
<p>Vocational Education</p>	
<p>The sector has been underdeveloped, with low enrollment rates, particularly in rural areas, while the budget for</p>	<p>Short Term (1-2 Y): Collaborate with non-governmental organizations (NGOs) and the private sector to supplement educational resources and funding.</p>

<p>scholarships is decreasing, making it less attractive.</p>	<p>Short Term (1-2Y): Provide targeted interventions to enhance attractiveness in vocational programs and address supply-related constraints.</p>
<p>Higher Education</p>	
<p>Public expenditure for higher education is low and tends to benefit better-off students. At the same time, there is a significant shortage of skilled workers in essential sectors of the economy.</p>	<p>Short Term (1-2Y): Regularly assess and update priority field programs to maintain their relevance in the labor market, align them with national priorities, and evaluate the performance of graduates in the job market.</p> <p>Short Term (1-2Y): Expand and enhance financial aid programs to support students from low-income backgrounds and make the system more targeted.</p> <p>Short Term (1-2Y): Develop a strategy for asset privatization and management that enables universities to generate additional capital for the construction of new infrastructure, such as the proposed academic city.</p> <p>Medium Term (3-5Y): Given the government plans to increase financing for higher education, consider allocating additional resources using performance-based mechanisms.</p> <p>Medium Term (3-5Y): Proceed with the strategic consolidation and merger plans, incorporating academies into universities, to ensure that the number of institutions aligns with demographic trends.</p> <p>Medium Term (3-5Y): Enhance the international student population in higher education by pinpointing and promoting programs with a competitive edge on a global scale, and by actively recruiting students from abroad.</p>
<p>Accountability and Monitoring</p>	
<p>A significant portion of the education expenditure is allocated to educational institutions, however, there is no centralized oversight of educational institutions' financial and economic activities.</p>	<p>Short Term (1-2Y): Implement a unified reporting system to track the utilization of funds at the school, regional, and national levels. This will enhance transparency and accountability in financial management.</p>

Table 14. Operational Roadmap for Educational Reform Initiatives

Level (1)	Policy Area (2)	Time frame for implementation (3)	Level of Priority (low, med, high) (4)	Difficulty of Implementation (low, medium, high) (5)	Policy Net Benefit (out of 3) (6)
Governance	Empower regional governments for education funds oversight	Short	High	Medium	3
	Streamline the governance structure and clearly define the roles, responsibilities, oversight, and accountability	Short	Medium	High	2
Pre-primary education	Implement low-cost strategies for pre-primary education awareness	Short	High	Low	3
	Encourage private participation in delivering pre-primary education	Short	Medium	Medium	2
	Explore alternative models for establishing pre-primary institutions at low-cost in a short period of time in collaboration with local communities	Short	High	High	2
	Develop standards and provide support to communities from the policy side in the implementation of pre-primary programs	Short	High	Medium	3
	Make at least one year of pre-primary education compulsory	Medium	Medium	Medium	3
	Set up incentives for regions to allocate more of their unconditional grants towards pre-primary education	Medium	Medium	Medium	2
	Explore the feasibility of directing earmarked support to communities for pre-school education	Medium	Low	High	1
	Consider the establishment of a department/division dedicated to pre-primary education within the MoECS	Short	High	Low	3
	Conduct a comprehensive assessment on areas where efficiency in the provision of pre-primary education could be enhanced	Short	High	Medium	2
General education	School network optimization	Short	High	High	2
	Introduce performance-based incentives in school funding formulas	Medium	High	Medium	3
	Develop the national student assessment system and Educational Management Information Systems (EMIS)	Short	High	High	3
	Adjust the minimum salary for teachers every year	Short	Medium	Medium	2
	Introduce sustainable performance-based incentives to encourage and reward teachers who demonstrate excellence in teaching	Medium	Low	High	2
	Conduct a comprehensive review of existing incentive structures for teachers	Short	Medium	Medium	2
Vocational education	Collaborate with non-governmental organizations (NGOs) and the private sector to supplement educational resources and funding	Short	Low	Medium	1
	Provide targeted interventions to enhance attractiveness in vocational programs and address supply-related constraints	Short	Medium	Medium	2

Higher education	Regularly assess and update priority field programs to maintain their relevance in the labor market	Short	Medium	Low	2
	Consider allocating additional resources using performance-based mechanisms in higher education	Medium	Medium	High	2
	Expand and enhance financial aid programs to support students from low-income backgrounds	Short	Medium	Medium	2
Accountability and Monitoring	Implement a unified reporting system to track the utilization of funds at the school, regional, and national levels	Short	High	Medium	3

This table is the summary of a (subjective) judgement related to characteristics to policy enactment across the policies recommended in this report.

Column 3 considers the time frame for implementation. A short time frame refers to policies that could be implemented within one-two years, a medium time frame refers to implementation between three and five years, and a long-time frame refers to longer than five years.

Column 4 considers the level of priority given the current context and institutional background.

Column 5 considers the difficulty of implementing these policies. The implementation difficulty assessment is based on a combination of the likelihood of pushback from interest groups or policy recipients and the coordination and capacity requirement to get a policy enacted (including cross-departments and ministries).

Column 6 scores each policy's net benefit on a scale of three (high, medium, low), taking into account the overall benefits minus the costs incurred by the government. It evaluates the policy's cost-effectiveness and its potential impact relative to the resources required for implementation.

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Annexes

Annex 1A. Background on Benchmarking and Definition of Peers

Peer selection

Armenia's 'structural peers' are those that share similar attributes for comparative analyses. These indicators include GDP per capita, the proportion of the rural population, natural resource rents as a percentage of GDP, and overall population size. The peers chosen for Armenia based on applying these criteria are (in alphabetical order): Albania, Bosnia and Herzegovina, Georgia, Kosovo, North Macedonia, and Serbia. A simple (unweighted) average is used to generate the peers line based on these countries. Furthermore, for some charts that list individual countries (e.g., Figure 11), 'aspirational peers' are also added, namely, Croatia and Estonia. These countries share some similar characteristics to Armenia but have more developed economies (as measured by income per capita), and their status as European Union members provides valuable perspectives on potential development paths for Armenia.

Country groups

Benchmarking is also conducted against country groupings of high-income (HICs), upper-middle-income (UMICs) and Europe and Central Asia (ECA). In our methodology, we adhere to the World Bank's standard classifications for organizing countries by income levels and geographical regions. However, we recognize that outliers such as average tax ratios can skew aggregate metrics for specific income groups. To address this, we identify and exclude outliers from our analysis. Outliers are identified based on two criteria: (i) population size, and (ii) the proportion of natural resource rents to GDP. Initially, we exclude small nations to mitigate their disproportionate impact on the data.¹²⁹ Subsequently, we scrutinize the distribution of natural resource rents within our dataset, removing countries that fall within the top decile, specifically those where resource rents constitute 20 percent or more of GDP. This two-pronged approach results in the removal of 44 countries due to their small population and 22 countries based on their high resource rents.¹³⁰ After this exclusion process, our sample size is refined to 130 countries. Despite its classification as a small state by population, an exception was made to include Estonia as it is considered an aspirational peer.

¹²⁹ <https://www.worldbank.org/en/country/smallstates/overview>.

¹³⁰ There are overlaps between these two groups.

Annex 1B. Taxation Rules in Armenia and Peer Countries

Table 1B.1. Armenia and Peers: Comparison of General Individual Taxation Rules

Country/ Taxation Rules	Armenia	Georgia	Serbia	Estonia	Croatia
Standard regime structure	Different flat rates by income type.	Different flat rates by income type.	Different flat rates by income type.	Flat tax.	Progressive.
Rate for first marginal bracket	No brackets, 20 percent flat rate on labor income. 10 percent for most property and royalties.	No brackets, 20 percent flat rate on labor income. 5 percent reduced rate for income from residential rent and sale of residential property and vehicles.	No brackets, 10 percent flat rate on labor income withheld after non-taxable salary cap deduction. 10-20 percent depending on other income types, including 15 percent on capital gains and 20 percent on real estate income.	No brackets, 20 percent flat rate on both active and passive income. Will rise to 22 percent in 2025.	15-23.6 percent depending on location of abode, for income up to EUR 50,400.
Top rate for highest marginal bracket					25-35.4% depending on location of abode, for income above EUR 50,400.
Social security and pensions	TSP: 5 percent monthly if gross salary less than AMD 500,000. If above, 10 percent monthly minus AMD 25,000. Max cap at AMD 87,500/month.	No SSC. 2 percent employee and 2 percent employer mandatory PC.	SSC: for employee, 14 percent pension, 5.15 percent health insurance, and 0.75 percent unemployment insurance. For employer, 10 percent pension, 5.15 percent health.	Employers pay social tax of 33 percent on salaries and other benefits to employees (20 percent for pension, 13 percent for health). Add 1.6 percent for employees and 0.8 percent for employers for unemployment insurance. Add 2 percent for employees for pension.	SSC: for employee, 15 percent Pillar One, 5 percent Pillar Two. Tax base calculation varies based on income. Employers add 16.5 percent for health insurance.
Can individuals register as sole proprietors under a special regime that covers CIT and VAT?	Yes, pay AMD 5,000/month as income tax if micro, threshold of AMD 24 million. Starting July 2023, microbusinesses should pay regular income tax.	Yes, exempt if micro, threshold of GEL 30,000. Above this, but below GEL 500,000, apply 1 percent tax on turnover. Above GEL 100,000 must also register under the VAT.	No.	No.	No.

Source: PWC; YourEurope; EU Commission; OECD Statistics; WB staff analysis.

Note: The table provides key features of general rules without including details on income definition and other special rules and qualifying criteria. Additional taxes such as those collected by subnational regions are not included.

Table 1B.2. Armenia and Peers: Comparison of General Corporate Taxation

Country/ Corporate Taxation rules	Armenia	Georgia	Estonia	Serbia	Croatia
Standard regime	Standard.	DPT plus standard (depending on sector).	DPT plus a reduced regular regime (to be removed in 2025).	Standard regime.	Standard plus reduced rate.
Top rate	18 percent standard.	15 percent on profit distribution. 20 percent (old) CIT banking, oil and gas, and individual entrepreneurs.	20 percent standard. Will increase to 22 percent in 2025.	15 percent standard.	18 percent standard. 10 percent reduced for firms with revenue lower than EUR 1 million.
Is there a special regime for SMEs that applies to both CIT and VAT?	Yes, turnover regime with multiple rates depending on economic activity. Income threshold above AMD 24 million but below AMD 115 million. VAT exemption is offered as part of this regime.	Yes, turnover regime. Table 1B.1 describes key features. In addition, SMEs with turnover that exceeds the GEL 500,000 threshold, have marginal revenue taxed at 3 percent. If this happens in 2 years, the firm is deregistered as a small business (SB).	No.	No.	As above, reduced rate for SMEs with revenue lower than EUR 1 million.

Source: PWC; YourEurope; EU Commission; OECD Statistics; WB staff analysis.

Note: The table provides key features of general rules without including details on income definition and other special rules and qualifying criteria. Additional taxes such as those collected by subnational regions are not included.

Annex 1C. International Taxes in Armenia

Armenia has partially implemented the Base Erosion and Profit Shifting (BEPS) Minimum Standards. Concerning BEPS Action 5, which focuses on harmful tax practices, Armenia is actively working to implement the terms of reference outlined by the OECD. After amendments to the Tax Code and Law on Free Economic Zones, which entered into force in July 2024, the Forum on Harmful Tax Practices (FHTP) updated its evaluation of the tax regime in Armenia and considered it not to be harmful. As part of BEPS Action 6, preventing tax treaty abuse, Armenia became a signatory to the Multilateral Instrument (MLI) in 2017 and ratified the MLI in September 2022, which came into force in January 2024. To adhere to the minimum standards, Armenia is incorporating the preamble statement and the Principal Purpose Test (PPT).. Concerning BEPS Action 14, Mutual Agreement Procedure, Armenia deposited its list of covered agreements to the OECD in September 2023. The country has opted for the alternative rule regarding the MAP pursuant to Article 16(5)a of the MLI. In this regard in September 2022 a Decree¹³¹ on “Setting the procedure and deadlines for dispute resolution by MAP” was adopted taking into account also the recommendations made by OECD in 2024. The Decree entered into force end April 2024.

Armenia’s CIT regime may face challenges with the Global Minimum Tax (GMT). Armenia’s Free Economic Zones (FEZ), in which residents are exempt from corporate tax, may not be compatible as a tax incentive if utilized by entities within the scope of the GMT. Two of the zones focus on attracting technology companies, and several major multinational IT firms have branches in Armenia, including Apple, Microsoft, Intel, and Siemens. It seems likely that these companies use the preferential regime in the FEZ and therefore may be affected by the GMT. In total, 16 entities are in the scope of the GMT, with an estimated effective tax rate (ETR) of 28 percent (this possibly includes oil companies which may inflate the ETR).

Armenia is behind on other issues relevant to its international tax regime. According to the EU list of non-cooperative jurisdictions for tax purposes adopted by The Council on February 20 2024, Armenia listed as cooperative with the EU with pending commitments. The exchange of information on review (EOIR) has not yet been reviewed because of the impact of the Russian invasion of Ukraine. Armenia has made the commitment to implement automatic exchange of financial account information (AEOI) by 2025. Armenia does not have Controlled Foreign Corporation (CFC) rules nor a General Anti-Avoidance Rule. Armenia does not have thin capitalization rules, but has certain limitations on deductibility of interest expenses. Armenia has not yet implemented the OECD VAT standards for e-commerce supplies (for both e-services and low value goods). The Armenian e-commerce market was forecast to grow 14.9 percent year-on-year, and generate revenue of USD 528.2 million in 2023. Revenue is expected to see an annual growth rate of 14.2 percent, resulting in a projected market volume of USD 899.9 million by 2027.

¹³¹ Decree Number 1727-N, September 10, 2022.

Annex 1D. Environmental Taxes and Excise Rates

Table 1D.1. Environmental Taxes in Armenia, Section 8 of Tax Code

Article	Item	Object Taxable	Tax Base
167	Emissions of hazardous substances into the atmosphere from stationary sources	Stationary sources	Dust, carbon monoxide, nitrogen oxides, sulfuric anhydride, chlorine, chloroprene, others
168	Emissions of hazardous substances into the atmosphere from mobile sources	Trucks, motor vehicles, other self-propelled vehicles and mechanisms, watercrafts	Registered in Armenia: according to motor size. Operated but not registered in Armenia: according to size and emissions limits for carbon oxide, hydrocarbons, smog
169	Emissions of hazardous substances and compounds directly released into water resources and (or) into a centralized drainage networks and other water systems.		Dependent substances, ammonia nitrogen, biological oxygen demand, petroleum products, copper, zinc, sulfates, chlorides, nitrites, nitrates, total phosphorus, detergents, salts of heavy metals, cyan and cyan compounds, other hazardous substances and compounds
170	In specially designated places for disposal of industrial and/or consumption waste, including waste disposal sites, polygons, dumpsites, landfills, complexes and/or buildings for disposal of production and (or) consumption waste		Industrial and (or) consumption hazardous and non-hazardous waste, mining hazardous and non-hazardous waste
171	Commodities harmful to the environment	Commodities	Since January 1, 2023 (abbreviated list): <ul style="list-style-type: none"> - Oils and other high-temperature distillates of coal tar, crude oil and crude oil products, - Petroleum and petroleum products - Bitumen and asphalt - Bituminous mixtures - Hydrofluorocarbons - Ink - Surface active organic substances, detergents - Photo products and film products - Hydraulic brake fluids and other prepared hydraulic coupling fluids - Antifreeze and ready-made antifreeze fluids

Article	Item	Object Taxable	Tax Base
			<ul style="list-style-type: none"> - Plastics products for the conveyance or packing of goods - Tableware and kitchen utensils, other household and sanitary utensils, made of plastic - Construction plastic - Rubber pneumatic tires - Rubber air chambers - Products from asbestos-cement, cellulose fiber cement or similar material - Processed asbestos fibers, mixtures with a basis of asbestos or magnesium carbonate, articles of these mixtures or of asbestos - Friction materials and unassembled articles made therefrom for brakes - Glass fiber and articles thereof - Lead and products - Non-precious metal electrodes with coating for electric arc welding - Equipment and devices for filtering oil or fuel in internal combustion engines - Primary batteries and accumulators - Electrical accumulators - Aluminum electrolytic capacitors - Lamps with fluorescent Thermo cathode - Mercury lamps - Vehicles with a manufacturing date of more than 5 years

Source: Armenian Tax Code.

Table 1D.2. Charges Due in Armenia for the Utilization of Natural Resources

Item	Tax Payer	Tax Objects
Section 10. Natural Resources Utilization Payment	<p>Organizations and natural persons carrying out activities that use: surface water, extraction of sweet and thermal groundwater, mineral groundwater, salt extraction, solid non-metallic minerals, biological resources</p> <p>Royalty payers: organizations exploiting mines of metallic minerals and producing ore concentrates, organizations exploiting mines of metallic minerals and producing any products from the metallic minerals, organizations producing ore concentrates and/or castings from waste of subsoil</p>	<ul style="list-style-type: none"> - Use of surface waters - Extraction of sweet and thermal groundwater - Extraction of mineral groundwater - Salt extraction - Extraction of solid non-metallic minerals (except for salt) - Utilization of biological resources - Object of royalty: extracted metallic minerals or ore or waste of subsoil use

Source: Armenian Tax Code.

Table 1D.3. Other Taxes Related to the Environment

Item	Taxpayer/Tax Object	Tax Base
Section 9. Road Taxes	Trucks (registered and unregistered)	According to vehicle weight
Section 12, Chapter 51. Vehicle Property Tax	Organizations and natural persons, owners of vehicles	Motor vehicles, water transport (working with engine), motorcycle, snowmobile, all-terrain vehicle (quadricycle). Tax according to engine size
Chapter 17, Article 87. Excisable Goods (Fossil Fuels and Others)	Petrol, diesel fuel, crude oil, other gas-like hydrocarbons, compressed natural gas	For fossil fuels, rates are established by weight or volume

Source: Armenian Tax Code.

Table 1D.4. Excise Rates for Fossil Fuels According to Chapter 17, Article 88 of Armenia's Tax Code

Product Code According to CNFEA	Name of Product Group	Tax Base Measurement Unit	Excise Tax Rates
2710 12	Petro ¹³²	1 metric ton	AMD 43,600
2710 (except for 2710 12 2710 19 710 – 2710 19 980) 3403 19 100 0 3403 19 900 0 3403 99 000 0	Diesel fuel	1 metric ton	AMD 14,200
2709	Crude oil, mineral oils	1 metric ton	AMD 29,450
2711 (except for 2711 11 2711 21)	Oil gases and other gas-like hydrocarbons	1 metric ton	AMD 1, 100
2711 21	Compressed natural gas	1 metric ton	AMD 37,100

Source: Article 88, Armenian Tax Code; rates amended 06/26/2023.

¹³² Where the sum total of excise tax prescribed for a metric ton of petrol and of value added tax calculated as prescribed by Section 4 (on VAT) of the Code is less than AMD 135,000, excise tax shall be increased by an amount necessary to make the sum total of excise tax and VAT for a metric ton of petrol equal to AMD 135,000.

Annex 1E. Methodology and Definition of Short-Run and Long-Run Buoyancy

This annex includes an extract from Violeta Vulovic's PFR Fundamentals: Tax Buoyancy Note, The World Bank.¹³³ Tax buoyancy estimates for Armenia used in this report followed the methodology outlined in this note, and were re-run using Armenia MoF data.

