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ARMENIA INCLUSIVE GROWTH DIAGNOSTIC

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USAID Inclusive Growth Diagnostic Team – Armenia

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LIST OF ABBREVIATIONS

ACCI	Armenian Chamber of Commerce and Industry
ADB	Asian Development Bank
ALB	Albania
ARM	Armenia
BIH	Bosnia and Herzegovina
CBA	Central Bank of Armenia
CIT	Corporate Income Tax
EAEU	Eurasian Economic Union
EIF	Enterprise Incubator Foundation
EU	European Union
FDI	Foreign direct investment
FEZ	Free Economic Zone
GCI	Global Competitiveness Index
GCF	Gross Capital Formation
GDP	Gross Domestic Product
GEO	Georgia
GFC	Global Financial Crisis
GSP	Generalized System of Preferences
GW	Gigawatts
GNI	Gross national income
HRV	Hausmann, Rodrik, and Velasco
ICT	Information and Communication Technology
IEA	International Energy Agency
IGD	Inclusive Growth Diagnostic
ILO	International Labor Organization
ITU	International Telecommunications Union
IMF	International Monetary Fund
LFPR	Labor Force Participation Rate
LPI	Logistics Performance Index
MDA	Moldova
MIC	Middle-Income Countries
MKD	North Macedonia
NEER	Nominal Effective Exchange Rate
NPL	Non-Performing Loan
ODA	Official Development Assistance
OEC	Observatory of Economic Complexity
OECD	Organization for Economic Cooperation and Development
REER	Real Effective Exchange Rate
SAIDI	System Average Interruption Duration Index
SAIFI	System Average Interruption Frequency Index
SBA	Stand-by Arrangement
SCD	Systemic Country Diagnostic
SME	Small and Medium Enterprises
SRB	Serbia
STEP	Skills Towards Employment and Productivity
TVET	Technical and Vocational Education and Training
UNCTAD	United Nations Conference on Trade and Development
UNESCO	United Nations Educational, Scientific, and Cultural Organization
USAID	United States Agency for International Development
USD	United States dollar
VAT	Value-added tax
WB	World Bank
WDI	World Development Indicators
WEF	World Economic Forum
WGI	World Governance Indicators
WITS	World Integrated Trade Solution
WTO	World Trade Organization

EXECUTIVE SUMMARY

Background

Since its independence in 1991, Armenia has followed an impressive growth trajectory. Following a period in the early 1990s of difficult economic transition, political upheaval, and conflict with Azerbaijan over Nagorno-Karabakh, the 25 years since have been largely stable both economically and politically despite the structural challenges of transitioning from a communist economy to a modern free market system. The difficulty of this transition was exacerbated by the profound changes that followed the global financial crisis; it sharply reduced investment and construction and fundamentally reset the growth path of the Armenian economy. Additionally, Armenia has troubled relationships with two out of four of its neighbors (i.e. Turkey and Azerbaijan) and limited trade relationships with Iran to the South, leaving only robust trade and economic relations with its neighbor to the north, Georgia. Regardless, Armenia has achieved enviable growth with of one of the highest rates of per capita gross domestic product (GDP) growth of any country in the world over the past two decades, and it recently moved from lower-middle income status to upper-middle income status. Though it lacks sea access and has a small population and geographic area, it has nonetheless found the means to grow, with significant remittance inflows, mineral resources, and a legacy of strong technology-focused human capital from the Soviet period.