Tax buoyancy measures the total response of tax revenues both to automatic changes to economic growth and to discretionary changes in tax policy. A tax system is buoyant when tax revenue increases more than one-for-one with an increase in GDP. Theoretically, the long-run tax buoyancy should equal one, as tax cannot grow faster or slower than GDP indefinitely. The lack of long-run equilibrium increases the risk of an increase in public debt. In the short-run, tax buoyancies can be different from one due to different features of the tax systems. For example, if income tax brackets and deductions are not adjusted for inflation, personal income taxes (PIT) may increase faster than income. Similarly, during the rebound period after a recession, corporate income tax (CIT) revenues may increase slower than value added tax (VAT) revenue due to loss-carry forward provision.¹³⁴

Short-run and long-run buoyancy can vary across countries and tax instruments, but theoretically, long-run tax buoyancy is expected to be greater than one for progressive taxes, such as PIT, and less than one for taxes that are mostly regressive like VAT or sales tax. However, both PIT and consumption taxes may show the short-run buoyancy lower than one because of a lack of indexation, wage rigidity, and relative persistence in consumption spending.¹³⁵ Depending on the VAT rate and consumption structure, even VAT can have long-run tax buoyancy greater than one if the standard VAT rate applies mostly to luxury goods, and necessary goods are subject to a reduced VAT rate. Long-run buoyancy of excises depends on the excise tax rate annual adjustment being greater than or less than the increase in income. Property taxes commonly have a lower short-run buoyancy due to counter-cyclical property tax rate adjustments.¹³⁶ However, as one of the major sources of municipal own tax revenues, they tend to have a stabilizing role during periods of economic contraction and fiscal distress. Similarly, excises are found to be more buoyant during recessions than during economic growth. Only CIT revenues are buoyant in the short and long run as profits are usually more responsive to fluctuations in business activity.¹³⁷

Tax buoyancy is sometimes a more appropriate measure of responsiveness of taxes to economic growth. As automatic and discretionary changes can be complimentary in the long run, thereby making it difficult to isolate their separate impacts, it is useful in this case to use tax buoyancy instead of tax elasticity as a comprehensive measure of the sustainability of the tax system.¹³⁸ The same holds true after a package of reforms has been passed since it would be difficult to adequately measure the size of each policy measure in the package. Furthermore, as certain tax instruments, such as customs and excises, may have lower tax elasticity, an increase in tax revenues is contributed to discretionary rather than automatic changes. Similarly, as tax evasion and/or avoidance reduce the automatic responsiveness of tax revenues to GDP,

¹³³ Vulovic, forthcoming.

¹³⁴ Dudine and Jalles, 2018.

¹³⁵ Stockhammer, 2013.

¹³⁶ Dillinger, 1991.

¹³⁷ Belinga et al. 2014.

¹³⁸ There is no clear-cut distinction in definition of luxury and necessary goods. In this case, the distinction is in terms of income elasticity (Deaton and Muellbauer 1980; Lancaster 1971), where luxury goods are those whose income elasticity is greater than one, while necessary goods have income elasticity between zero and one.

additional tax revenues are raised through discretionary measures to improve tax compliance. In either of these cases, growth in tax revenues is reflected through tax buoyancy and not tax elasticity.

An examination of tax buoyancy is crucial for tax policy design for a few reasons. Firstly, it illustrates the role of tax policy in stabilizing the economy over the business cycle in the short run, and in ensuring fiscal sustainability in the long run. For instance, if the country has a buoyant tax system, it means that even during an economic downturn, tax revenues may not decline as sharply as economic output. Analyzing country-specific individual tax buoyancies also allows a country to determine whether its tax revenue mobilization is in line with economic activity as well as identify the strengths and weaknesses of its tax system.¹³⁹ An understanding of the institutional and structural characteristics that affect tax buoyancy can help adjust expectations about tax buoyancy as these characteristics change.

¹³⁹ Dudine and Jalles, 2018.

Annex 1F. Details of AETB Estimates by Firm-Level Database

Data summary statistics

The database contains between 123 and 176 thousand companies, depending on the year, comprising companies subject to the profit and turnover tax regimes. The data covers the period from 2018 to 2022. The AETB indicator represents the tax paid over gross income, as indicated in (2). This indicator is similarly calculated for each taxpayer and year, from 2018 to 2022.

$$\text{Effective Tax Burden Rate} = \frac{\text{Tax Paid}}{\text{Gross Income}} \quad (2)$$

below presents the detailed number of companies covered each year by tax regime type.

Figure 1F.1. Number of Companies Covered by Year and Tax Regime

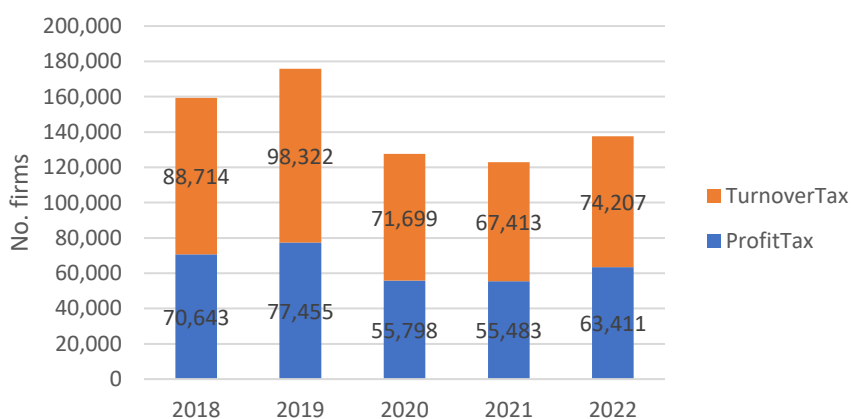


Figure 1F.21F.2 presents a sector disaggregation for 2022, and Table 1F.1 presents the details for every year, sector and tax regime. The figure shows that the wholesale and retail sector is the most numerous in terms of firms, with around 70,000 and 100,000 different firm IDs registered per year.

Figure 1F.2. Number of Firms by Main Economic Sector and Tax Regime (2022)

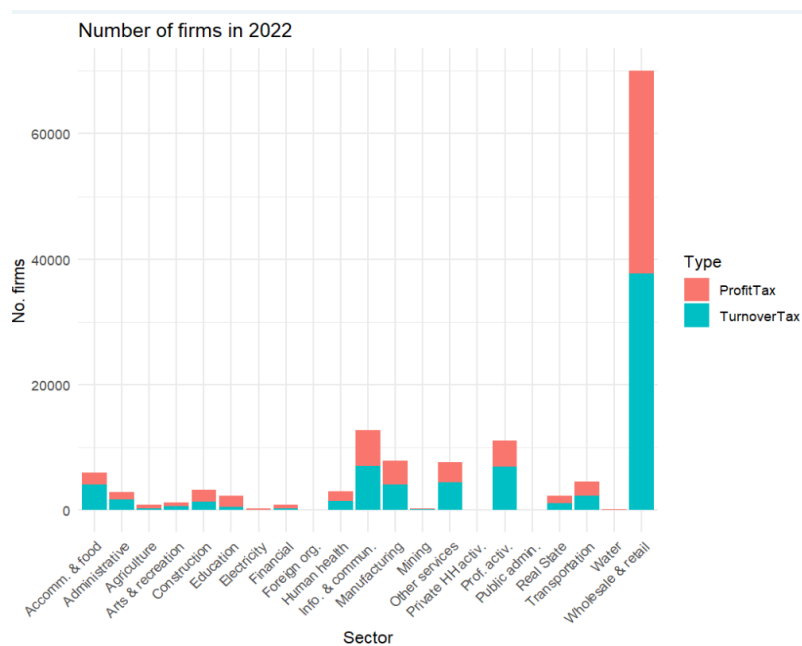


Table 1F.1. Number of Firms per Year, Sector, and Tax Regime

Sector/Tax Regime	Years				
	2018	2019	2020	2021	2022
Accomm. & food	8,343	9,780	6,570	5,849	5,986
Profit tax	2,951	3,595	2,181	1,976	1,945
Turnover tax	5,392	6,185	4,389	3,873	4,041
Administrative	3,204	3,761	2,571	2,455	2,857
Profit tax	1,105	1,292	935	933	1,142
Turnover tax	2,099	2,469	1,636	1,522	1,715
Agriculture	790	951	769	806	855
Profit tax	509	594	547	586	619
Turnover tax	281	357	222	220	236
Arts & recreation	1,562	1,968	1,145	1,157	1,252
Profit tax	745	911	572	612	635
Turnover tax	817	1,057	573	545	617
Construction	1,887	2,285	2,451	2,758	3,309
Profit tax	1,022	1,237	1,387	1,577	1,989
Turnover tax	865	1,048	1,064	1,181	1,320
Education	2,241	2,551	2,002	2,014	2,298
Profit tax	1,710	1,774	1,561	1,632	1,793
Turnover tax	531	777	441	382	505
Electricity	284	293	276	291	283
Profit tax	230	224	207	211	211
Turnover tax	54	69	69	80	72
Financial	1,055	1,089	936	856	845
Profit tax	686	697	640	618	606
Turnover tax	369	392	296	238	239
Foreign org.	34	33	28	22	31

Sector/Tax Regime	Years				
	2018	2019	2020	2021	2022
Profit tax	31	31	26	21	27
Turnover tax	3	2	2	1	4
Human health	1,922	2,282	2,729	2,811	2,985
Profit tax	1,177	1,310	1,328	1,371	1,456
Turnover tax	745	972	1,401	1,440	1,529
Info. & commun.	2,778	3,253	3,787	4,849	12,718
Profit tax	1,003	1,192	1,498	2,072	5,678
Turnover tax	1,775	2,061	2,289	2,777	7,040
Manufacturing	12,494	14,035	8,752	8,125	7,846
Profit tax	5,156	5,881	3,880	3,735	3,718
Turnover tax	7,338	8,154	4,872	4,390	4,128
Mining	399	412	274	304	318
Profit tax	174	176	130	159	172
Turnover tax	225	236	144	145	146
Other services	15,909	17,138	7,312	6,356	7,674
Profit tax	7,410	7,537	2,927	2,614	3,266
Turnover tax	8,499	9,601	4,385	3,742	4,408
Private HH activ.	10	18	3	6	3
Profit tax	4	10	1	3	2
Turnover tax	6	8	2	3	1
Prof. activ.	5,716	6,643	8,345	9,073	11,100
Profit tax	2,155	2,467	3,120	3,407	4,177
Turnover tax	3,561	4,176	5,225	5,666	6,923
Public admin.	90	96	90	95	87
Profit tax	51	58	55	56	47
Turnover tax	39	38	35	39	40
Real estate	2,384	2,687	2,496	2,155	2,327
Profit tax	917	1,000	982	1,001	1,146
Turnover tax	1,467	1,687	1,514	1,154	1,181
Transportation	2,908	3,495	2,435	2,585	4,601
Profit tax	1,295	1,531	1,063	1,185	2,295
Turnover tax	1,613	1,964	1,372	1,400	2,306
Water	154	196	164	190	201
Profit tax	84	113	88	107	120
Turnover tax	70	83	76	83	81
Wholesale & retail	95,193	102,811	74,362	70,139	70,042
Profit tax	42,228	45,825	32,670	31,607	32,367
Turnover tax	52,965	56,986	41,692	38,532	37,675
Grand Total	159,357	175,777	127,497	122,896	137,618

Table 1F.2. Weighted Average for the Effective Tax Rate and Tax Burden in All Sectors and All Tax Regimes (2022)

Sector	Type	Values	
		Sum of WAverageEffTaxRate	Sum of WAverageTaxBurden
All	All	16.9%	1.9%

Note: Weight used = gross income.

Table 1F.3. Weighted Average for the Effective Tax Rate and Tax Burden of All Tax Regimes by Sector (2022)

Sector	Type	Values	
		WAverageEffTaxRate	WAverageTaxBurden
Accomm. & food	All	16.7%	1.3%
Administrative	All	17.6%	2.2%
Agriculture	All	15.8%	0.3%
Arts & recreation	All	18.0%	1.7%
Construction	All	17.7%	2.2%
Education	All	17.4%	0.9%
Electricity	All	18.0%	0.4%
Financial	All	17.8%	2.9%
Foreign org.	All	18.0%	1.2%
Human health	All	17.9%	1.3%
Info. & commun.	All	17.9%	2.2%
Manufacturing	All	17.7%	2.1%
Mining	All	18.0%	3.8%
Other services	All	16.3%	2.1%
Private HH activ.	All	0.0%	0.0%
Prof. activ.	All	17.5%	2.9%
Public admin.	All	17.6%	3.2%
Real estate	All	17.9%	6.3%
Transportation	All	17.9%	2.6%
Water	All	18.0%	2.1%
Wholesale & retail	All	15.7%	1.4%

Note: Weight used = gross income.

Table 1F.4. Weighted Average for the Effective Tax Rate and Tax Burden (2022)

Sector	Tax Regime	WAverage EffTaxRate	WAverage TaxBurden
Accomm. & food	Profit tax	18.0%	1.3%
	Turnover tax	2.9%	2.8%
Administrative	Profit tax	18.0%	2.2%
	Turnover tax	3.3%	3.3%
Agriculture	Profit tax	16.2%	0.3%
	Turnover tax	3.7%	3.6%
Arts & recreation	Profit tax	18.0%	1.7%
	Turnover tax	3.3%	3.2%
Construction	Profit tax	17.8%	2.1%

Sector	Tax Regime	WAverage EffTaxRate	WAverage TaxBurden
	Turnover tax	3.6%	3.5%
Education	Profit tax	17.4%	0.9%
	Turnover tax	3.3%	3.2%
Electricity	Profit tax	18.0%	0.4%
	Turnover tax	3.1%	3.0%
Financial	Profit tax	17.8%	2.9%
	Turnover tax	2.7%	2.6%
Foreign org.	Profit tax	18.0%	1.2%
	Turnover tax	0.0%	0.0%
Human health	Profit tax	18.0%	1.3%
	Turnover tax	2.8%	2.7%
Info. & commun.	Profit tax	18.0%	2.2%
	Turnover tax	3.5%	3.4%
Manufacturing	Profit tax	17.8%	2.1%
	Turnover tax	3.3%	2.9%
Mining	Profit tax	18.0%	3.8%
	Turnover tax	4.8%	4.8%
Other services	Profit tax	17.6%	2.0%
	Turnover tax	3.3%	3.2%
Private HH activ.	Profit tax	0.0%	0.0%
	Turnover tax	0.0%	0.0%
Prof. activ.	Profit tax	17.9%	2.9%
	Turnover tax	3.4%	3.4%
Public admin.	Profit tax	18.0%	3.2%
	Turnover tax	3.9%	3.7%
Real estate	Profit tax	18.0%	6.4%
	Turnover tax	3.3%	3.2%
Transportation	Profit tax	18.0%	2.6%
	Turnover tax	3.1%	3.0%
Water	Profit tax	18.0%	2.1%
	Turnover tax	4.6%	4.6%
Wholesale & retail	Profit tax	17.7%	1.2%
	Turnover tax	0.0%	2.2%

Note: Weight used = gross income.

Tax indicators constructed

We created two common indicators for the profit and turnover tax regimes in Armenia, as explained below. Notice that the profit tax data is yearly, while the turnover tax data is quarterly. To merge the two databases, we converted the quarterly data to yearly, by adding quarterly data, omitting quarters with missing data. The indicators are calculated using yearly data.

Effective tax rate

This indicator represents the tax paid over net income, as indicated in (3). This indicator is calculated for each tax ID and year, from 2018 to 2022.

$$Effective\ Tax\ Rate = \frac{Tax\ Paid}{Net\ Income} \quad (3)$$

Table 1F.5.1F.5 indicates the data used to build this indicator for the profit taxes and turnover taxes.

Table 1F.5. Data Used to Calculate the Effective Tax Rate Indicator

Tax Regime	Variable	Series Used
Profit taxes	Tax paid	100. Total profit tax
	Net income	87. Taxable profit considering incentives for reducing taxable profits
Turnover taxes	Tax paid	$\sum_{quarters} \text{Amount of tax payable calculated for the reporting quarter}$
	Net income	$\sum_{quarters} \{(\text{Revenues from commercial (buying and selling) activities in the reporting quarter} - \text{Total amount to be deducted from the amount of tax in the reporting quarter})\}$

Tax burden rate

This indicator represents the tax paid over gross income, as indicated in (4). This indicator is calculated for each tax ID and year, from 2018 to 2022.

$$\text{Tax Burden Rate} = \frac{\text{Tax paid}}{\text{Gross Income}} \quad (4)$$

Table 1F.6.1F.6 indicates the data used to build this indicator for the profit taxes and for turnover taxes.

Table 1F.6. Data Used to Calculate the Effective Tax Rate Indicator

Tax Regime	Variable	Series Used
Profit taxes	Tax paid	100. Total profit tax
	Gross income	41. Gross income (income calculation listed in points 6 to 40)
Turnover taxes	Tax paid	$\sum_{quarters} \text{Amount of tax payable calculated for the reporting quarter}$
	Gross income	$\sum_{quarters} \text{Revenues from commercial (buying and selling) activities in the reporting quarter}$

Annex 1G. MIMIC Model on Relationship Between Informality and Taxation

The methodology, description of data, results and robustness checks of the multiple indicator multiple cause (MIMIC) model are detailed in Al-Rikabi et al. (forthcoming). Although the aforementioned paper primarily focuses on Georgia, the MIMIC model relies on global data, providing a comprehensive analysis of the relationship between fiscal policies and informality. The benchmark estimates of informality can nonetheless be calibrated based on country-level estimate. This annex thus offers a brief overview of the methodology, summarizes the variable used in the model, presents the results, and provides additional calibration for Armenia to estimate its informal economy.

Methodology. MIMIC is a structural equations model (SEM) that has been used to estimate the size of the informal economy by considering both its various causes/explanations on one hand and effects/indicators of the informal economy on the other.¹⁴⁰ The overall model can be represented by two equations: (i) the structural model, which evaluates the extent to which the explanatory variables affect the informal economy, and (ii) the measurement model, which relies on observable indicators to estimate the latent variables constituting the underlying constructs or concepts that are not directly observable but rather inferred from the observed indicators.

Data description and sources. The MIMIC model utilizes data from a panel encompassing 143 countries over the period 2002 to 2021, incorporating eight explanatory variables and two indicator variables to construct the MIMIC index, which serves as a proxy for the size of the informal economy. The table below presents the variables used in the analysis.

Table 1G.1. Description of MIMIC Variables

VARIABLE	DESCRIPTION	UNIT	SOURCE
<i>INDICATOR VARIABLES (MEASUREMENT MODEL)</i>			
Self-Employment (% of total employment)	Proportion of self-employed individuals within the total employed population	Percentage of total employment	Modeled ILO estimate
Cash in the Economy	Ratio of monetary base (M0) to broad money	Ratio	IMF International Financial Statistics
<i>EXPLANATORY VARIABLES (STRUCTURAL MODEL)</i>			
Personal Income Tax Burden	Taxes on individual earnings, profits, and capital gains, calculated on net income that includes salaries, wages, investment income, and capital gains from asset sales	Percentage of GDP	World Bank and Government Finance Statistics
Corporate Income Tax Burden	Taxes on corporate earnings and gains, based on the financial performance of corporations, including profits and capital gains from asset sales	Percentage of GDP	World Bank and Government Finance Statistics
Indirect Tax Burden	Taxes levied on goods and services, such as general sales tax, value added tax (VAT), and selective excises	Percentage of GDP	World Bank and Government Finance Statistics

¹⁴⁰ Schneider, Buehn, and Montenegro, 2010; Medina, 2013; Elgin and Erturk, 2019; Hayat and Rashid, 2020.

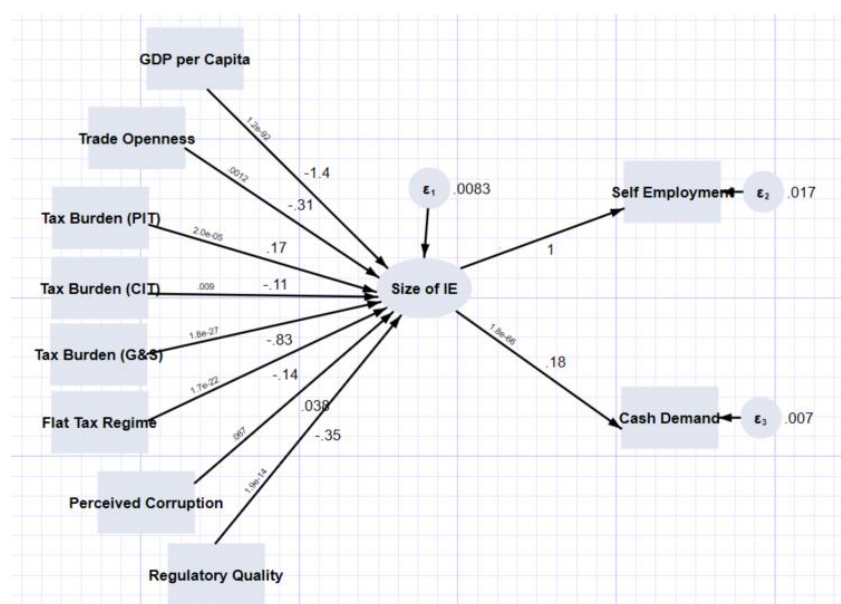
Flat Tax Regime	Represented as a dummy, taking a value of 0 if the country does not implement a personal income flat tax regime or, conversely, a value of 1 if such a regime is in effect	Dummy variable taking the value of 0 or 1	World Population Review
GDP per Capita	Expressed in purchasing power parities (constant 2017 international dollars)	PPP-adjusted 2017 USD constant	World Bank
V-Dem Political Corruption Index	Measures six distinct types of corruption across various political domains, distinguishing between executive, legislative, and judicial corruption, and between bribery and embezzlement at different levels of government	Index	Varieties of Democracy (V-Dem)
Regulatory Quality	Government's capacity to devise and implement policies and regulations that encourage private sector development Captures perceptions of the ability of the government to formulate and implement sound policies and regulations that permit and promote private sector development	Score in units of a standard normal distribution, i.e. ranging from approximately -2.5 to 2.5.	Worldwide Governance Indicators (WGI) from the World Bank

Source: WB staff analysis.

Results.

Figure illustrates the outputs of the model, i.e., the different coefficients representing the estimated effects of each independent variable on the dependent variable. The model also provides an index that is then benchmarked with an exogenous estimate of the size of the informal economy to convert the values of the latent variable into percentage points of GDP. Instead of calibrating informality based on Georgia's existing estimate, this analysis estimates the size of Armenia's informal economy to be 35 percent of GDP in 2008 based on measurements from Abdih and Medina study (2013). The benchmarked results and comparison with peer countries are illustrated in Figure 1G.1.

Figure 1G.1. MIMIC Model and Parameters



Source: WB staff analysis.

Notes: The size of informal economy (IE) is modelled as a latent (unobserved) variable that is explained by 8 causes/determinants: (i) GDP per capita – PPP constant 2017 international \$ from World Development Indicators (WDI); (ii) trade openness – imports and exports in percent of GDP from WDI; (iii) tax burden (PIT) – PIT tax revenues in percent of GDP from Government Finance Statistics (GFS); (iv) tax burden (CIT/DPT) – CIT/DPT tax revenues in percent of GDP from GFS; (v) tax burden (G&S) – tax revenue from taxes on goods and services in percent of GDP from GFS; (vi) flat tax regime – dummy variable taking the value of 1 if a PIT flat tax regime exists (0 otherwise) from the World Population Review; (vii) perceived corruption – index of political corruption (v2x_corr) from Varieties of Democracy (Vdem); and (viii) regulatory quality – estimate from Worldwide Governance Indicators. It also includes two indicator variables for the size of the informal economy (1) self employment – share of self-employment in total employment from the modelled International Labor Organization (ILO) estimates, and (2) cash demand – ratio of currency in circulation to broad money from the International Monetary Fund (IMF) International Financial Statistics (IFS); the underlying model database covers 143 countries during the period 2002–2021.

Discussion. The benchmarked results from the MIMIC model using Armenian estimates for 2008 indicate that the informal sector accounted for 28 to 35 percent of GDP and remained relatively stable at this level from 2002 to 2017. A declining trend was observed from 2018 onwards, reaching around 31 percent of GDP in 2021. This suggests that the informal sector in Armenia has been larger than that of its peers, although there have been some improvements in recent years. Tunyan (2005) and Grigorian and Davoodi, (2007) have highlighted high levels of corruption, poor tax collection due to lax enforcement, and multiple exemptions as major causes of the persisting informal sector in Armenia. Improvements in perceived levels of corruption (reflected in both the Vdem corruption index and the WGI control over corruption estimates) and improved collections of taxes on goods and services contribute to the declining trend in the size of the informal sector observed from 2018 onwards. This suggests the potential for improvements in tax collection and governance to reduce the size of the informal sector.

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Annex 1H. Commitment to Equity (CEQ) Methodology and Limitations

The Commitment to Equity (CEQ) methodology provides a systematized framework to determine the impacts of the fiscal system on poverty and inequality.¹⁴¹ Findings from the analysis create an evidence base on how to promote tax and expenditure reforms that are consistent with both fiscal sustainability and fiscal equity. It measures how the government's taxes and social expenditures affect poverty and inequality. In turn, it allows the identification of potential reforms that would enhance revenue collection while preserving equity and reducing poverty. As such, fiscal analysis is an important tool for macro and fiscal stability. The CEQ methodology also informs Sustainable Development Goal 10.4.2, which measures the redistributive impact of the fiscal system on inequality reduction.

The CEQ could allow the identification of areas to increase the fiscal space in an equitable way as it assesses the distributional impacts of existing fiscal policies. The standard CEQ model covers several fiscal interventions (direct taxes, indirect taxes, direct transfers, indirect subsidies, and in-kind benefits from health and education) and models how fiscal systems work in practice. Building a fiscal incidence model under the CEQ methodology requires legislation and administrative data, and microdata from a representative socioeconomic household survey to model how taxes and social expenditure are allocated across households and individuals. Once all taxes and transfers are modeled, the CEQ methodology calculates different income concepts for each household to assess how fiscal policy affects households' income at various stages. Once completed, the CEQ also allows the simulation of distributional impacts of potential policy reforms, which can be particularly useful to inform evidence-based fiscal policy design as it measures equity considerations before and after implementation.

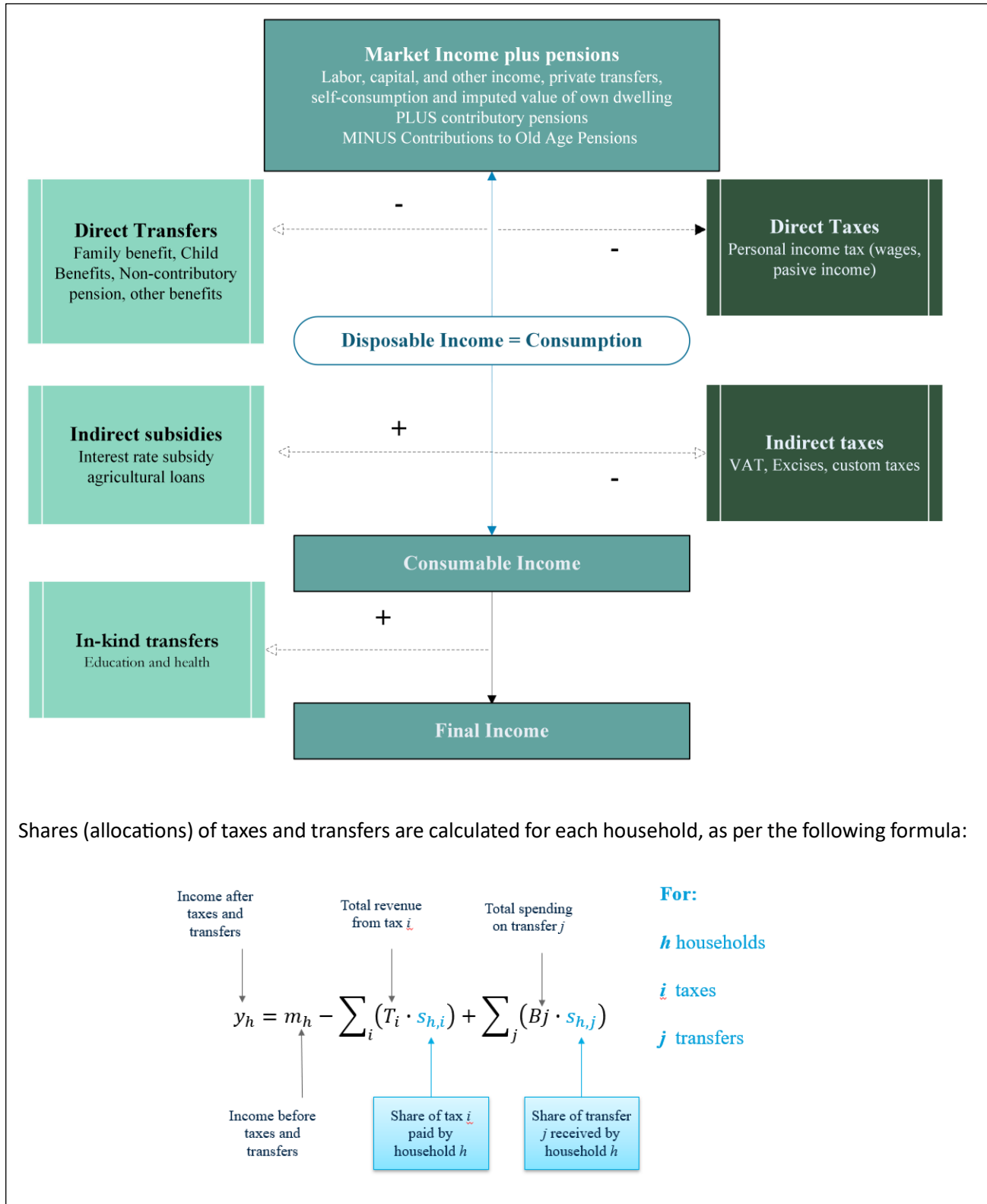
The CEQ involves a set of assumptions and limitations, including: (i) a standard incidence analysis that excludes behavioral, lifecycle, or general equilibrium effects; (ii) the exclusion of the quality of government services in education and health; and (iii) the exclusion of some crucial taxes and spending, such as corporate income taxes, investments in infrastructure, defense, and public goods.

The main data sources for CEQ analysis for Armenia are as follows:

- **Microdata (2021).** Integrated Living Conditions Survey (ILCS) 2021 (nationally representative; based on 5,184 households and 17,194 individuals; information on income, employment, consumption, health, education).
- **Fiscal administrative data (2021).** Tax rates and tax collection (MoF). Executed government expenditure, disaggregated (MoF). Social protection administrative data (MOLSA). Indirect subsidies for agricultural loans (MoF). Health administrative data (MoF, ArmStat). Education administrative data (MoF, ArmStat).
- **Macrodata (2021).** Total GDP (ArmStat). Total private consumption (Armstat).
- **CEQ conceptual methodology summary.** Calculates different income concepts for each household to assess different stages of fiscal redistribution.

¹⁴¹ The Commitment to Equity (CEQ) project was led by Nora Lustig at Tulane University. The latest CEQ Handbook was published in 2022 and is available publicly online. More information at: <http://commitmenttoequity.org/publications-ceq-handbook>.

Figure 1H.1. CEQ Income Concepts and Allocation Formula



The CEQ in Armenia covers 75.3 percent of the tax revenue in 2021 and 70.1 percent of the total revenue (Table 1H.1).

Table 1H.1. Armenia's Fiscal System Covered in the CEQ Analysis, Revenue

	Fiscal Accounts			Portion of Fiscal Accounts Analyzed		
	Included	AMD (billions)	Share of total government revenue	% GDP	AMD (billions)	% of total
Total Revenue & Grants		1,744	100	24.9	1,223	70.1
<u>Taxes</u>		<u>1,625</u>	<u>93.2</u>	<u>23.2</u>	<u>1,223</u>	<u>75.3</u>
<i>Direct Taxes</i>		<i>618</i>	<i>35.4</i>	<i>8.8</i>	<i>426</i>	<i>69</i>
Personal Income Tax	Yes	426	24.4	6.1	426	100
Others (CIT, Property Tax)	No	191	11	2.7		
<i>Indirect Taxes</i>		<i>917</i>	<i>52.6</i>	<i>13.1</i>	<i>754</i>	<i>82.2</i>
VAT	Yes	556	31.9	8	556	100
Excises	Yes	113	6.5	1.6	113	100
Custom Duties	Yes	85	4.9	1.2	85	100
Other	No	163	9.4	2.3		
<i>Social Contributions</i>	Yes	<i>43</i>	<i>2.5</i>	<i>0.6</i>	<i>43</i>	<i>100</i>
<u>Non-Tax Revenue</u>	No	<u>119</u>	<u>6.8</u>	<u>1.7</u>		

Background and Key Assumptions for Different Types of Taxes Used in CEQ Analysis

Tax	Background	Method of allocating Incidence	Key assumptions
Direct and Payroll Taxes			
Personal Income Taxes	Individual tax schedule Flat tax of 22% Passive income Dividend 5% Others 10%	-Simulated incidence based on information on taxable income from gross-up income from the survey -Deduct credit on mortgage interest payments (real estate credits reported by households)	Grossing up wages (based on SSC and PIT payments) Assumptions on informality: workers with a written contract

Social security contributions	<p>Two brackets</p> <ul style="list-style-type: none"> -For income up to AMD 500,000, at a 3.5% rate -For income exceeding the AMD 500,000 at a 10% rate <p>Maximum income for SSC is set at AMD 1,020,000 (15 times the minimum salary)</p>	Simulation	<p>Informality assumptions</p> <p>Pensions are treated as deferred income (PDI scenario)</p>
Indirect Taxes			
Value Added Tax	<p>Rates</p> <ul style="list-style-type: none"> -Standard 20%, zero-rate for exports <p>Exempt goods</p> <ul style="list-style-type: none"> -Education and educational supplies -Health (provision of medical aid and healthcare services) -Financial services Jewelry 	Simulation using the effective rate	<ul style="list-style-type: none"> -Define tax base: food, non-food, others -Estimate gross expenditure (exclusive of VAT) -Estimate effective rate -Estimate VAT using effective rate X gross expenditure <p>Limitation: Tax evasion is uniform around the income distribution, and this may overstate the tax burden for lower-income deciles and the regressivity of VAT</p> <p>No indirect effects are estimated due to the lack of IO table</p>
Import duties	<ul style="list-style-type: none"> -A uniform rate of 10% applies to the majority of the imports (all exports from Armenia are duty-free) -Some essential goods like foodstuffs, raw materials, and fuel are exempt from customs duties -The main exempted items modeled were food (cereals, rice, flour), books, medical products, personal care products, and non-tradable services 	Simulation using the effective rate	<p>Define tax base: food, non-food, others</p> <p>Estimate gross expenditure (exclusive of VAT and import duties)</p> <p>Calculated effective rate = 2.77%</p> <p>Estimated effective rate x gross expenditure</p>

<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Excises on alcohol and tobacco</p>	<p>Alcohol rates -Ad rem or ad valorem Tobacco rates Ad rem</p>	<p>Simulated</p>	<p><u>Alcohol</u> -Identify alcohol products in the food expenditure dataset -Calculate the gross expenditure base subject to excises = net expenditure/(1+ VAT rate) x (1+ excise rate) -Calculate excises on alcohol = max (minimum excise value for 1 liter, excise rate x gross expenditure)</p> <p><u>Tobacco</u> -Identify tobacco products in the food expenditure dataset -Estimate quantities of tobacco consumed (using average prices ArmStat) -Convert consumption to units (1 package = 20 units) Calculate excises on tobacco = excise (per unit) x total units</p>
<p style="writing-mode: vertical-rl; transform: rotate(180deg);">Excises on petroleum products</p>	<p>Rates: Ad valorem</p>	<p>Simulation</p>	<p>-Identify petroleum products in the non-food expenditure dataset -Estimate quantities consumed by type of petroleum product = total expenditure/average price of the product -Convert to relevant measurement units for excises (metric tons, kgs) -Calculate excises on petroleum products (minimum excise value for 1 metric ton or kg, excise rate * total expenditure)</p> <p>Limitation: No indirect effects are estimated due to the lack of IO table</p>

Annex 11. Descriptive Statistics on Micro-Level Tax Administration Data

The World Bank Tax Microsimulation Model was customized for Armenia’s PIT system based on the current tax policy applicable to individual taxpayers including the tax rates, tax treatment of income from labor (wages, contract) and capital (such as interest, rent, and dividends), social payments, and various deductions.¹⁴² The model was developed using a dataset of individual taxpayers for the year 2021 that covers income from various sources including salary, contracts, interest, royalty, rent, insurance, dividends, gaming, and prizes for both resident and non-resident taxpayers.¹⁴³ The dataset also covers social payments and deductions from income such as interest paid on housing mortgage loans. The model allows revenue forecasting in the medium-term (2021–2027) based on growth factors that are year-on-year and growth rates for various sources of income such as wage, rent, dividend, and interest as well as deductions such as mortgage cashbacks. The growth rates are computed exogenously and can be estimated by using sophisticated econometric techniques and time-series data. For the sake of simplicity, the current model is based on an expectation that the revenues will grow with a buoyancy of 1 (at the same rate as GDP growth). The model also allows simulation of behavioral responses of taxpayers based on income elasticities for labor and capital income that can be provided as inputs to the model. These elasticities are a measure of changes in labor or capital income in response to changes in tax rates applicable to such income.

Data

Anonymized data consisted of approximately 778,000 taxpayers (with their identities masked by a unique identification number). Under the current system, taxpayers are not obligated to file a consolidated tax return at the end of tax year. Each income source (i.e., salary, contracts, interest, royalty, dividend, rent, etc.) is subject to a withholding tax, which is final. The withholding agents transmit the information related to income and withholding taxes at the taxpayer level to the revenue authorities. The data was divided into multiple files, which had to be cleaned and then merged into a single file containing information related to income from all sources for each taxpayer in the database, and the information related to value of house property and cash-back claim in case of mortgage cashbacks.

Dataset used for the model covers income from salary as well as passive sources (such as royalty, interest, dividend, rent, gaining, prize, donation, alienation income, other income, etc.). Mortgage cashbacks on account of interest paid on housing loans that are allowed as a deduction are also covered. For the purposes of the model, withholding tax data from various sources (e.g., employers, State Revenue Committee) was consolidated at the level of each taxpayer so that the tax liability could be calculated separately for each taxpayer based on the applicable tax law. Also, the data includes a breakdown of passive income by resident and non-resident taxpayers. The final dataset used in the model is based on a stratified random sample of 186,849 records that was drawn from the population data. A weights file was separately prepared to compute the aggregate weighted results.

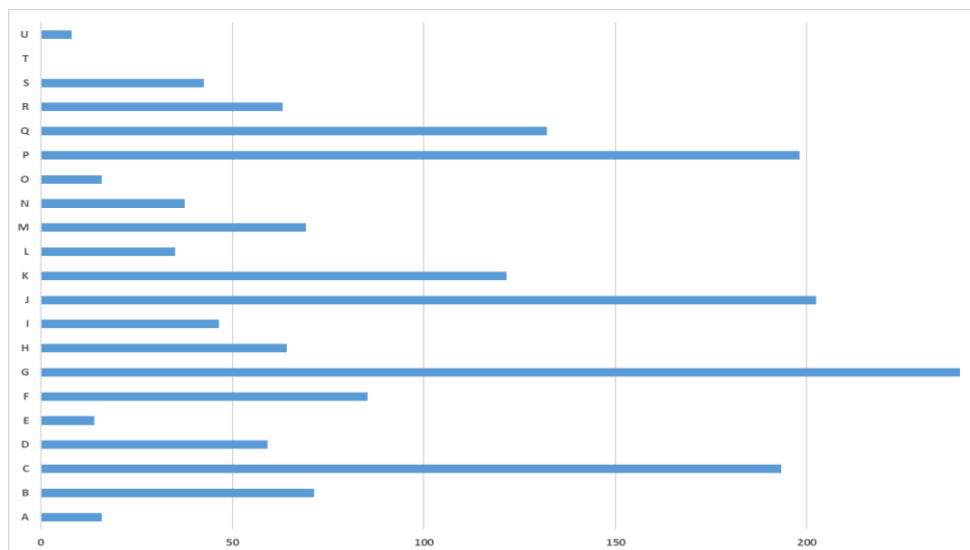
¹⁴² While the model was based on 2021 administrative data, Armenian MoF officials have been trained to incorporate and run the model with the latest available data.

¹⁴³ The taxable year is the calendar year.

Sectors

4.4 The dataset was mapped by adding a code for each sector of the Statistical Classification of Economic Activities in the European Community (NACE).¹⁴⁴ This allowed policy simulations at the sector level (e.g., change in tax rate for a tax incentive in the IT sector). The highest total gross income was recorded in the following three NACE sections: (i) G-Wholesale and retail trade; repair of motor vehicles and motorcycles, (ii) J-Information and communication, and (iii) P-Education.