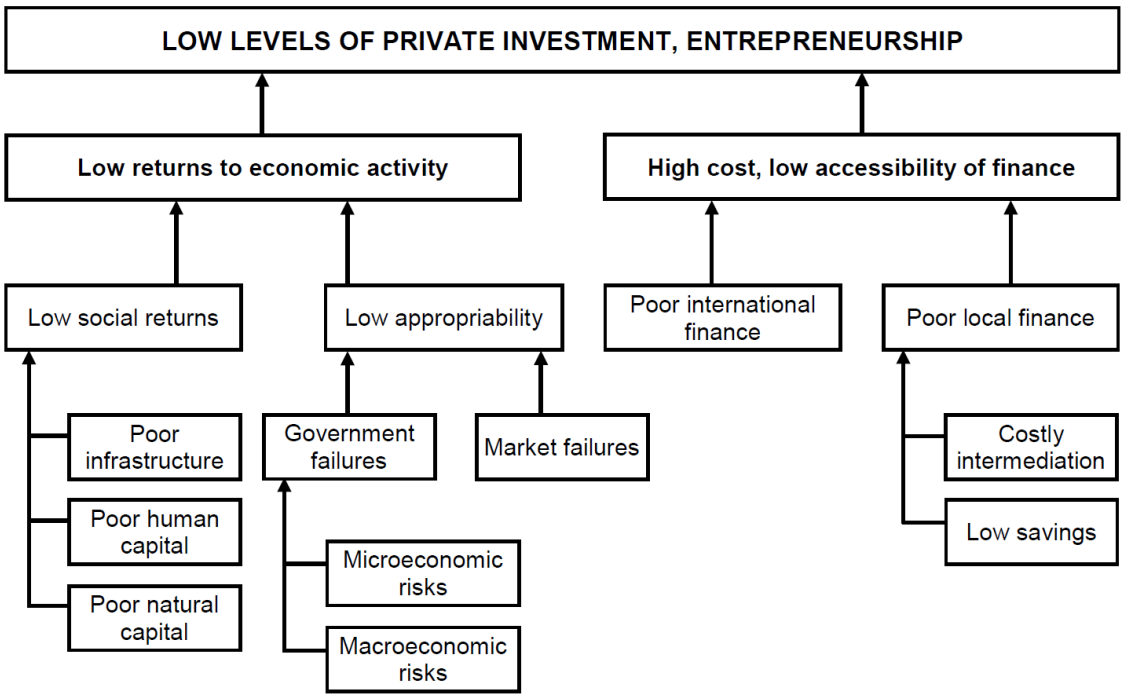
Given the country's relative success and commitment to further reforms, finding a solid prohibitive constraint to growth is challenging. However, the most dominant problems can still be identified. Armenia's geographic and geopolitical situation informs its binding constraints to accelerated economic growth: infrastructure challenges and microeconomic risks that result in high trade costs and delays for exporters, limiting exports to the rest of the world. Additionally, financing in Armenia has been relatively expensive, and represents a secondary constraint, though improvements have been seen in recent years.

The recent revolution has led to cautious optimism about Armenia's private-sector growth prospects. Further development of a robust and dynamic private sector will be necessary for the country to accelerate its economic growth potential and stated economic objectives. USAID can assist the government in its journey to self-reliance, and the Agency's new private sector engagement policy provides an opportunity to work with partners in new and innovative ways. The findings from this Inclusive Growth Diagnostic (IGD) will assist the Mission as it plans future strategies and programs that are consistent with private sector-oriented growth and a focus on the principles of self-reliance.

Methodology

The foundational assumption of the IGD methodology is that private sector investment and entrepreneurship are critical for sustained and inclusive economic growth. Furthermore, to support that investment, the private sector needs: (1) access to finance at a reasonable cost and (2) an expectation that they will receive a reasonable return on their investment, both of which are further unpacked and examined in the form of a diagnostic tree (Figure 0.1). Using this tree, the IGD runs a series of data driven tests (see Chapter 1) to arrive at evidence-based conclusions regarding the bottlenecks to growth.

Figure 0.1. Inclusive Growth Diagnostic Framework ('Tree')



Source: Hausmann, Rodrik, and Velasco, 2005.

Limitations of the Report

The IGD methodology utilizes existing data to examine where binding constraints to growth currently exist. As such, it is not intended to assess alternative possibilities that may exist in the future but do not exist today. Therefore, while the findings in this report point to valid and critical problems that currently exist in Armenian economy, these findings may not hold if major economic and political shocks occur in the future, such as another political revolution or major financial crisis. Furthermore, the IGD methodology does not prioritize results based on political feasibility or objectives other than private sector economic growth and makes no recommendations on whether or to what extent such other factors should be considered in formulating final programming decisions.

Findings

The analysis identifies both primary and secondary bottlenecks to growth heretofore referred to as *binding constraints* and *secondary constraints*. More specifically, a constraint represents a factor that is keeping the economy from growing. Although it can be tempting to think of all problems in the economy as binding constraints, the IGD methodology takes as its starting assumption that constraints are binding to varying degrees. In other words, while a number of issues may be relevant for economic growth, it is still possible to rank order these according to "Which one, if relaxed, will deliver the biggest bang for the effort."[1] The purpose of the IGD methodology, therefore, is to use rigorous analysis and a strict methodological framework to help identify the most important (or binding) constraints to a country's growth.