Figure 11.1. Total Gross Income by NACE Sections (2021)¹⁴⁵



Source: MoF/SRC data, 2021.¹⁴⁶

Mortgage cashbacks

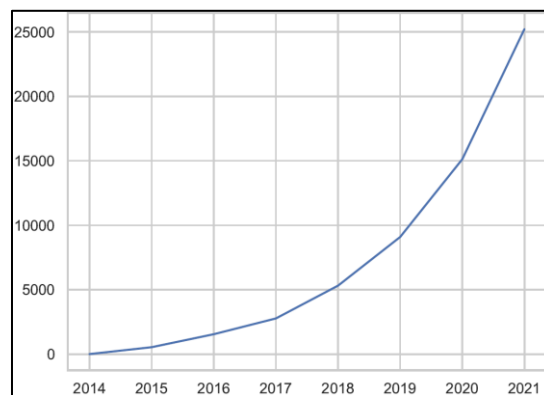
Under the current Armenian tax law, there is a tax incentive that is provided to taxpayers with the intended policy objective of giving a boost to the housing industry. The tax incentive is referred to as the mortgage cashback, which was introduced in 2014. It allows cashbacks to be received by an individual taxpayer against taxes paid during the year in the amount of interest paid on mortgage loans in order to buy (or build) house property. Cashbacks are only available against one house property, and to qualify, the value of property should be less than AMD 55 million and the annual paid interest should be less than AMD 6 million. Quarterly data of mortgage cashbacks during the 2014–2021 period show that they increased quite sharply after 2018, reaching AMD 25 billion in 2021 or a five-fold increase from 2018 levels. Figure 11.2 clearly illustrates the exponential growth rate of mortgage cashbacks, which is a trend that is expected to continue until 2025 when this tax incentive will end. Over the past 8 years the aggregate cashbacks claimed by taxpayers has increased to AMD 25 billion per annum (5.8 percent of tax revenues or 0.36 percent of GDP).

¹⁴⁴ <https://ec.europa.eu/eurostat/documents/3859598/5902521/KS-RA-07-015-EN.PDF>.

¹⁴⁵ Additional explanations of NACE sections are available in Appendix V.

¹⁴⁶ The PIT anonymous microdata was provided by SRC. The aggregated figures were reconciled with the MoF internal reports and publicly available data from SRC to ensure the completeness of the datasets.

Figure 11.2. Trend in Growth of Mortgage Cashbacks, in million AMD (2014–2021)



Source: MoF/SRC data.

The regional distribution of mortgage cashbacks were found to be quite uneven. The claims are mainly concentrated in two neighboring regions namely, Yerevan, which accounts for 91.8 percent of total cashbacks and Kotayk with 7.04 percent. It is important to note that Yerevan, as an administrative unit, has a much larger population than other administrative units. Data from the last census (2011) showed that Yerevan’s population was approximately 1 million while the second largest municipality in the country had a population of around 260,000, which is 3.8 times smaller. This disparity is much higher compared with the other administrative units and affects the disposition of the cashback distribution. The below table shows that as an administrative unit, Yerevan had an average participation rate of 54 percent in overall construction volumes from 2014 to 2021, while all other regions had a participation rate of 46 percent.

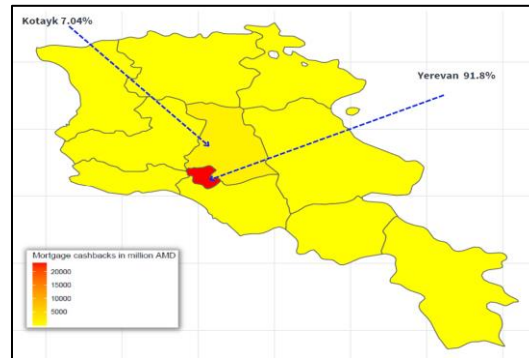
Table 11.1. Total Construction Volume (at current prices, in millions of AMD)

Regions	2014	2015	2016	2017	2018	2019	2020	2021
Yerevan	250,029	306,665	250,457	206,044	227,944	239,944	248,696	195,721
Aragatsotn	13,374	17,963	22,773	21,327	20,752	13,298	14,153	20,536
Ararat	16,427	10,186	15,663	32,669	25,263	25,351	24,160	36,820
Armavir	8,699	16,663	10,096	25,866	37,277	37,121	23,228	34,903
Gegharkunik	11,671	12,996	16,376	16,140	15,506	22,695	20,254	25,033
Lori	68,635	26,876	16,811	17,685	20,741	14,269	16,634	20,258
Kotayk	22,307	24,260	15,199	21,641	24,330	26,770	25,098	48,069
Shirak	11,689	10,769	13,541	14,711	16,186	28,145	17,383	23,991
Syunik	16,203	24,785	29,789	19,190	22,219	19,486	21,420	44,533
Vayots dzor	13,914	10,381	7,228	37,773	10,837	6,766	8,557	9,929
Tavush	30,911	19,954	12,670	16,888	14,748	16,962	13,001	10,287
Total	463,858	481,497	410,603	429,932	435,804	450,807	432,584	470,079

Source: www.armstat.am

The geographic distribution of mortgage cashback is shown on the following Choropleth map.

Figure 11.3. Comparison Total Mortgage Cashback by Regions in AMD Millions (2021)

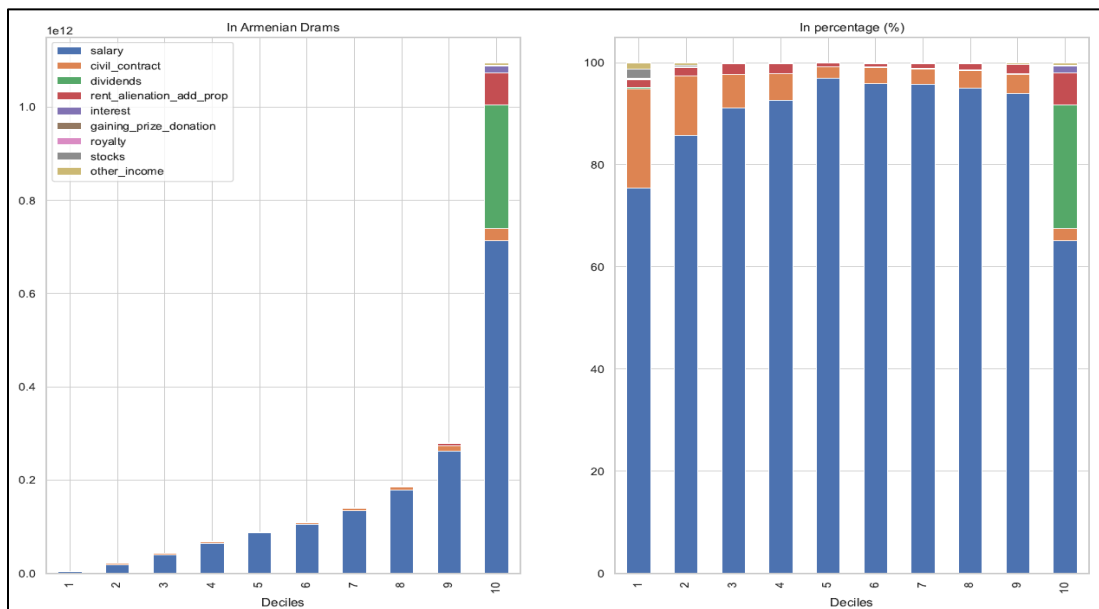


Source: MoF/SRC data.

Income distribution

Data analysis of gross income distribution across decile groups shows that for most taxpayers, labor income is the largest source of income, representing 82 percent in gross total income. The remaining 18 percent of income comes from passive sources. Moreover, the share of passive income increases with income deciles indicating that high-income taxpayers earn higher passive income than the low-income taxpayers. The share of passive income in first decile, for example, is about 5 percent whereas it is 32.5 percent in the highest decile.

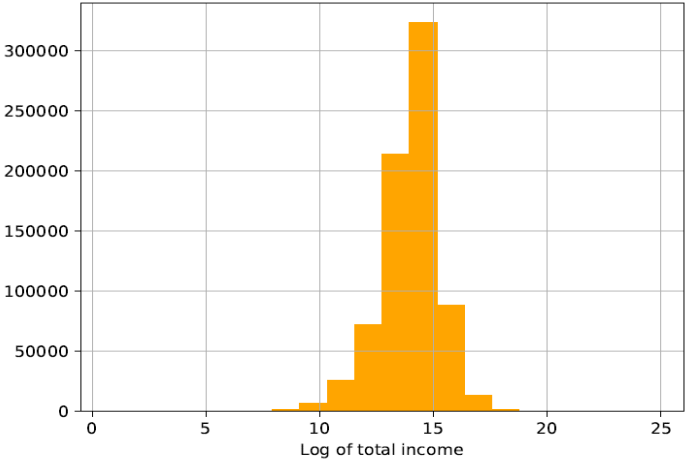
Figure 11.4. Income Distribution in Armenia in AMD Millions (2021)



Source: MoF/SRC data.

Furthermore, a significant proportion of passive income among the highest decile is derived from dividends (24.2 percent), property rental and sale (6.3 percent), and interest (1.3 percent). The following histogram shows the distribution of taxpayers by income levels. Most of the taxpayers fall into the income range of AMD 1.2 to 3.3 million.

Figure 11.5. Distribution of Taxpayers by Gross Income up to 10 in AMD Millions (2021)



Source: MoF/SRC data.

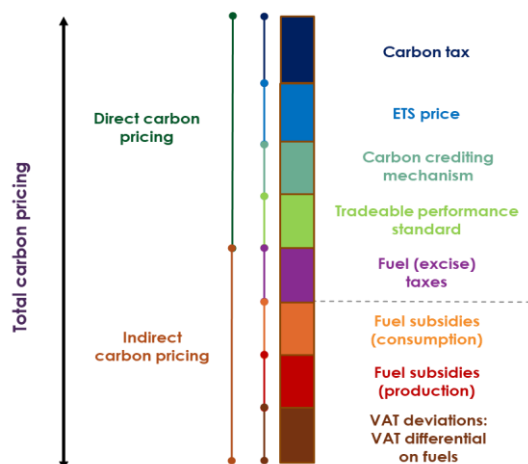
Annex 1J. Methodology to Estimate the Total Carbon Pricing (TCP)

Key Takeaways:

- The methodology to estimate the TCP provides a comprehensive metric for assessing the overall carbon pricing signal and the fiscal incentives for complying with the polluter-pays principle and reducing emissions.
- The total carbon pricing metric highlights the importance of considering both direct and indirect carbon pricing measures and their specific exemptions in order to accurately track progress and inform policy discussions on carbon pricing commitments.

The concept of total carbon pricing (TCP) refers to the combination of both direct and indirect forms of carbon pricing that affect the overall carbon pricing signal and therefore the fiscal incentives to comply with the polluter-pays principle and to reduce carbon emissions in an economy. While direct carbon pricing instruments such as carbon taxes and ETS have gained attention in recent years, indirect forms of carbon pricing, such as fuel excise taxes and fuel subsidy reforms, also play a significant role in shaping the overall price signal for carbon emissions. The TCP considers the coverage, exemptions, and specific interventions of both direct and indirect carbon pricing instruments to provide a comprehensive measure of the price signal for carbon emissions. The direct carbon price, which is the first component of TCP, is the average price (in the form of ETS or carbon taxes) applied to direct emissions, taking into account coverage and exemptions. The second component is the indirect tax payments per unit of fuel-related emissions, which relies on the net tax wedge i.e., the difference between the retail price and supply cost of a fuel in a sector after adjusting upstream direct carbon pricing. Note that this component also includes consumer subsidies and VAT deviations as forms of negative carbon pricing. Figure 1J.1 summarizes the components of the TCP. Given data availability, carbon crediting mechanisms and tradeable performance standards are not included in the TCP metric. In addition, the TCP applies the *de jure* tax system, ignoring issues of imperfect compliance.

Figure 1J.1 Components of Total Carbon Pricing



Data uncertainty: price reliability traffic light

The data underpinning the TCP metric do not reflect equal reliability across countries, fuels and/or sectors. The TCP is therefore accompanied by a confident interval, which aims to alert the user to the reliability of the data. The six fuels considered in this analysis are coal, natural gas, gasoline, diesel, LPG, and kerosene. To ensure the relevance of the methodology, the years considered are limited from 2016 to 2021, as price collection and updates from official sources are typically limited to this period. This section further explains how uncertainty is quantified.

The first step involves assigning reliability scores to the sources of fuel prices. By assigning these reliability scores, the methodology aims to differentiate between sources that are considered more reliable because data are collected from authorities or are retrieved from trustworthy sources from those that may have a higher level of uncertainty because they rely on estimations or assumptions. A numeric score is assigned to evaluate the reliability of the source of prices for each fuel. This score ranges from 0 (green) for trusted sources (e.g., IMF desks, World Bank country teams, IEA, etc.), 1 (yellow) for medium trusted (i.e., adjusted, spot, or average prices) sources, and 2 (red) for projected or untrusted sources. Similarly, for supply prices, a score of 0 is given to directly sourced or bottom-up estimated supply costs, 1 for supply costs calculated by the IMF using their methodology, and 2 for projected or untrusted prices.

Once the reliability scores are assigned, the uncertainty surrounding the TCP is accompanied by a price reliability traffic light for a specific country-fuel-year. The uncertainty is calculated as the average of the reliability scores for both the supply cost and retail price. The overall or weighted reliability for TCP can be determined at different levels: country, country-fuel, and country-year. This is achieved by calculating the weighted sum of the reliability scores for different fuel prices, with the weights determined by the CO2 emissions associated with each particular fuel in the country in that year. For visual presentation purposes, the final weighted reliability score is color-coded.

TCP metric and uncertainty indicator

In the representation of the total carbon price (TCP), the uncertainty indicator can be seamlessly integrated. The computation of the total carbon price and its volatility are fused with the uncertainty indicator, which utilizes the traffic light system-like approach. This representation incorporates historical variability, underscoring the potential influence of less reliable sources on the fluctuations in carbon prices.

First, the reliability score of the TCP is determined for a given year, i.e., the average reliability score of all fuels in one country for one year. This means that the reliability score of the TCP is influenced by the reliability scores of the individual fuel prices. For example, if all fuel prices in a single year are obtained from trusted sources, the reliability score for the TCP would be 0 (green), indicating a high level of reliability. On the other hand, if some fuel prices are derived from projected or untrusted sources, the reliability score of the TCP would be higher (red), indicating a lower level of reliability.

Second, the uncertainty surrounding the TCP is quantified by considering the volatility (standard deviation) of the TCP over the past five years and multiplying it by the reliability score. This step allows for the incorporation of the historical variability of the TCP into the assessment of uncertainty. By multiplying the volatility with the reliability score, the methodology assigns a higher level of uncertainty to prices derived from relatively untrusted sources. This approach acknowledges that prices obtained from less reliable sources may be subject to larger fluctuations and, therefore, have a higher level of uncertainty.

Data

The data used to calculate TCP includes information on nominal rates of pricing instruments and policies, as well as the quantity of emissions on which each rate is applied. The dataset includes information on carbon taxes, ETS, fuel excise taxes, energy consumption subsidies, and VAT deviations for various fuels consumed in different sectors. The methodology allows for the calculation of the total carbon price at the global, country, sector, and fuel levels. For example, a sector-specific TCP can be calculated by aggregating the carbon pricing interventions across fuels and weighting them according to the fuel-related emissions shares. Similarly, a country-level TCP can be calculated by aggregating either across sectors or across fuels.

The data collection process for retail prices, VAT rates, energy taxation, and subsidy information for fossil fuels in Armenia follows a bottom-up approach, with default prices from IMF being retained only when more specific data was unavailable. Annual retail prices derived from the consumer basket in Armenia spanning the 2016–2021 period were sourced from the Statistical Committee of the Republic of Armenia (Armstat). Data for excise tax on imported natural gas, petroleum distillates, and other petroleum products from 2016 onwards came from the Ministry of Finance (MoF) of Armenia. Given Armenia's reliance on energy imports, excise taxes for imported energy products were determined by converting total excise values into per-unit measurements, utilizing energy consumption data from the International Energy Agency (IEA). The prevailing general VAT rate for Armenia is established at 20 percent, with no observed differential VAT rates for specific fuels. Finally, subsidies information was extracted from the OECD (2023), which provides detailed information for both producer and consumer support for fossil fuels.

Incorporating producer support is challenging for two main reasons: (i) producer-side subsidies may not impact energy prices directly, making it difficult to quantify them per unit of emissions, and (ii) many producer subsidies are in the form of tax expenditures. The information regarding fossil fuel subsidies in Armenia was sourced from the OECD's *Inventory of Support Measures for Fossil Fuel*,¹⁴⁷ which reports bottom-up cross-country data on different types of fossil fuel support. This support is categorized into two main indicators: consumer support estimates, which broadly include subsidies provided directly to the end-users of energy, and producer support estimates, which broadly include subsidies provided to energy producers. The support mechanisms include both budgetary expenditures, such as direct energy subsidies to targeted households, and tax expenditures, such as tax exemptions for the producers of fossil fuels.

Finally, data from the different sources were harmonized to create a dataset used to calculate TCP in Armenia. The harmonized data are shown below.

¹⁴⁷ OECD Inventory of support measures for Fossil Fuel Armenia: <https://www.oecd.org/env/oecd-companion-to-the-inventory-of-support-measures-for-fossil-fuels-country-notes-5a3efe65-en.htm>.

Table 1J.1. Description of Data Collection and Processing

Step	Component	Data Needs	Data Processing	Fuels	Data Source
1	Energy taxes	Total excises and/or other taxes on fuels	Energy taxes (per unit of fuel) = total excise tax collected (for specific fuel) / fuel consumption (all sectors)	Natural gas, gasoline, diesel	Ministry of Finance
		Fuel consumption			IEA/Armstat
2	Subsidies	Total annual consumer subsidy	Consumer subsidy (per unit of fuel) = total consumer support (for specific fuel) / fuel consumption (applicable sectors)	Natural gas	OECD Inventory
		Fuel consumption			IEA/Armstat
3	VAT	Retail price VAT rate	VAT (paid in applicable sectors) = Retail Price * VAT rate / (1 + VAT rate)	Natural gas, gasoline, diesel, LPG	Armstat
4	Pre-tax price	Retail price	Pre-tax price = retail price – VAT paid (if applicable) – energy taxes + subsidies (if any)	Natural gas, gasoline, diesel, LPG	Armstat
		VAT			Own calculation
		Energy taxes Subsidy			
5	Net indirect tax burden (NT)	Retail price	Note that there were no direct carbon pricing instruments applicable in Armenia for the years under consideration	Natural gas, gasoline, diesel, LPG	Armstat
		Pre-tax price			Own calculation
		VAT			

Source: Prepared by WB.

Annex 1K. Methodology for Climate Policy Assessment Tool (CPAT)

The Climate Policy Assessment Tool (CPAT) is a spreadsheet-based tool to support climate policy discussions. It allows for rapid estimation of effects of carbon pricing and fossil fuel subsidy reforms along several economic and non-economic dimensions. These include key macroeconomic variables, energy consumption, local and global pollutants, ‘development co-benefits’, distribution/equity and poverty. Its objectives are to:

- Help decision-makers and analysts do quick diagnostics on the potential benefits from explicit carbon pricing and fossil fuel subsidy reforms to inform SCDs and other country strategies;
- Provide first estimates of benefits across different dimensions (from tax revenues to health) to start an engagement with country counterpart and identify areas where more in-depth analyses are needed or promising.

CPAT is being developed jointly by the World Bank and IMF. It evolved from an earlier IMF tool, described in Appendix III of a 2019 Board Paper, “Fiscal Policies for Paris Climate Strategies”, and applied in the IMF’s October 2019 Fiscal Monitor on “How to Mitigate Climate Change”. Background research for the various channels modeled has been completed by the CPAT team, notably through the studies “Benefits beyond Climate” and “Getting Energy Prices Right”.

Mitigation module

The mitigation module is a simplified reduced-form model of fuel consumption, deriving quantities under a baseline and a policy scenario broadly in line with more complex models (the IEA’s World Energy Model, Enerdata POLES). The mitigation module’s primary goal is to predict energy use, energy prices, emissions, carbon tax revenues, and GDP effects over the time horizon of CPAT (2019–2035).

The module takes four types of inputs: (i) energy balances and price inputs; (ii) external forecasts (baseline international energy prices and macro indicators); (iii) parameter inputs (elasticities, fiscal multipliers); and (iv) user-specified policy inputs (for example, the level and coverage of a carbon tax, exemptions phase-out and other inputs).

The module’s outputs include energy consumption by fuel type and sector, greenhouse gas emissions (CO₂ and other GHG such as leaked methane), fiscal revenues and GDP effects, price changes, power generation, and power sector investment.

The mitigation module forms the core of CPAT. When the user chooses a policy in the dashboard, the mitigation module works out the direct impact of the policy, displays it in the dashboard, and passes the outputs on to other modules.

The general approach to determining baseline fuel consumption and the response to a carbon tax or other policy is a simplified, reduced-form model based on income and price elasticities. The changes in energy consumption from the base year are driven by energy prices (including the influence of mitigation policy) and real (total) GDP. Real GDP adjusts to changes in fiscal policy through multiplier effects. It can be considered the main driver of the baseline, while energy prices are the primary driver of any policy, such as a carbon tax. Exogenous changes to efficiency and the price of renewable energy are also drivers of fuel use and consumption.

The mitigation module includes two power sector models, an elasticity-based model and a hybrid techno-economic dynamic model (engineer model) of the power sector with explicit capital stock. The two models use the same power demand elasticities and separately consider power generation's costs by type. The user can either select "average" – meaning an average of both models – or tailor the model using the engineer model alone.

The elasticity-based model uses marginal increases in fuel prices and price elasticities to determine the shares of each generation type. It is simple, transparently parameterized, easily explainable, and easily deployable in a spreadsheet model used in previous versions of CPAT and IMF tools.

The techno-economic engineer model explicitly models the capacity of different generation types, with capacity expanding to meet desired power demand. Flexible capacity (gas and coal) is allocated according to marginal price, with a sigmoidal function of relative price. Investment is also a function of levelized cost, with a system penalty for the cost of integrating high levels of renewable penetration. Transmission losses are modeled as a fixed quantity of total generation.

The main advantage of the engineer model is that it allows modeling decisions that change the stock of assets in the power sector (investment and retirement) and decisions that change the use of assets for power generation (dispatch). In addition, the model allows the user to define a Variable Renewable Energy (VRE) scale up rate. The rates reflect a linear type constraint. It constrains generation in VRE additions to be a certain percentage of total generation (in gross additions, not net of retirements). The model is consistent with countries' generation capacities and makes it possible to investigate the radically different power systems consistent with high carbon prices, while the empirical 'elasticity-based' model is valid only for more marginal changes.

Finally, as one of the main outputs, the mitigation module estimates carbon pricing effects on GDP. CPAT adjusts the baseline GDP growth forecasts endogenously depending on different carbon pricing and revenue recycling scenarios. The module captures two channels: the fiscal effects and the impact on consumption. In the first channel, a carbon tax has both direct and indirect effects on GDP. The latter arises when the carbon tax revenues are recycled as a reduction of other taxes and/or increased government spending. We quantify these effects using the CPAT fiscal multipliers estimates. In the second channel, the change in GDP affects energy consumption and, therefore, the effective carbon tax revenues. This channel is captured by the income elasticities of energy demand.

CPAT uses four sources of fiscal multipliers. Income-group multipliers and global averages are obtained from the World Bank's Macro-Fiscal Model (MFMod). Estimated multipliers are obtained econometrically from panels of high- and low-income countries created along the dimensions of income levels, regions, debt levels, and trade openness. Country-specific multipliers are then obtained as weighted averages over the respective multipliers from each sample/subsample of which the country is part. Finally, since multipliers tend to be higher during expansions and lower during contractions, all baseline multipliers can be adjusted upwards and downwards by adding/subtracting one empirical standard deviation. This takes into account the uncertainty around empirical estimates and gives the CPAT user additional flexibility in choosing the appropriate set of multipliers. Finally, the user has the option to manually enter the preferred multipliers, thereby allowing for a thorough exploration of the uncertainty in these parameters.

Distributional impacts analysis

The variation in consumption (gain if positive; loss if negative) for household consumption deciles $d = \{1, 2, 3, 4, 5, 6, 7, 8, 9, 10\}$ from changes in end-user energy prices under Fossil Fuel Subsidy Removal (FFSR); Moderate Carbon Price (MCP) + FFSR and Elevated Carbon Price (ECP) + FFSR Scenarios is estimated as:

$$(A) \quad \sum_g \pi_t^{dg} \cdot \rho_t^{dg}$$

where g stands for the main categories of goods/services consumed by households, π_t^{dg} is the share of decile d 's total consumption spent on good/service g at time t , and ρ_t^{dg} is the relative price change for good/service g due to the simulated scenarios. For example, for a good with a budget share of 3 percent of total household consumption, expression (A) implies that a 7 percent increase in said good's price will reduce decile d 's consumption by 0.21 percentage points.

The percent price change for each energy product under the simulated scenarios is calculated relative to a business-as-usual state (assuming the absence of new or the tightening of existing climate mitigation policies). Calculating equation (A) above in terms of the energy product-specific price changes and household budget shares for each energy product obtained from the ILCS yields an estimate of the loss in household consumption from higher household electricity bills (i.e., the direct household consumption incidence effect).

Price increases for other consumer goods/services (due to higher electrical energy input prices) are calculated, assuming full pass-through of producer electricity-related cost increases onto consumer prices, domestically (i.e., flat/perfectly elastic supply curves). In particular, non-energy price increases are obtained as the sum-product of: (i) each sector's input intensity in each energy product and (ii) the price increase of each energy product under each scenario (relative to BAU). Sectoral electricity intensities are generally obtained from input-output tables (IOTs)/direct requirements matrices. These matrices were sourced from the GTAP-10 database, which includes 2014 data for 65 sectors that are, in turn, mapped to the CPAT non-fuel consumption good/service categories mentioned above to re-estimate equation (A).¹⁴⁸ Adding the estimates across all non-fuel goods/services yields a measure of the loss in household consumption from price increases of non-energy products (e.g., food, clothing, housing, etc.) due to energy inputs becoming more expensive under the simulated scenarios (i.e., the indirect incidence effect).

Adding up the direct and indirect effects yields an estimate of the total household consumption incidence effect. All incidence effects are scaled by household consumption decile (and consumption item) specific price elasticities of demand (assuming a constant elasticity of substitution (CES) utility function for households) based on USDA data.¹⁴⁹ The application of these elasticities implicitly adjusts the estimated incidence effects for household behavioral responses to higher energy/non-energy prices as a result of the simulated scenarios (accounting for substitution to/away from given consumption items, but not substitution across specific consumption items).

In the simulations of the different revenue recycling modes (new targeted cash transfers, reductions in personal income tax (PIT) liabilities, public investment in infrastructure access, and current spending scale-

¹⁴⁸ These cover the following five fossil fuels: coal (coa), electricity (ely), oil (oil), natural gas (gas, gdt) and petroleum products (p_p).

¹⁴⁹ See: <https://data.ers.usda.gov/reports.aspx?ID=17825>.

ups), the total amount of additional (relative to BAU) CPAT-generated revenues as a percent of GDP in 2030 under each scenario (adjusted by the proportion chosen to be recycled towards each mode) was used as a proxy for the gross (monetary) household gain from revenue recycling. For the modeling of new, targeted cash transfers, recycled revenues were divided by the population of the targeted deciles (e.g., first four deciles to target the bottom 40 percent of the distribution, assuming 10 percent leakage and 90 percent coverage) and subsequently expressed as a percent of decile-specific household per-capita consumption.

For the modeling of PIT liability reductions, CPAT used data on the amount of PIT paid by each household decile (reconciled with national accounts data). Subsequently, PIT liabilities were (in absolute terms) uniformly reduced across the PIT-paying population, similar to a per-capita lump-sum transfer to the working population. The respective (equal, per-capita) gains are calculated by dividing the revenues used for PIT reductions by the 2030 sum of all individuals in Armenia. The calculated amount is the maximum available transfer for PIT reduction purposes. Hence, the per-capita gain (in local currency units) g for (household per-capita consumption) decile d is:

$$g_{dcy_PE} = \min \{l_{dcy}, r_{cy}\}$$

where l_{dcy} stands for the per-capita PIT liability of decile d . Additionally, r_{cy} is the ratio of all available revenues to the 2030 sum of all individuals in Armenia and represents the maximum possible mean, per-capita gain of a given decile d . Decile d is, hence, guaranteed l_{dcy} provided that $l_{dcy} < r_{cy}$. Finally, r_{cy} is parametrized such that it reflects use of all revenues made available for PIT liability reductions across all deciles. Specifically, any remaining revenues following the abovementioned calculations are, once again, equally divided across all individuals in the country and paid out as additional gains. Since this revenue recycling mode resembles a lump-sum, per-capita transfer to the working population, gains are likely to be, by default, progressively distributed. This is because said transfers tend to represent a larger proportion of poorer households' total consumption.

For the modeling of revenue recycling into public investment (e.g., to support sustainable development goals, SDGs), CPAT uses data directly from the 2019 ILCS on household access to the following infrastructure types: electricity, water, sanitation, information and communications technology (ICT), and public transport. The calculation is set up as follows: if, for example, the average infrastructure access rate of the poorest (e.g., bottom 20 percent) individuals is equal to 40 percent, scenario revenues are allocated to the remaining 60 percent of these individuals and so on for subsequent parts of the income distribution. The gains from revenue recycling under this specific mode are, hence, relatively understated since they do not account for the likely positive efficiency gains from public investment (i.e., assuming projects have benefits greater than their costs as opposed to the zero efficiency gains from direct cash transfer payments).

Lastly, a different approach was followed when modeling the scale-up of current spending. In this case, the distribution across deciles of the benefits (in percent of household consumption) from existing spending programs is scaled up by the ratio of the total amount of available scenario-specific revenues (adjusted by the proportion chosen to be recycled) to the total amount of the benefit (pre-revenue recycling) in the BAU.¹⁵⁰

¹⁵⁰ As this is reflected in the World Bank's Atlas of Social Protection Indicators of Resilience and Equity (ASPIRE) database.

The analysis described above is subject to several shortcomings. First, in projecting the distributional analysis forward to year 2030, the fossil fuel intensities (as given by the input-output matrices) and decile-specific household budget shares are assumed to remain constant. This means that the use of input-output matrices likely overstates consumer price changes for non-energy goods/services since the energy intensity of production would likely decrease due to the decarbonization process implicit in the simulated scenarios. Second, some of the incidence of carbon taxation could be passed backwards into lower producer prices, assuming upward-sloping supply curves in the medium-to-long run. If this results in lower capital returns, some of the incidence could be borne by capital owners or even workers (e.g., in the form of lower wages).

Parametrization of CPAT with local data

Local fuel prices data for Armenia

The simulations run in CPAT and the calculation of the TCP metric both require good quality data on fuel prices and its components. Because of this, we collected local data from the Armenian Tax Code about fossil fuel excises, retail prices used in the calculation of price indexes (for the residential sector only), and average prices from the Statistical Committee of the Republic of Armenia.¹⁵¹ The dataset was then completed, whenever required, with information from the IMF’s Global Energy Subsidies database, ensuring accounting consistency was verified.

The data collection exercise was facilitated by the World Bank team, which included Armineh Manookian Salmasi (Senior Economist, EECM1) and Gor Khachatryan (Senior Energy Specialist, IECE1).

The data collected was then treated following the procedure described in Table 1K.1.

Table 1K.1. Processing Steps Applied to Data Collected for Each Fuel to Compute CPAT-Consistent Price Components

Fuel	Process
Natural Gas	<ul style="list-style-type: none"> Assume correspondence between sector-category and CPAT sector groups Industry: compute annual weighted average retail prices given the period of application and seasonal rates Residential: average prices in domestic currency per energy unit were taken from official domestic sources (CPI) Convert values to currency and energy units (or volumes) consistent with CPAT Compute VAT payments based on provided rate, and estimate pre-tax price to ensure accounting consistency Complement missing components with information from the IMF dataset
Electricity	<ul style="list-style-type: none"> Assume correspondence between tension-category and CPAT sector groups Industry: using seasonal rate and period of application, compute monthly average rates, which are subsequently used to compute weighted average annual rates Residential: average prices in domestic currency per energy unit were taken from official domestic sources (CPI) Convert values to currency and energy units (or volumes) consistent with CPAT Compute VAT payments based on provided rate, and estimate pre-tax price to ensure accounting consistency

¹⁵¹ https://statbank.armstat.am/pxweb/en/ArmStatBank/ArmStatBank__1%20Economy%20and%20finance__12%20Consumer%20Prices__1.2.4%20Average%20annual%20prices/EF-CPI-av.px/?rxid=9ba7b0d1-2ff8-40fa-a309-fae01ea885bb.

	<ul style="list-style-type: none"> • Complement missing components with information from the IMF dataset
Oil Products	<ul style="list-style-type: none"> • Convert values to currency and energy units (or volumes) consistent with CPAT • Compute VAT payments based on provided rate, and estimate pre-tax price to ensure accounting consistency • Complement missing components with information from the IMF dataset

The results obtained at this stage are reported in current USD per energy unit. A summary is presented in Tables 1K.2 and 1K.3. It should be noted that there are no subsidies registered for most fossil fuels and that the retail prices instead allow for internal margins. This is feasible thanks to bilateral trade agreements allowing the country to import energy products at rates below international spot prices.

In addition, note that unlike the cases of coal, natural gas, and electricity, the price of other fuels is reported at the levels applied to purchases for residential purposes. In a subsequent step, when considering the purchases of fuels by the industrial or power sectors, VAT payments are assumed to be null and are hence not considered for computing the retail price applied to these sectors. This results from the simplifying assumption that considers all VAT payments in inputs by these sectors to be translated into tax credit.

The data in tables 1K.2 and 1K.3 is color-coded by source:

- Green: Data taken from official sources used for CPI calculations
- Blue: Data built using information directly shared by the World Bank team
- Black: Data taken from the IMF's dataset
- Orange: Data computed to ensure accounting consistency, or built using information shared by the team and complemented with IMF data
- Red: Assumptions

Table 1K.2. Coal, Natural Gas, and Electricity Price Components by Sector

Year	Fuel	Power sector					Industry					Residential				
		supply cost	margin over int. prices	Excise & other taxes	retail price	VAT rate	supply cost	margin over int. prices	Excise & other taxes	retail price	VAT rate	supply cost	margin over int. prices	Excise & other taxes	retail price	VAT rate
		current USD/GJ	current USD/GJ	current USD/GJ	current USD/GJ	%	current USD/GJ	current USD/GJ	current USD/GJ	current USD/GJ	%	current USD/GJ	current USD/GJ	current USD/GJ	current USD/GJ	%
2017	Coal	4.2	1.0	0.1	4.2	0%	6.2	3.1	0.2	6.4	0%	9.3	6.2	-0.2	11.1	20%
2018	Coal	4.5	1.1	0.1	4.5	0%	6.6	3.2	0.2	6.7	0%	9.7	6.3	-0.2	11.7	20%
2019	Coal	3.3	1.1	0.1	3.4	0%	5.5	3.2	0.1	5.6	0%	8.7	6.4	-0.1	10.4	20%
2020	Coal	2.9	1.1	0.0	3.0	0%	5.1	3.3	0.1	5.2	0%	8.4	6.5	-0.1	10.0	20%
2021	Coal	5.5	1.1	0.1	5.6	0%	7.8	3.4	0.2	8.0	0%	11.2	6.8	0.0	13.4	20%
2022	Coal	7.0	1.2	0.1	7.2	0%	9.5	3.7	0.3	9.8	0%	13.2	7.4	0.2	15.8	20%
2017	Nat. Gas	5.4	2.1		6.5	20%	5.4	2.1		6.5	20%	6.3	3.9		7.6	20%
2018	Nat. Gas	5.4	2.1		6.5	20%	5.4	2.1		6.5	20%	6.3	3.5		7.5	20%
2019	Nat. Gas	5.4	2.2		6.5	20%	5.4	2.2		6.5	20%	6.3	4.3		7.6	20%
2020	Nat. Gas	5.7	2.2		6.9	20%	5.5	2.2		6.6	20%	6.3	4.7		7.5	20%
2021	Nat. Gas	5.9	2.3		7.1	20%	5.6	2.3		6.7	20%	6.1	4.6		7.3	20%
2022	Nat. Gas	9.2	2.5		11.1	20%	8.7	2.5		10.4	20%	7.2	5.4		8.6	20%
2017	Electricity										20%				0.08	20%
2018	Electricity								0.05	20%					0.08	20%
2019	Electricity								0.05	20%					0.09	20%
2020	Electricity								0.05	20%					0.08	20%
2021	Electricity								0.05	20%					0.08	20%
2022	Electricity								0.06	20%					0.10	20%

Table 1K.2. Price Components for Fuels Whose Prices are First Computed for the Residential Sector

Year	Fuel	Residential*				
		supply cost	margin over int.	Excise & other taxes	retail price	VAT rate
		current USD/GJ	current USD/GJ	current USD/GJ	current USD/GJ	%
2017	Gasoline	0.6	0.2	0.04	0.79	20%
2018	Gasoline	0.7	0.2	0.06	0.93	20%
2019	Gasoline	0.7	0.2	0.06	0.87	20%
2020	Gasoline	0.5	0.2	0.06	0.70	20%
2021	Gasoline	0.7	0.2	0.06	0.90	20%
2022	Gasoline	0.9	0.2	0.06	1.14	20%
2017	Diesel	0.6	0.2	0.06	0.74	20%
2018	Diesel	0.8	0.2	0.02	0.95	20%
2019	Diesel	0.7	0.2	0.02	0.93	20%
2020	Diesel	0.6	0.2	0.02	0.71	20%
2021	Diesel	0.7	0.2	0.02	0.86	20%
2022	Diesel	1.1	0.2	0.02	1.4	20%
2017	LPG	0.6	0.2	0.00	0.67	20%
2018	LPG	0.5	0.2	0.00	0.66	20%
2019	LPG	0.5	0.2	0.00	0.66	20%
2020	LPG	0.5	0.2	0.00	0.60	20%
2021	LPG	0.5	0.2	0.00	0.62	20%
2022	LPG	0.5	0.2	0.0	0.6	20%
2017	Kerosene	0.6	0.2	0.0	0.7	20%
2018	Kerosene	0.8	0.2	0.0	0.9	20%
2019	Kerosene	0.7	0.2	0.0	0.9	20%
2020	Kerosene	0.5	0.2	0.0	0.6	20%
2021	Kerosene	0.7	0.2	0.0	0.9	20%
2022	Kerosene	1.1	0.2	0.0	1.3	20%
2017	Biomass	8.63		0	8.63	0
2018	Biomass	10.49		0	10.49	0
2019	Biomass	10.87		0	10.87	0
2020	Biomass	11.26		0	11.26	0
2021	Biomass	11.788		0	11.788	0
2022	Biomass	12.737		0	12.737	0
2017	Other oil products	54.887		0	54.887	0.2
2018	Other oil products	71.613		0	71.613	0.2
2019	Other oil products	64.198		0	64.198	0.2
2020	Other oil products	43.334		0	43.334	0.2
2021	Other oil products	70.831		0	70.831	0.2
2022	Other oil products	98.996		0	98.996	0.2

Local household consumption data for Armenia Data on household budget shares was obtained from Armenia’s 2019 Integrated Living Conditions Survey (ILCS), which decomposes household consumption into more than 2,000 items across 5,165 households.¹⁵² After the data is aggregated into CPAT-compatible good/service categories, households are grouped into population-weighted, per-capita consumption deciles. Budget shares are computed by dividing total consumption expenditure on each CPAT good/service category by each household’s total consumption expenditure across all goods/services.¹⁵³

¹⁵² Source information available at : https://webapps.ilo.org/surveyLib/index.php/catalog/8473/variable/FA_ARM_HILCS_2019_FULL/VA195?name=_v4.

¹⁵³ To facilitate relative cross-country comparability of results, CPAT uses a standardized classification of goods and services across all countries, distinguishing among 8 fuel (coal, electricity, natural gas, oil, gasoline, diesel, kerosene, LPG) and 14 non-fuel (appliances, chemicals, clothing, communications, education, food, health services, housing, other, paper, pharmaceuticals, recreation and tourism, transportation equipment, public transportation) good/service categories. This classification is, in part, informed by the implicit carbon intensity of non-fuel goods/services (i.e., goods/services with similar carbon intensities are classified under the same category).