Binding Constraints

The results of this IGD show that the binding constraints to accelerated private sector led economic growth in Armenia relate to transport infrastructure and microeconomic risks, causing excessively **high trade costs and delays for exporters**. These costs are driven upwards by inadequate transport infrastructure that must grapple with Armenia's challenging terrain and are exacerbated by microeconomic risks related to trade and customs regulation. As a result, the competitiveness of Armenian exports on the global market is reduced. With its small domestic market, Armenia needs cheap and easy access to larger markets to make the country a more enticing location for productivity-enhancing investment.[2] The Armenian nexus of investment, productivity, exports, and growth is not at its potential—instead, the economy is limited by high trade costs that disincentivize productivity-enhancing private sector investment.

<u>Infrastructure</u>

Armenia's terrain and geopolitical situation presents challenges for the efficient movement of goods and services and creates high transportation costs, particularly for firms reliant on imported inputs or exported commodities. Armenia is not only landlocked but also has closed borders with two of its four neighbors (Turkey and Azerbaijan) and limited trade with Iran due to recently re-imposed economic sanctions, as well as unpredictable variations in the time to initiate transit and comply with formalities, truck availability, and restricted traceability in Iran. Therefore, trade is especially dependent on transit routes through Georgia, which imposes high transit costs, and where trade often experiences higher costs due to delays and unpredictability at Poti and Batumi ports or the Upper Lars customs point on the Georgia-Russia border.

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[1] *Doing Growth Diagnostics in Practice: A 'Mind Book,'* Ricardo Hausmann, Bailey Klinger, Rodrigo Wagner, CID Working Paper No. 177, September 2008.

[2] The country's accession to the EAEU has not yet fully delivered on the promise of access to the large Russian market, due to the EAEU's significant regulatory compliance burden, geopolitical tensions, and road infrastructure weaknesses between Georgia and the Russian Federation. Additionally, while the EAEU should make it easier for trade to cross borders among member states, burdensome Armenian export requirements may remain unaffected by EAEU regulations.

While this is a challenging position to start from, high-quality export-oriented transport infrastructure would lower costs to firms. In Armenia, there are clear quality concerns about the roads, particularly among exporters. Though increasing, export levels are relatively low. Further, 29.5 percent of Armenian exporters view transport as a major constraint to growth—well above the 8.2 percent of Armenian firms overall. The IGD tests indicate that infrastructure is not presently adequate for Armenian exporters, presenting a binding constraint to economic growth.

Overall, the IGD team found convincing evidence that export-oriented road infrastructure—combined with the microeconomic risks described below—are a binding constraint to growth in Armenia. There are three main pieces of evidence:

1) The cost of trade is high, with the costs per kilometer exported falling above the global trendline.
2) Investment and goods transported by road/rail had a positive and statistically significant impact on economic growth in Armenia between 1982-2010.
3) Firms less dependent on transportation infrastructure (e.g. services, ICT) are outperforming more transportation-dependent firms in Armenia. Further, a very low proportion of firms are exporters.

Microeconomic Risks

The trade infrastructure weaknesses are compounded by microeconomic risks related to trade and customs regulation, further increasing costs and delays for exporters in particular. Although Armenia is a highly open market and operates a liberal regime for trade and investment, it performs particularly poorly against comparators for its customs and trade regulation; more firms in Armenia than in any of its comparators cite customs and trade regulations as problematic. Several additional pieces of evidence underscore the challenges businesses face. Logistics performance is low and the logistics sector is highly concentrated. Most notably, trade compliance costs and delays are significant, particularly for exports. There is also some evidence that non-tariff barriers lead firms to make irregular payments for importing and exporting, though this behavior is not extraordinary behavior vis-à-vis the comparator group.

Secondary Constraint

Access to Finance

Access to finance is a secondary constraint. While not as binding relative to the confluence of infrastructure and microeconomic constraints described above, access to affordable finance remains a challenge for many market participants. The financial sector remains bank-dominated, with banks holding 85.5 percent of total assets in the financial system. Interest rates are higher than in any of the comparator countries, and gross capital formation appears to be responsive to changes in the real interest rate.

Despite these weaknesses, there are positive trends in the financial sector that demonstrate it is actively easing as a constraint to economic growth. Domestic credit to the private sector is increasing, interest rates are declining, lending portfolios are improving, and nascent capital markets are forming. Though there are inclusivity challenges for small and medium enterprises (SMEs), this is true in almost every country, and recent International Monetary Fund (IMF) analysis indicated that the SME financing landscape in Armenia is better than elsewhere in the Caucasus and Central Asia. As such, this IGD categorizes finance as a secondary constraint.