Annex 1L. Additional Scenarios on Uses of Revenue From Carbon Tax

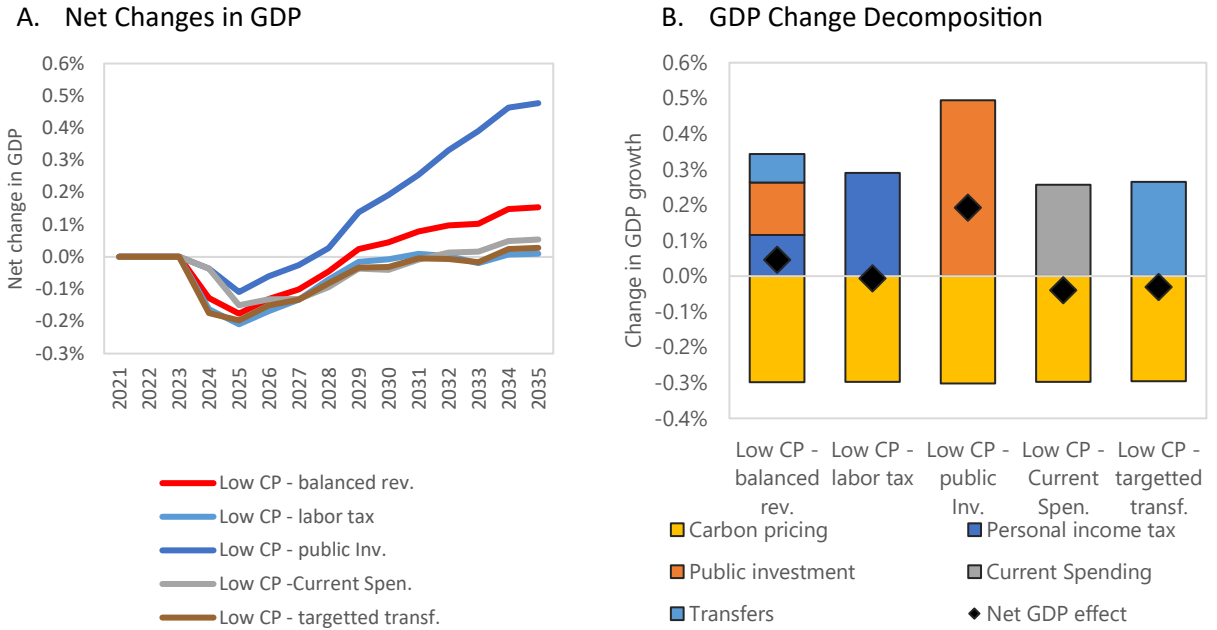
To illustrate the importance of the use of revenues in GDP and distributional impacts, we ran the additional scenarios indicated in the table below.

Table 1L.1. Additional Price Scenarios: Assumption on Carbon Price Levels and Revenue Recycling Schemes

Name	Carbon Tax				Revenue Recycling (percent)			
	Start price (\$/tonneCO ₂)	Start year	Target level (\$/tonneCO ₂)	Target year	Labor taxation	Public investment	Current spending	Cash transfers
Low CP - balanced revenue	14	2024	20	2030	40	30	0	30
Low CP - labor tax	14	2024	20	2030	100	0	0	0
Low CP - public investment	14	2024	20	2030	0	100	0	0
Low CP - current spending	14	2024	20	2030	0	0	100	0
Low CP - targeted transfers	14	2024	20	2030	0	0	0	100

As illustrated in the figures below, a scenario where all the revenues would be used to increase public spending would be the most favorable in terms of economic growth.

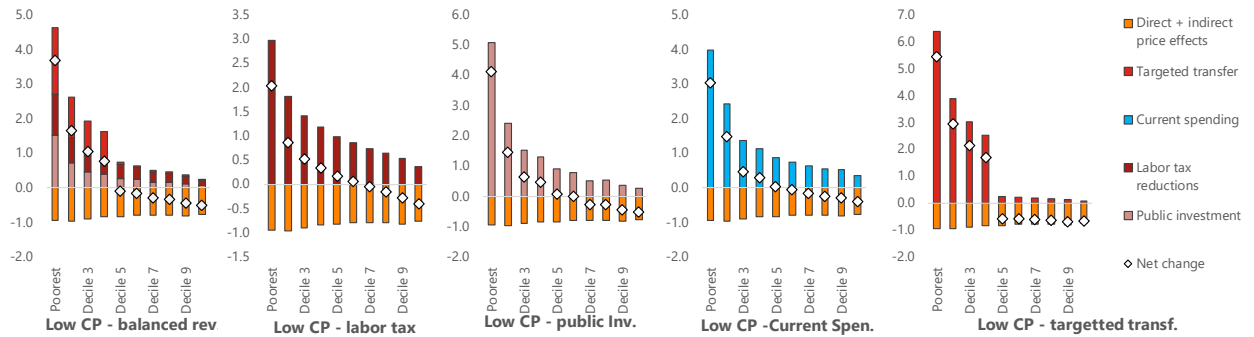
Figure 1L.1. Policy Effects on GDP Changes and GDP Impact Decomposition



Source: World Bank staff calculations.

Household consumption impacts will also be affected by the recycling of revenues. The channels that improve households' welfare not only include cash transfers, but also labor tax reductions, public investments (which includes improved access to infrastructure and services), and increased spending (which includes existing social programs).

Figure 1L.2. Household Relative Mean Consumption Effects After Revenue Recycling (2025)



Source: World Bank staff calculations.

Annex 1M. Methodology for MANAGE and General Equilibrium Modeling of Reforms

The Mitigation, Adaptation and New Technologies Applied General Equilibrium (MANAGE-WB) model is a single-country recursive dynamic computable general equilibrium (CGE) model designed to support World Bank teams and clients in macroeconomic analysis in a wide range of topics.¹⁵⁴ It takes the standard assumptions found in most single-country CGE models: firms minimize costs under constant return-to-scale technologies, households maximize utility, economic agents own the production factors and supply them to firms, all agents are price takers in perfectly competitive markets for products and production factors. The model has been extended to focus on energy, emissions, and climate change economic impacts. In addition, the MANAGE model includes a detailed energy specification that allows for capital/labor/energy substitution in production, intra-fuel energy substitution across all demand agents, and a multi-output, multi-input production structure.

The drivers of growth in the model follow the neo-classical growth framework. The level of GDP depends on three factors: the supply of workers, investment, and productivity. The level of investment in the economy is determined by domestic and foreign savings net of new government debt. Household saving rates evolve with the returns to savings. Foreign savings can either be defined as a constant share of nominal GDP or assumed to adjust to the expected domestic returns to capital and the public debt-to-GDP ratio. The nominal exchange rate is fixed. The real exchange rate adjusts to maintain the current account balance. Investment is distinguished between public and private.

For this analysis, we use an extended version of MANAGE-WB that includes a wage-setting mechanism tailored to address search frictions, a key element for analyzing the duality of labor markets in developing countries. By incorporating search frictions, we modify the CGE labor market equilibrium, which traditionally assumes market-clearing wages and treats informality as a choice derived from a cost-benefit analysis. Search frictions have a significant impact on labor market efficiency in developing countries. They encompass challenges such as limited knowledge of job openings, high costs associated with job searching, and a skills mismatch between job seekers and job offerings. These issues can extend the duration of job searches and contribute to labor market segmentation: those unable to signal their suitability for formal positions may find themselves in informal jobs that are unproductive, low-paying, and lack protection. In many developing countries, the lack of a robust social safety net, coupled with an inefficient labor market, often leaves informal employment as the only option, which can perpetuate the cycle of poverty.

The model incorporates search frictions for specific labor categories, while other labor types can still be modeled according to the traditional CGE assumption of market-clearing. This approach is important for analyzing informality, where the literature traditionally distinguishes between informality by choice and being informal due to a lack of opportunities (as discussed in Ohnsorge and Yu, 2022). We utilize this feature of the model to differentiate between two types of labor: skilled and low-skilled labor. For skilled individuals, we maintain the traditional labor market equilibrium, which allows us to consider informality by choice. Conversely, we apply the search and matching

¹⁵⁴ Beyene et. al, forthcoming.

framework for low-skilled individuals to account for labor segmentation. Our approach thus encompasses a wide array of search frictions, which are particularly severe for low-skilled workers due to factors such as non-specialized skills, geographical constraints, limited job search resources, or challenges in signaling their eligibility for formal positions (see, for example, OECD, 2024).

A comprehensive description of the methodology and calibration strategy is provided in Al-Rikabi et al. (forthcoming).

Data input

We calibrated the model to replicate the economy of Armenia in 2017 and used the social accounting matrix (SAM) from GTAP 11.¹⁵⁵ We constructed a dynamic baseline by targeting GDP growth as projected by a long-term growth model and took the power-mix projection from a sectoral analysis based on a power model of the World Bank. Regarding the labor market, we assumed that the share of informal employment within a sector remains constant over time.¹⁵⁶

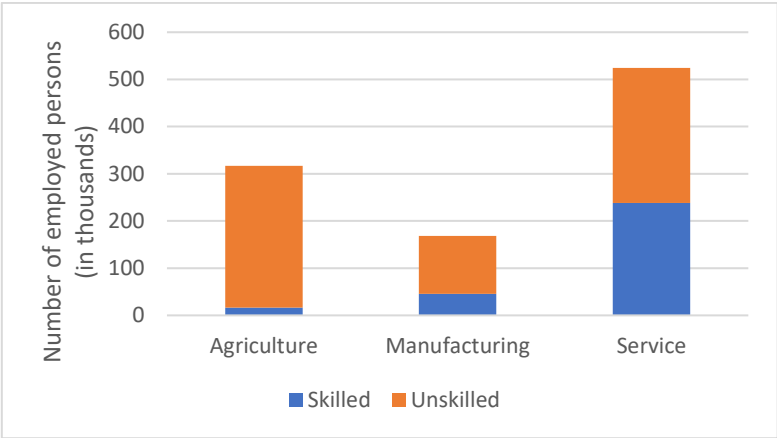
For the labor market, we utilized 2017 data from ILOSTAT to disaggregate the workforce by industry according to ISIC-Rev-4 classifications. Subsequently, we employed sectoral labor expenditure data from GTAP to refine the disaggregation of the workforce into the specific sectoral breakdown we employed. Next, we used ILOSTAT data for 2017 to further disaggregate the sectoral workforce by education and employment status. For the former, we considered individuals with a bachelor's or equivalent level of education (≥ 6 in ISCED-11) as skilled and the others as unskilled (< 6 in ISCED-11). We used the information about employment status to further split the employment groups into informal and formal employment. In our analysis, we adopted the assumption of a productivity differential between unskilled formal and informal labor that mirrors the findings of Al-Rikabi et al. (forthcoming), who derived the productivity differential in the case of Georgia.

Figure 1M.1 illustrates the distribution of employment across macro sectors and skill groups, whereas Figure 1M.2 and 1M.3 show the share of informal employment per sector and skill group. The data shows that 61 percent of unskilled workers are in informal employment, of which 34 percent work outside the agricultural sector. This indicates that while the agricultural sector is a predominant contributor to informality among unskilled workers, there is also a notable portion of informality present in other sectors. In contrast, only 17 percent of skilled workers are employed in the informal sector. These figures highlight a significant disparity in the incidence of informality between skilled and unskilled labor.

¹⁵⁵ Aguiar et al., 2022.

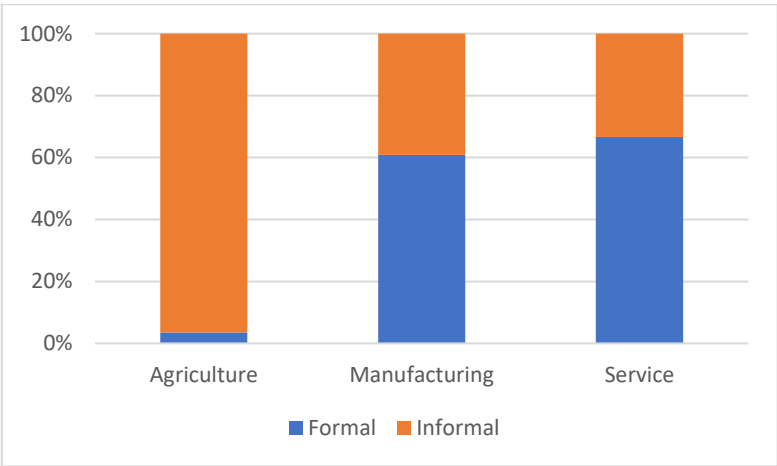
¹⁵⁶ Note that this does not mean that the aggregate share of informal employment remains constant over time. Changes in the economy's structure can influence the levels of informal employment through the movement of workers between industries. For instance, labor might move from sectors with a high concentration of informal work, like agriculture, to sectors typically characterized by more formal employment, such as services.

Figure 1M.1. Sectoral Employment per Skill-Level in Armenia (2017)



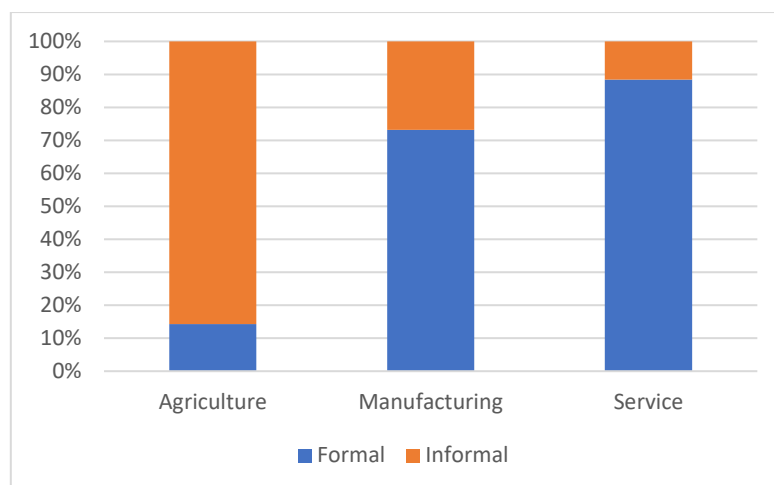
Source: WB Staff estimates.

Figure 1M.2. Unskilled Labor Share per Employment Status in Armenia (2017)



Source: WB Staff estimates.

Figure 1M.3. Skilled Labor Share per Employment Status in Armenia (2017)



Source: WB Staff estimates.

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Annex 2A. Additional Figures and Tables

Table 2A.1. Number of Educational Institutions, Students, and Teachers by Level of Education (2022)

Education Levels	Students		Teachers/ Instructors		Institutions	
	Total	Share (%)	Total	Share (%)	Total	Share (%)
Pre-primary education	75,089	12.7	6,809	12.6	981	37.4
General education	406,291	68.5	30,095	55.9	1,393	53.1
Primary (grades 1-4)	156,224	26.3				
Lower secondary (grades 5-9)	188,291	31.7				
Upper secondary (grades 10-12)	61,776	10.4				
Special general education*	551	0.1	105	0.2	7	0.3
Preliminary vocational education**	6,456	1.1	1,133	2.5	51	1.9
Middle vocational education**	33,230	5.6	4,548	8.4	99	3.8
Higher education	71,732	12.1	10,969	20.4	54	2.1
Postgraduate education	737	0.1			60**	
Grand Total	593,535	100	53,859	100	2,624	100

Notes: *Special general education refers to programs designed for children with special educational needs. These numbers are also included in general education. **Vocational education is divided into two levels: preliminary and middle vocational education. Both offer vocational qualifications, which help to provide access to the labor market.¹⁵⁷ ***Includes 21 higher educational institutions, 32 institutions of National Academy of Sciences of RA, and 7 scientific organizations.

Source: Authors' calculations using ArmStat: Social Situation in RA for 2022.

Table 2A.2. Number of Educational Institutions, Students, and Teachers in Yerevan and Regions by Level of Education (2022)

Education Levels	Yerevan			Regions		
	Students	Teachers/ Instructors	Institutions	Students	Teachers/ Instructors	Institutions
Pre-primary education	27,729	2,323	241	47,360	4,486	740
General education	137,473	8,424	245	268,818	21,671	1,148
Primary (grades 1-4)	53,909			102,315		
Lower secondary (grades 5-9)	64,332			123,959		
Upper secondary (grades 10-12)	19,232			42,544		
Special general education*	466	87	6	85	18	1
Preliminary vocational education	2,581	357	11	3,875	976	40
Middle vocational education	19,564	2,297	38	13,666	2,251	61
Higher education	62,803	9,474	43	8,929	1,495	11
Postgraduate education	726		52**	11		8***
Grand Total	250,876	22,962	618	342,659	30,897	2,006

Note: *Also included in general education. **Includes 18 higher educational institutions. ***Includes 3 higher educational institutions.

Source: Authors' calculations using ArmStat: Social Situation in RA for 2022.

¹⁵⁷ <https://escs.am/en/static/vocational-education?s=edu>

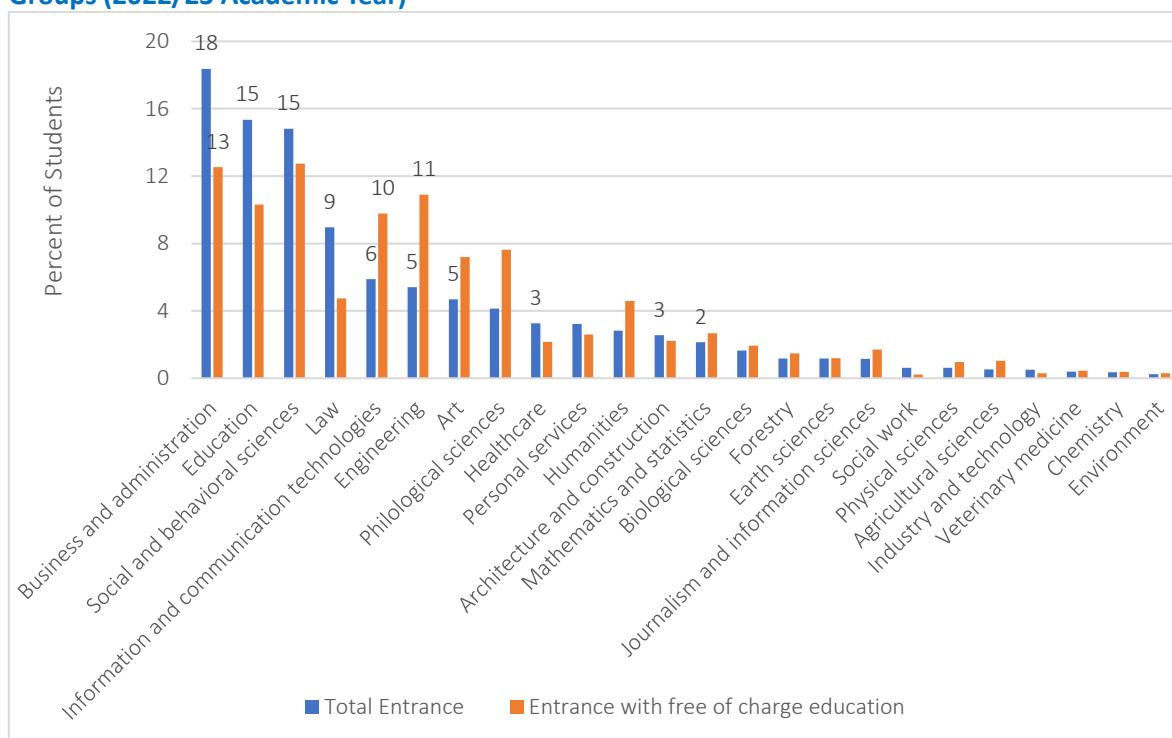
Table 2A.3. Percentage of Students Enrolled in Private Institutions (2022)

	Pre-primary Education (%)	Primary Education (%)	Secondary General and Vocational Education (%)	Higher Education (%)
Armenia	3	3	3	17
Albania	9	10	11	19
Bosnia and Herzegovina	29	2	3	21
Estonia		7	4	8
Georgia		10	10	35
Moldova	1	3	3	15
Tunisia		8		13
Averages				
ECA UMIC	9	3	4	19
Developmental Peers	13	7	6	18
UMIC	37	17	19	35
European Union	25	11	14	21

Note: Statistics for vocational education are presented together with statistics for secondary general education in comparison countries.

Source: Authors' calculations using 2023 WDI and ArmStat: Social Situation in RA for 2022.

Figure 2A.1. Distribution of Entrants and Those Receiving Free Higher Education across Specialty Groups (2022/23 Academic Year)



Source: WB based on 2023 ArmStat.

Table 2A.4. Breakdown of MoESCS Expenditures by Program and Sector in 2020

Code	Program Name	Sector	Actual	%
1045	Primary (vocational) and secondary professional education	Education	11,180.4	6.5
1111	Higher and post-graduate professional education program	Education	10,820.3	6.3
1130	Development of state policy, coordination and monitoring of programs in the field of education, science, culture and sports	Education	1,599.2	0.9
1146	General education program	Education	96,202.8	56.3
1148	Extracurricular education program	Education	3,497.1	2.0
1183	Safe school	Education	2,732.7	1.6
1192	Ensuring the quality of education	Education	5,745.3	3.4
1193	Implementation of universal inclusive education system	Education	1,962.7	1.1
1198	Program of cultural and aesthetic education	Education	651.1	0.4
1215	Development of international and diaspora cooperation in the fields of education, culture and sports	Education	703.6	0.4
1041	A sport of great achievement	Sport	1,924.3	1.1
1163	Mass sports	Sport	194.6	0.1
1056	Cinematography program	Culture	969.9	0.6
1075	Cultural heritage program	Culture	3,775.1	2.2
1124	Publishing and Libraries Program	Culture	1,909.3	1.1
1147	National Archives Program	Culture	596.1	0.3
1168	Arts program	Culture	12,030.4	7.0
1196	Regional cultural development program	Culture	52.1	0.0
1162	Scientific and technical research program	Science	13,106.4	7.7
1115	Youth program	Youth	1,247.1	0.7
RA Ministry of Education, Science, Culture, and Sports			170,900.6	100.0

Source: World Bank based on 2023 Ministry of Finance data.