Other Notable Findings

Human Capital

Government spending on education in Armenia lags behind its peers, with the Government of Armenia spending just 2.8 percent of GDP on education, the lowest among the comparator countries. The low level of spending on education in Armenia indicates that there is significant scope for further investment in human capital. Though human capital is currently adequate for the core of the economy, it is at risk of disadvantaging dynamic sectors such as information and communications technology (ICT). While the tests conducted in this IGD do not indicate that human capital is currently a constraint to growth for Armenia, it has the potential to become one if investments in the educational and workforce training systems are not made, particularly given limited opportunities for youth to gain practical experience, a moderate female labor force participation rate, and a shrinking population.

Corruption

Endemic corruption was undoubtedly a serious issue in Armenia in prior years, which directly led to the 2018 Velvet Revolution. These protests overthrew the Republican Party of Armenia that had ruled since 1999. Nikol Pashinyan became Prime Minister on a public platform heavily predicated on anti-corruption. High-profile arrests of notorious oligarchs and other measures have led to a clear perception among stakeholders interviewed in June 2019 that corruption issues have significantly diminished following the revolution, a feeling that was shared by both domestic stakeholders and international observers of Armenia. An International Republican Institute poll done within the first 6 months of the revolution suggested that 81 percent of Armenians surveyed believe that the corruption problem has improved, compared to 15 percent who say it has remained the same and two percent who think it has deteriorated. While additional post-revolution data on corruption is limited, it is unlikely a binding constraint to business in the current environment.

Water

The water sector, while not a binding constraint to growth, suffers high and unsustainable losses, particularly with regards to irrigation. Though Armenia is generally not considered to be water short (in terms of actual resources), the water system suffers from high technical and commercial losses. This has resulted in an indebted sector that is performing well below cost-recovery and requires significant government subsidies even to cover routine operations and maintenance, as well as needed investments in the sector to increase its water efficiency. With that said, water at this point does not itself create a binding constraint to businesses, though this could change in the next decade if the changing climate puts pressure on the water resources in Armenia as expected, and the government fails to make mitigating investments.

Conclusions

This Inclusive Growth Diagnostic finds that the binding constraints to economic growth in Armenia are inadequate export-oriented transport infrastructure compounded by microeconomic risks in trade and customs regulation, resulting in high trade costs and delays for exporters. While geography and politics play a significant role in increasing costs for Armenian exporters, the evidence supporting this cross-nodal constraint indicates that this challenge has not yet been fully overcome. Export-oriented infrastructure and regulatory improvements would make access to larger markets cheaper and easier. With the obstacle of high export costs removed, the data indicate that Armenia would be a significantly more compelling investment destination for both domestic and foreign investors.

A secondary constraint is the high cost of finance. Until recently, finance may have been categorized as a more binding constraint than the market access challenges described above. Though there are numerous signs that the financial sector is improving, the cost of finance remains very high. As such, the sector merits considerable attention to avoid backsliding on recent positive developments and drive toward further improvements.

Figure 0.2. Summary of Diagnostic Tests in Armenia.

		TESTS				
		Shadow Price	Impulse-Reaction	Circumvention	Camels & Hippos	IMPLICATIONS
BINDING CONSTRAINTS	**Infrastructure**					Prioritize improvement of export-oriented infrastructure, particularly roads.
	Microeconomic Risks					Streamline trade and customs regulation and enforcement to reduce compliance time and costs for exporters.
SECONDARY CONSTRAINT	**Finance**					The financial sector bears considerable attention to avoid backsliding on recent positive developments. SMEs have greater challenges accessing finance.
NOT YET BINDING	**Macroeconomic**					
	Human Capital					
	Market Failures					
	Natural Capital					

Key	
	Test suggests constraint is significant.
	Test suggests constraint is not significant.
	Unable to conduct test, or test was inconclusive.

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--- PO, KS, JS, FW

1 OVERVIEW AND SYNDROME

1.1 Overview[3]

1.1.1 Purpose and Motivation

The purpose of Armenia Inclusive Growth Diagnostic is to diagnose the most binding constraints to economic growth. The goal of this report is to inform the programming and decision-making for the USAID Armenia Mission.