Table 2A.5. Programs and Subprograms Included in “Support Services to Education” in State Budget (2021–2022)

	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Pre-primary and primary general education	34,079	36,739	38,125	44,042	45,485	47,349	47,401	49,711	51,159	60,630	63,551
Pre-primary education	11,985	13,225	14,430	16,644	16,651	18,075	19,163	21,704	20,329	26,038	29,134
Primary education	22,094	23,514	23,695	27,397	28,834	29,274	28,238	28,007	30,830	34,592	34,418
Secondary education	49,102	48,324	53,047	53,545	55,289	54,702	53,324	57,533	62,610	60,827	63,838
Lower secondary	30,531	30,619	30,506	36,100	39,211	39,605	38,658	40,107	41,556	41,706	44,553
Upper secondary	18,572	17,706	22,542	17,445	16,077	15,096	14,665	17,426	21,054	19,121	19,285
Vocational education	5,375	6,182	7,471	8,933	9,047	9,815	9,956	11,990	11,349	10,586	10,985
Higher education	7,781	8,055	9,573	11,220	11,751	12,096	11,682	9,606	11,493	12,779	12,600
Ungraded education	6,859	7,658	9,643	11,376	11,796	11,812	11,926	12,640	13,120	14,522	15,736
Extracurricular education	6,859	7,658	9,643	11,376	11,796	11,812	11,926	12,640	13,120	14,522	15,736
Support services to education	16,600	13,549	16,840	14,486	10,834	11,967	12,277	8,707	14,260	15,143	25,221
Education (n.e.c.)	671	684	831	1,094	1,145	1,306	1,266	1,021	1,737	1,770	1,903
Grand Total	120,468	121,192	135,531	144,695	145,346	149,047	147,832	151,208	165,728	176,256	193,835

Source: World Bank based on 2023 Ministry of Finance data.

Table 2A.6. Composition of the State Budget in Education by Economic Classification (%)

	2016	2017	2018	2019	2020	2021	2022
Recurrent expenditures	97.4	96.2	95.4	96.6	94.9	95.3	91.4
WAGES AND SALARIES	1.5	1.4	1.7	0.8	1.3	1.2	1.2
ACQUISITION OF GOODS AND SERVICES	1.5	1.4	1.3	1.6	0.8	0.8	0.9
SUBSIDIES	71.8	70.6	69.8	73.1	71.6	71.1	66.9
Subsidies to non-financial state organizations	71.4	70.2	69.4	73.1	71.6	71.1	66.9
Subsidies to non-governmental and non-financial organizations	0.4	0.4	0.4	0.0	0.0	0.0	0.0
Subsidies to non-state financial organizations	0.0	0.0	0.0	0.0	0.0	0.0	0.0
GRANTS	4.9	4.6	4.7	5.1	5.3	6.0	6.9
Capital grants to other levels of the public sector	0.0	0.0	0.0	1.2	0.2	0.4	1.1
Current grants to other levels of the public sector	4.9	4.4	4.7	4.0	4.8	5.4	5.4
Current grants to state and community commercial organizations	0.6	0.6	0.5	0.0	0.0	0.0	0.0
Current grants to state and community non-commercial organizations	2.6	2.0	2.2	1.9	2.3	2.9	2.8
Current subsidies to communities	0.5	0.5	0.5	0.5	0.4	0.2	0.2
Other current grants	1.2	1.3	1.5	1.6	2.0	2.2	2.4
Grants to international organizations	0.0	0.2	0.0	0.0	0.4	0.2	0.4
SOCIAL BENEFITS AND PENSIONS	16.0	16.7	16.9	15.8	15.8	16.2	15.5
Educational, cultural and sports benefits	1.8	1.8	1.8	1.6	1.4	1.5	1.3
Funeral allowances from the budget	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Other allowances from the budget	14.3	15.0	15.2	14.2	14.5	14.7	14.2
OTHER EXPENDITURES	1.6	1.4	0.9	0.1	0.1	0.1	0.1
Non-financial assets	2.6	3.8	4.6	3.4	5.1	4.7	8.6
Capital repair of buildings and structures	1.9	1.7	2.7	3.0	3.0	2.0	1.9
Construction of buildings and structures	0.3	1.9	1.8	0.0	0.9	2.3	5.2
Other machinery and equipment	0.0	0.0	0.0	0.2	0.9	0.3	1.1
Other non-financial assets	0.4	0.2	0.1	0.2	0.3	0.1	0.3
Total Expenditures	100	100	100	100	100	100	100

Source: World Bank based on Ministry of Finance (2023).

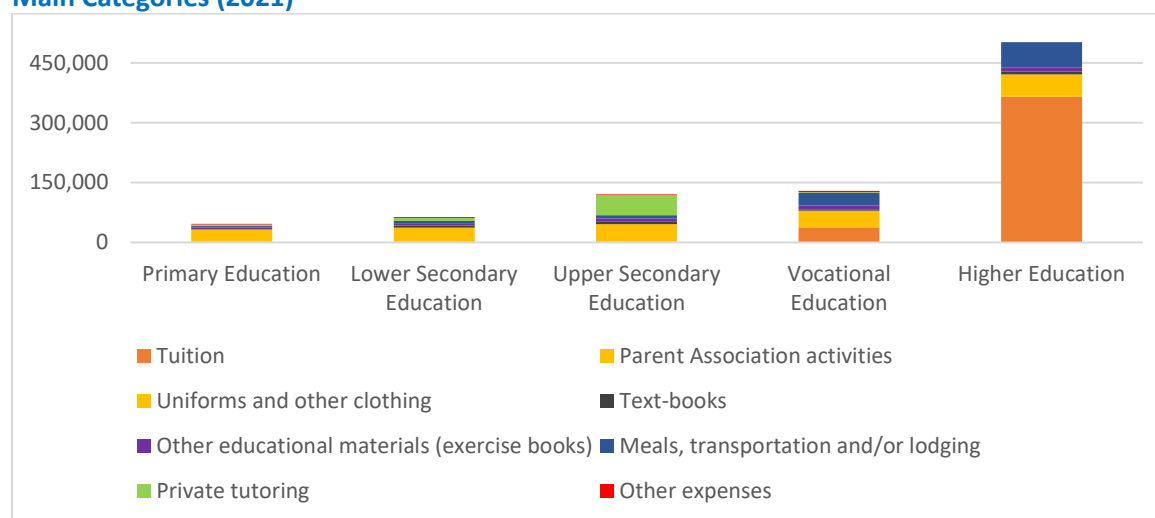
Table 2A.7. Assumptions for Calculations of Household Expenditure on Education, 2021

	Annual, Per-Student (AMD)	Number of Students	Total Expenditure (billion AMD)	% GDP
Primary education	46,495	155,801	7.2	0.10
Lower secondary education	63,233	185,971	11.8	0.17
Upper secondary education	120,473	61,881	7.5	0.11
Vocational education	129,237	37,920	4.9	0.07
Higher education	512,939	68,874	35.3	0.51
Total		510,447	66,687	0.95

Note: Expenditure of pre-primary education is not included in the survey.

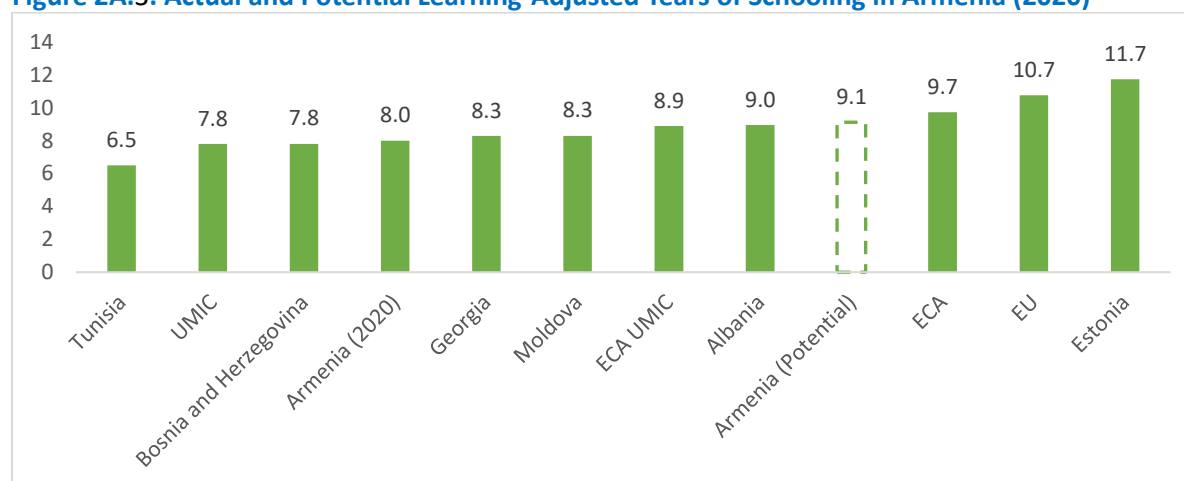
Source: Authors' calculations using data from the 2021 Household's Integrated Living Conditions Survey and MoF.

Figure 2A.2. Annual Household Expenditure per Student on Education by the Level of Education and Main Categories (2021)



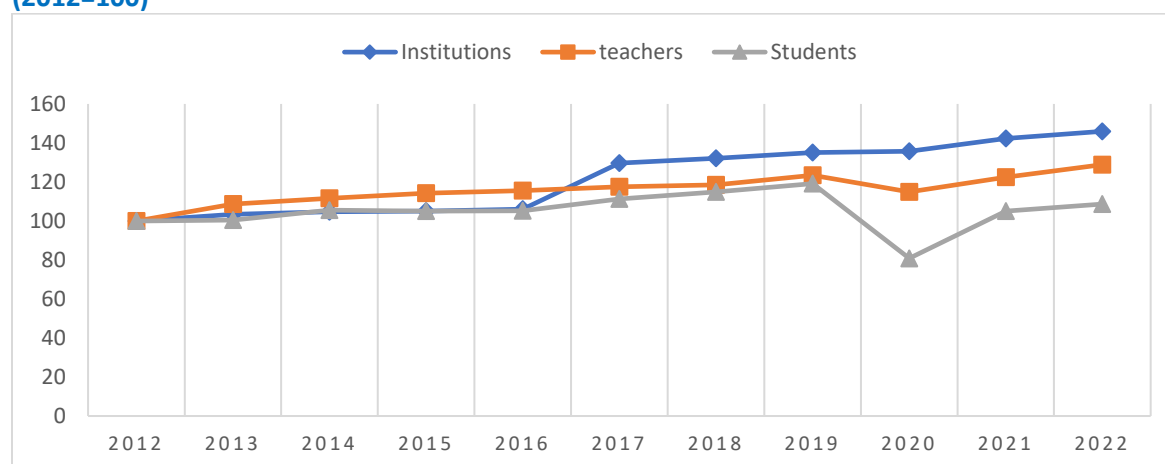
Source: Authors' calculations using the 2021 Household's Integrated Living Conditions Survey and MoF.

Figure 2A.3. Actual and Potential Learning-Adjusted Years of Schooling in Armenia (2020)



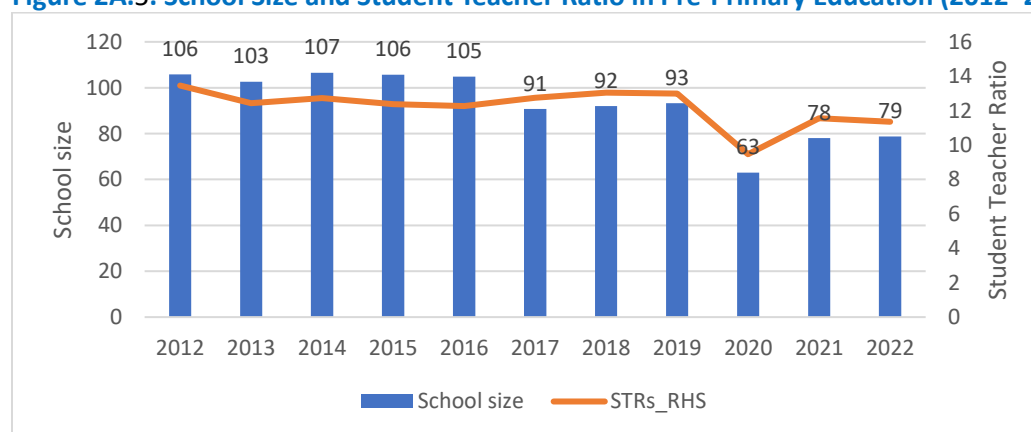
Source: Authors' calculations using 2023 UNESCO UIS and WDI data.

Figure 2A.4. Evolution in Number of Pre-Primary Institutions, Teachers, and Students, 2012-2022, (2012=100)



Source: World Bank based on ArmStat (2023).

Figure 2A.5. School Size and Student Teacher Ratio in Pre-Primary Education (2012–2022)



Source: World Bank based on ArmStat (2023).

Table 2A.8. Cross-Country Factors Associated with Learning-Adjusted Years of Schooling (2020)

Variables	LAYS
Education expenditure as a share of GDP	0.109** (0.0526)
GDP per capita	0.774*** (0.155)
Share population under 14 years old	-0.127*** (0.0174)
Constant	3.428* (1.929)
Observations	161
R-squared	0.825

Note: Robust standard errors in parentheses. *** p<0.01, ** p<0.05, * p<0.1.

Box 2A.1. Allocation Formulas in General Education (2023–2024)

Institutions are subject to financing according to the following formulas:

$$Eg = ((TDt \times TDr + MDt \times MDr + ADt \times ADr) \times UNa + (TDt + MDt + ADt) \times DGI + MMg + VUaa + NKhaf) \times 12 + BL + Sg + Dg + HDz$$

where

Eg is the total amount allocated to the institution for one year.

TDt, MDt, and ADt represent the average annual class size in primary, lower secondary, and upper secondary, respectively, determined as follows: (number of classes in January \times 2 + number of classes in September) / 3). This calculation is based on (i) the rules for class formation in state general education programs set by the government of the Republic of Armenia and (ii) the rules for forming multi-community classes in general education institutions approved by the authorized body.

TDr, MDr, and ADr are the average number of monthly teaching loads per grade in primary, lower secondary, and upper secondary, respectively, according to the institution's curriculum.

UNa is the amount of the minimum salary set for one teacher's workload.

DGI represents the extra payment for classroom management (for the master-teacher).

MMg is the allowance given to the head of the methodological unit.

VUaa denotes the monthly salary of the administrative staff.

NKhaf signifies the amount of monthly pre-primary financing, calculated by the following formula:

$$NKhaf = NKht \times UNa \times 1.8$$

NKht is the number of pre-primary groups.

BL is the allowance given to employees of state educational institutions located in high mountainous communities.

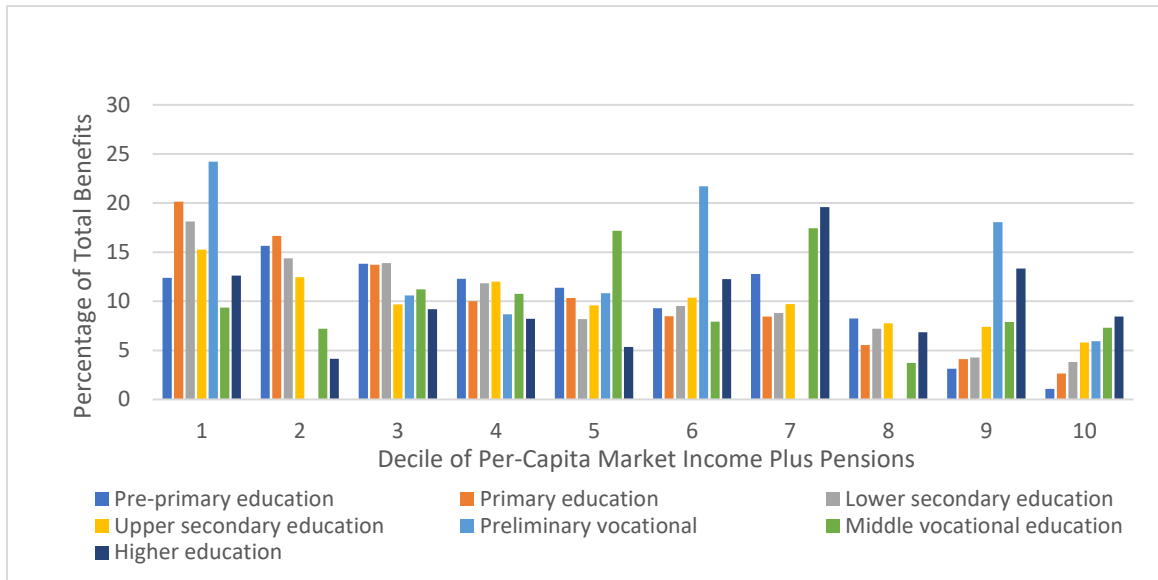
Sg is the food fees.

Dg is the amount of compensation for the investment money of textbooks.

HDz is the school-wide cost.

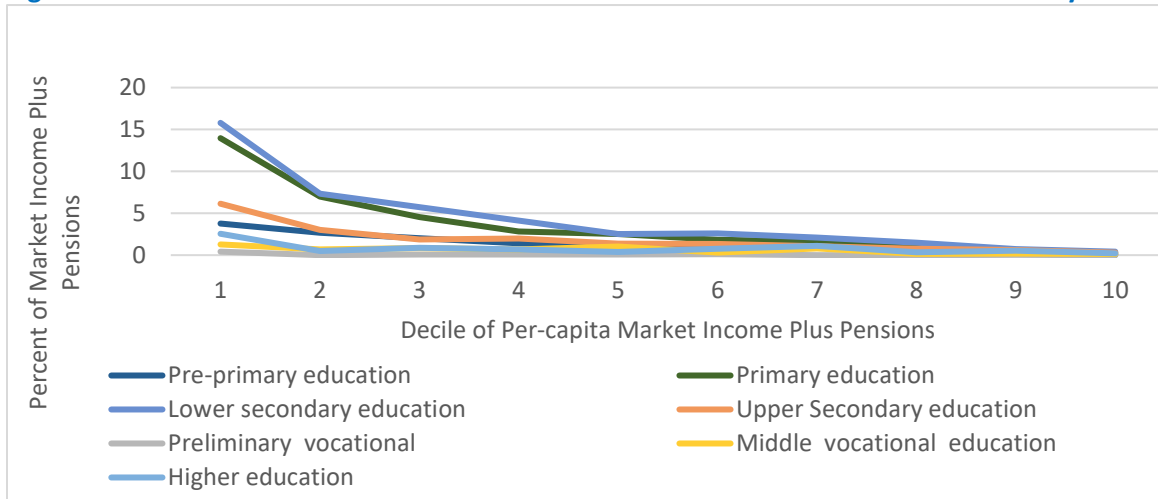
The Minister of Education, Science, Culture, and Sports of the Republic of Armenia and the Governors of the Republic of Armenia (including the Mayor of Yerevan) are allowed to make redistributions in the allocations of public educational institutions under their jurisdiction. If the amount to be redistributed exceeds 10 percent of the amount allocated to the given public education institution or if the redistribution is directed to capital expenses, it must be approved by the RA Ministry of Education, Science, Culture, and Sports.

Figure 2A.6. Concentration of Education Benefits by Decile (2021)



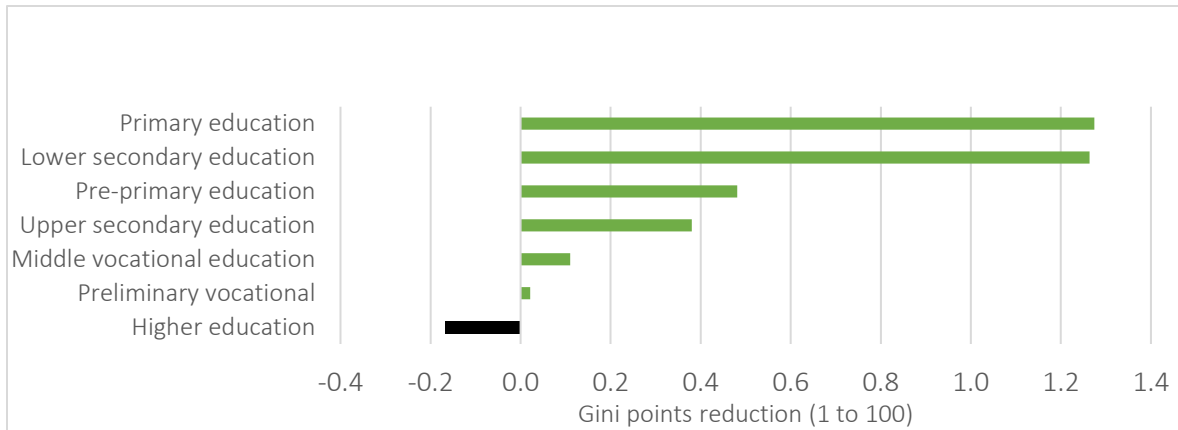
Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

Figure 2A.7. Incidence of Education Benefits as Share of Market Income Plus Pensions by Decile (2021)



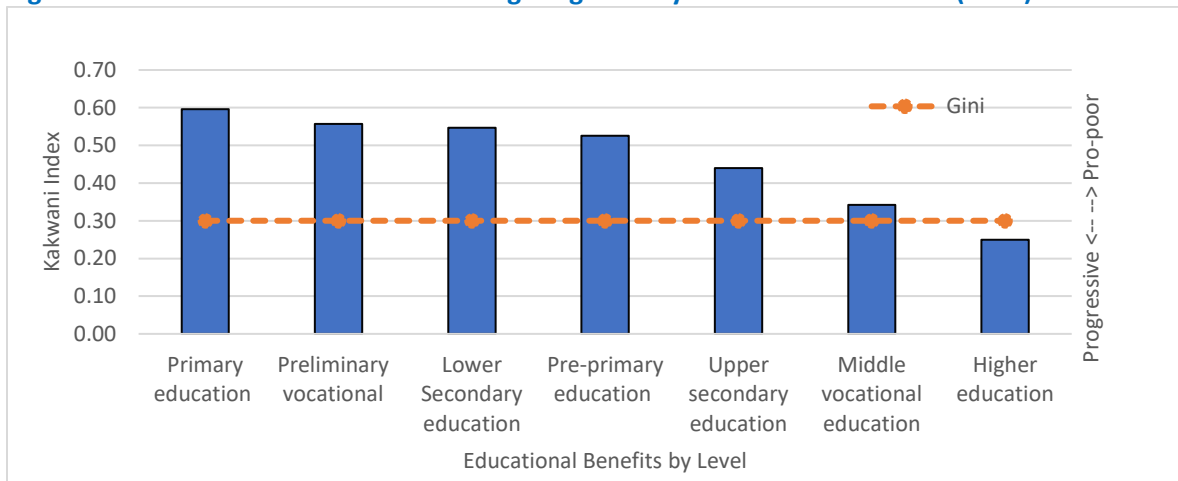
Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

Figure 2A.8. Marginal Effects to Redistribution in Education (2021)



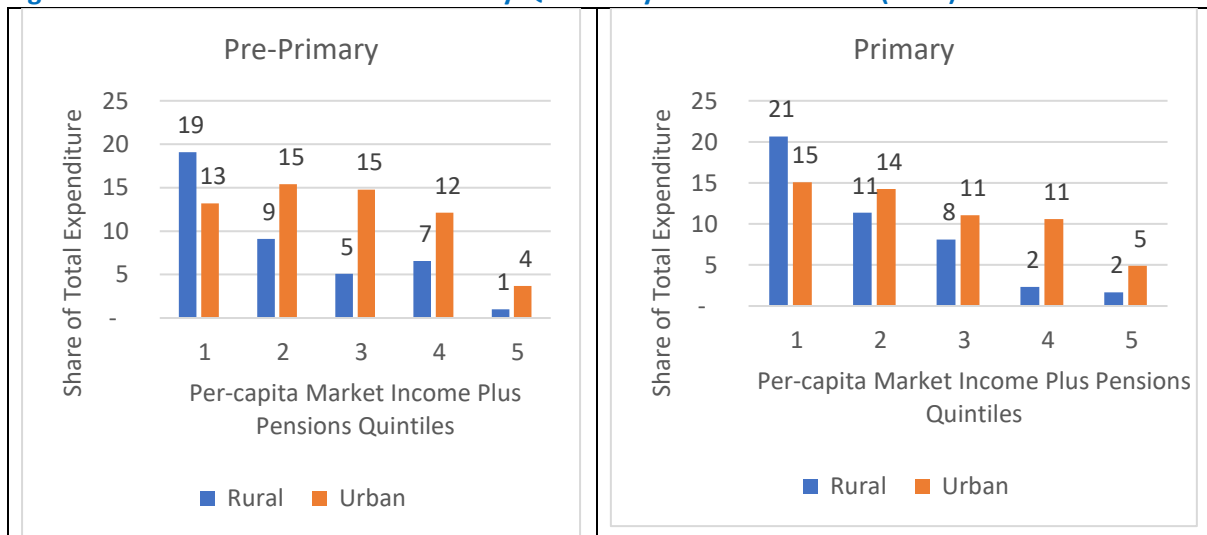
Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

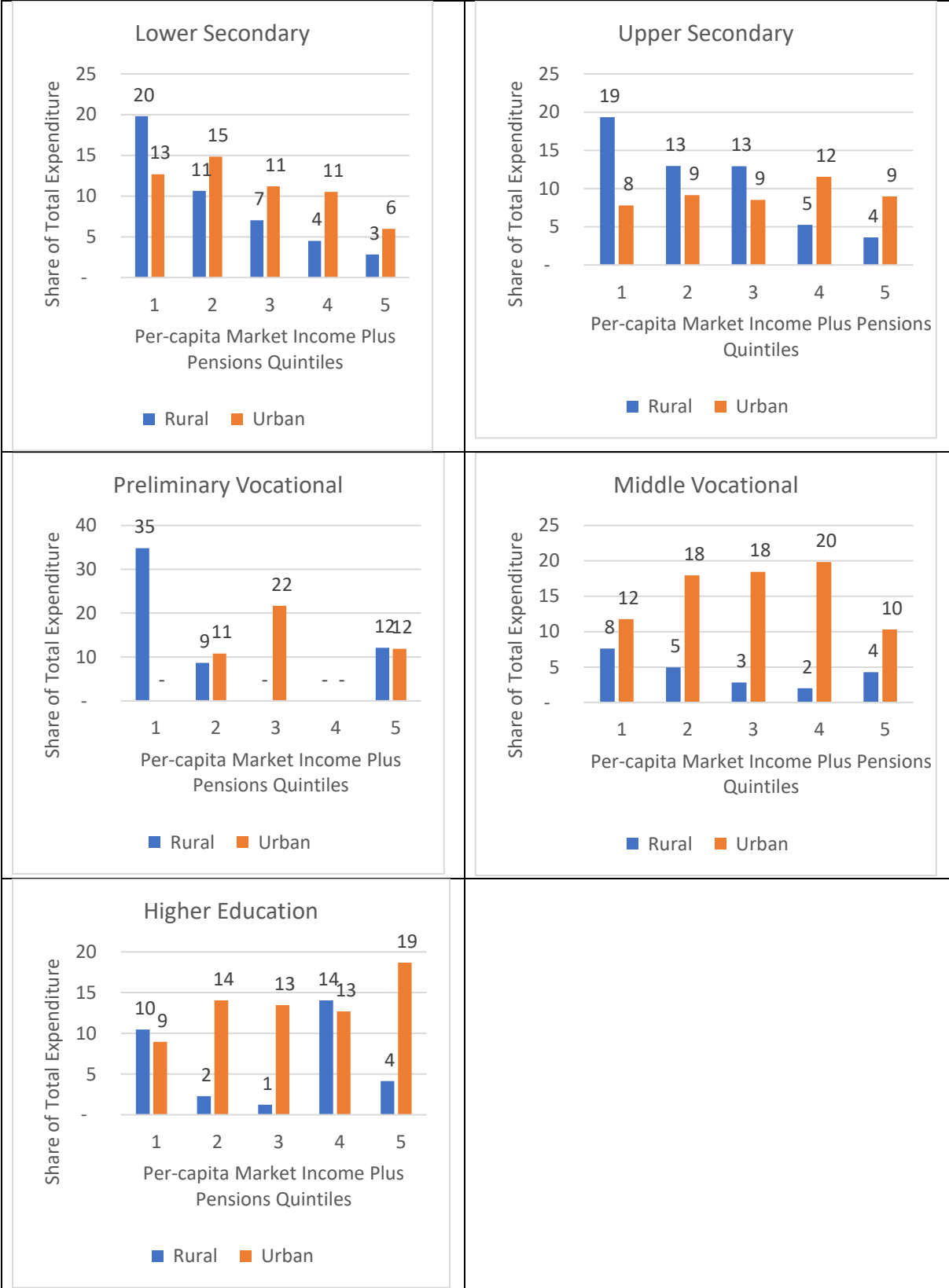
Figure 2A.9. Kakwani Coefficients Showing Progressivity of Education Benefits (2021)



Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

Figure 2A.10. Rural and Urban Benefits by Quintile by Educational Level (2021)





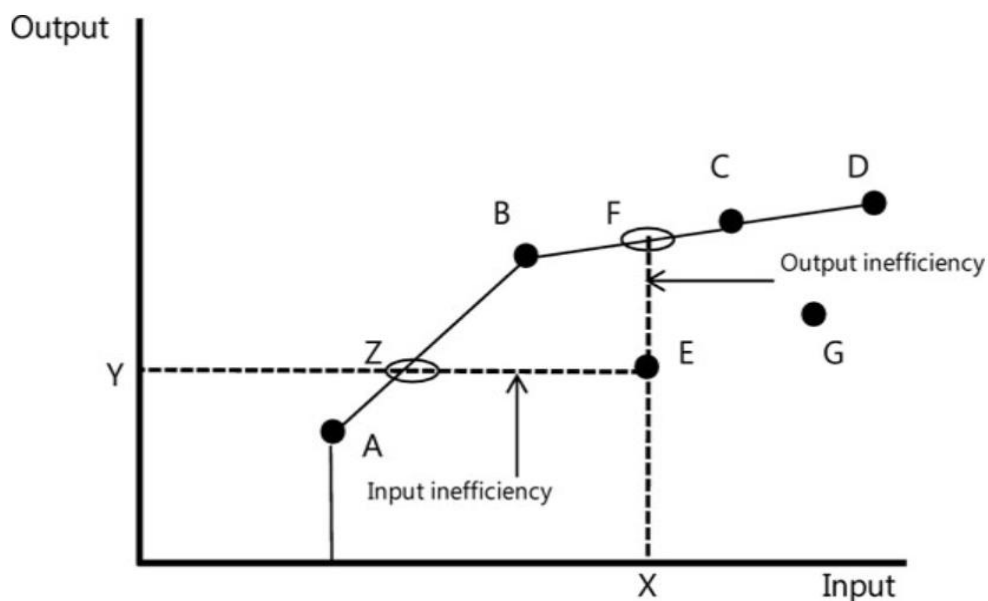
Source: World Bank's estimates based on ILCS 2021 and fiscal administrative data.

Data Envelope Analysis Methodology

Relative efficiency is assessed using a cross-country (or cross-education institution) approach that measures the effectiveness of spending in producing outcomes. The relative efficiency of spending inputs and outcomes in each country (education institution) is assessed using the Data Envelope Analysis (DEA) technique developed by Farrell (1957) and recently used by academics and international organizations to estimate efficiency of public expenditures in several sectors.¹⁵⁸ Based on the assumption of a convex production possibilities set, an efficiency frontier is constructed as the linear combination of efficient input and output combinations in the cross-country sample.

The figure below illustrates an efficiency frontier that connects points A to D as these countries dominate other input-output pairs, such as countries E and G in the interior. The convexity assumption allows an inefficient input-output pair, such as point E to be assessed relative to a hypothetical position on the efficiency frontier, such as point Z by taking a linear combination of efficient country pairs, such as points A and B. In this manner, an input-based efficiency score that is bound between zero and one can be calculated as the ratio of YZ to YE. The score corresponds to the proportional reduction in spending consistent with relatively efficient production of a given outcome. Similarly, an output-based efficiency score for point E can be calculated as the ratio of XF to XE, consistent with the proportional increase in the outcome indicator given current spending if production is relatively efficient. This would correspond to the hypothetical point F that is calculated as a linear combination of the actual countries B and C.

Diagram of Data Envelope Analysis with a Single Input and Output



Source: IFM, 2015; Avitabile and Vasquez; World Bank, 2017.

¹⁵⁸ OECD, 2015; Dutu and Patrizio Sicari, 2016.

Annex 2C. Indices for Teacher and Principal Inputs

Quality of teaching classroom practices: Questions to capture teachers' classroom practices focus on whether teachers report giving emphasis to a range of approaches and processes the curriculum for their respective grades and subjects – knowing basic facts and principles, providing explanations of what is being learned, designing, planning, and conducting investigations or projects, doing exercises and problems, and integrating the subject with other subjects. It also captures whether teacher report frequent use of the following methods for assessing student learning – develop and administer assessments (own or national test), have individual students answer questions in front of the class, provide written feedback on student work in addition to a grade, let students judge their own progress, observe students when working on particular tasks and provide immediate feedback, collect data from classroom assignments or homework.

Quality of management practices: The dimensions measured include operations management, target setting, performance monitoring, and people management.¹⁵⁹ Questions to capture performance monitoring and target setting include whether student assessments are used to inform parents about their child's progress, to make decisions about students' retention or promotion, to compare the school to regional/national performance, to monitor school's yearly progress, to make judgements about teacher effectiveness, to identify aspects of instruction or curriculum that could be improved or to compare school with other schools and if achievement data is posted publicly and tracked over time by an authority. Questions related to operations management and people management include how do appraisals and/or feedback to teachers are related to changes in salary, bonuses or monetary rewards, opportunities for professional development, career advancement opportunities or public recognition, changes in responsibilities, and the frequency of school principals engaging with teachers to help build a school culture of continuous improvement, asking teachers to participate in reviewing management practices, solving classroom problems with teachers, discussing the school's academic goals with teachers at faculty meetings, referring to the school's academic goals when making curricular decisions with teachers, setting aside time at faculty meetings for teachers to share ideas or information from in-service activities, conducting informal observations in classrooms on a regular basis, among others.

Satisfaction with the teaching profession: Questions to capture teachers' satisfaction with their profession include whether they perceive more advantages than disadvantages of being a teacher and if they regret having become a teacher or if they would choose becoming a teacher again. Questions to capture their satisfaction with their current job focus on whether they enjoy their work at the school, if they would recommend their school as a good place to work, if they are satisfied with their performance at the school and if they are satisfied with their current job.

Principal-teacher work relationship: Questions to capture the quality of the relationship between principals and teachers were asked to school principals only and include whether they feel supported by teachers, valued by teachers at the school, have a good relationship with teachers, are treated with cordiality and respect by teachers and their decisions are respected by teachers even when in disagreement.

Teacher and principal capacity to implement curriculum: Questions to capture obstacles to their own implementation of the new curriculum include lack of or inadequate/poorly qualified teaching staff, lack of or inadequate or poor-quality educational material, a lack of or inadequate or poor-quality physical infrastructure.

¹⁵⁹ This follows the school management literature in the construction of this index (Bloom et al., 2015), borrowing questions from the school survey in PISA 2012 as done by Leaver, Lemos, and Scur, 2020.

Annex 2D. Current and Ongoing Reforms in the Education Sector

This section presents the specific activities envisioned in the government program 2021–2026 by the level of education.¹⁶⁰

Pre-primary education: Ensuring the quality outcomes of general education also hinges on a robust early childhood development system and widespread access to pre-primary institutions services. To achieve this, the plan is to:

1. Build, renovate, or overhaul at least 500 kindergartens and pre-primary institutions by 2026, fully equipping them.
2. Increase the enrollment of 3- to 5-year-old children in pre-primary institutions to at least 85 percent by 2026.
3. Transition to universal inclusion in all pre-primary institutions by 2024, mirroring the model in general education.
4. Introduce an interconnected mechanism for teacher-caretaker career advancement, continuous professional development, and remuneration, following the general education model.

General education: To address the prevailing challenges within the general education sector, a comprehensive and impactful transformation is imperative. The foundational element of this transformation is the complete adoption of new general education standards across all grades and schools throughout the republic by 2026. This entails ensuring a contemporary and suitable school infrastructure, fostering an inclusive and progressive learning environment, delivering quality educational content, and maintaining a high-caliber teaching staff. Additionally, transparent and effective school management is pivotal.

The key objectives to achieve this overarching goal include:

1. Constructing, renovating, or overhauling a minimum of 300 schools by 2026, equipped with the necessary resources.
2. Establishing modern science and engineering laboratories in all 1,400 schools across the country by 2026 to significantly enhance the quality of education.
3. Implementing a complete overhaul of textbooks and educational materials, aligning them with new standards. This includes improving media literacy, enhancing foreign language instruction (Russian, English, regional languages, and French), and introducing a differentiated policy for teachers' professional development.
4. Instituting a differentiated policy for teacher professional development, including career advancement, and creating an interconnected mechanism for continuous development and remuneration. This aims to provide all teachers with a 30–50 percent salary increase and a

¹⁶⁰ <https://www.gov.am/files/docs/4586.pdf>

comprehensive revision of the pedagogical education system to make the teaching profession appealing, prestigious, and modern among young individuals.

5. Establishing an effective, transparent, performance- and results-based management and funding system through digitalization, reducing administrative burdens and corruption risks, and enhancing institutional management capacities.
6. Developing e-learning tools to ensure educational continuity and accessibility across all levels, especially in border areas. This initiative includes combining e-learning tool development with a secondment system for high-quality teachers.

Vocation education: The government proposes the following main directions of reforms to emphasize the role of primary (vocational) and secondary professional education in socio-economic development, and the need to replenish the labor market according to demand:

1. Modernization of educational programs, introduction of new professions, rationalization of placement of institutions and the programs implemented in them, and introduction of a new methodology for the distribution of admission places. This should align with the 56 priority directions of socio-economic development of the Republic of Armenia, the characteristics of the development of regions, as well as the demand of the labor market.
2. Introduction and expansion of work-based and dual training through active involvement of the private sector and the business community in at least two educational institutions per year. This will contribute to the preparation of a qualified workforce in accordance with the requirements of the labor market.
3. Testing and introduction of new management models of institutions based on public-private cooperation and increasing the efficiency of the system.
4. Professional development and certification of educators, introduction of systems, and connecting them with payment mechanisms.
5. Improving the building conditions of educational institutions in order to increase the attractiveness, accessibility, and inclusiveness of primary vocational and secondary vocational education, educational production provision (with laboratories) (at least one institution on an annual basis).

Higher education: The development of the higher education sector will be closely linked to the development strategy and priorities of the state. Creating an inclusive, student-centered educational environment, increasing the efficiency and effectiveness of higher education, developing an e-management system and e-learning tools, modernizing the content of education, developing teachers' abilities and infrastructure, as well as strengthening the education-science-labor market connection will be key. Reforms in the field of higher education will be aimed at:

1. Creating an institutional basis for effective management, accountability, and balanced transparency mechanisms, continuous improvement of the quality of higher education, continuous growth of higher education.

2. Revision of the content and structure of educational programs in the research component until 2025, aiming at the end results of studies, qualifications in accordance with the requirements, and the internationalization of the national framework.
3. Expansion of mobility opportunities.
4. Implementation of the directions and principles of the European higher education area.
5. Gradual increase of funding for higher education, the expansion of funding volumes, along with the revision of the principles of financial resources provided to educational institutions until 2024. This includes addressability, purposefulness of financial support, defining key indicators of the effectiveness of the educational institution, and introducing funding mechanisms dependent on the results.
6. Promoting the expansion of higher education inclusiveness along with the transition to universal inclusive education.
7. Developing and implementing a new learning and teaching methodology using modern information and communication technologies in the educational process.
8. Revising the principles and mechanisms of admission to higher educational institutions.
9. Meeting the new demands of the labor market by introducing master's programs in the languages of the respective regions, including the relevant educational programs in the list of educational programs of the professions.
10. Creating effective cooperation between schools, universities, and the private sector, raising awareness of the demand and applicability of current and future professions that are in demand, but little spread among parents, through a necessary review to provide an attractive physical, virtual, and social infrastructure environment in the higher education sector. This aims to enhance engagement among teachers, students, and the community.
11. In this sense, the idea of establishing an academic city is of strategic importance for the development of the quality of higher education in natural sciences. This can be achieved by bringing it to an internationally competitive level through state support and institutional investments.