1.1.2 Methodology

The growth diagnostic methodology was first described by Ricardo Hausmann, Dani Rodrik, and Andres Velasco (HRV) in 2005.[4] Hausmann, Bailey Klinger, and Rodrigo Wagner wrote the 'Mindbook' operationalizing the HRV methodology in 2008.[5]

> "The foundational assumption of this methodology is that private sector investment and entrepreneurship are necessary for sustained economic growth. From this assumption, the methodology proposes two possible explanations for low levels of private investment and entrepreneurship: the expected private returns to investments are too low, or the cost of financing is too high. Under the first explanation, there is sufficient supply of financing for private sector investment to flourish but the demand for financing is too low because there are no profitable investments available to entrepreneurs. This can result from low social (economic) returns or low appropriability, which refers to the expectation that any profit from an investment will be 'appropriated' away for some reason. Under the second explanation, the cost of financing can be traced to either international financial markets or domestic financial markets."

The authors of the methodology created an organizing framework, seen in Figure 0.1, to illustrate their argument. The chapters in this report broadly follow the divisions of this framework, or 'tree.'

To operationalize the 'tree,' the authors offer four "principles of differential diagnosis" for identifying constraints to growth (Table 1.1).

[3] This section is adapted from the USAID inclusive growth diagnostic for the Kyrgyz Republic, 2019.
[4] Hausmann, Ricardo; Rodrik, Dani and Velasco, Andrés. "Growth Diagnostics." Harvard University, 2005.
[5] Hausmann, Ricardo; Klinger, Bailey and Wagner, Rodrigo. "Doing Growth Diagnostics in Practice: A 'Mindbook.'" Center for International Development, Harvard University, Working Paper No. 177, 2008.

Table 1.1. Principles of Differential Diagnosis

Principle	Explanation	Example
The shadow price of the constraint should be high.	The shadow price indicates whether the opportunity cost or value to a consumer is greater than the market price.	A price ceiling on gasoline creates a black market in which consumers pay a higher price.
Movements in the constraint should produce significant movements in the objective function.	When the constraint is relaxed, there is a positive market reaction (investment and entrepreneurship increase). Referred to as the impulse-response test.	Reducing tax rates results in an increase in investment when tax rates are a constraint.
Agents in the economy should be attempting to overcome or bypass the constraint.	Economic actors should be taking observable steps to circumvent the constraint. Referred to as the circumvention test.	Firms purchase generators instead of relying only on the grid when electricity is a constraint.
Agents less intensive in the constraint should be more likely to thrive, and vice versa.	Firms should flourish if they are better suited to the domestic business environment. Referred to as the "camels and hippos" test.	Firms that are less dependent on infrastructure (e.g. electricity) fare better when infrastructure is a constraint.

Source: Ricardo, Klinger, and Wagner, 2008.

No single principle or test is sufficient to declare a given constraint to be the most binding for economic growth. Instead, the methodology requires conducting multiple tests across each 'node' of the framework and aggregating these tests to make the most credible conclusion. Table 1.2 illustrates how the nodes are connected to specific sectors and conclusions.

Table 1.2. IGD Nodes, Relevant Sectors, and Relevant Implications

Node	Sectors / Issues	Negative Implications
Low Social Returns		
Infrastructure (Bad infrastructure)	Water, telecommunications, energy, roads, ports, etc.	Poor inputs to production leading to low returns on investment
Human Capital (Low Human Capital)	Education, health system, labor market, etc.	
Low Appropriability		
Government Failures		
Microeconomic Risks (Enabling Environment)	Property rights, court system, regulation, corruption, firm-level tax policy, etc.	Inability to reap an adequate return on one's investment
Macroeconomic Risks (Enabling Environment)	Monetary policy, exchange rate policy, fiscal management, inflation, etc.	High uncertainty of potential return to investment
Market Failures		
Coordination Failures	Market efficiency (e.g., availability of information on supply and demand)	Missed opportunities for maximizing profits
Information Externalities	Intellectual property rights legislation, patent laws, prevalence of R&D	Slow adaptation of technologies lowering profitable returns to investors
High Cost of Finance		
Availability of Finance (Low domestic savings and poor international finance)	Foreign Direct Investment (FDI), financial institution access, financial market depth	Lack of access to finance
Cost of Finance (Poor local Finance)	Financial market regulations, overhead costs, investment risk, collateral policies	Finance is available but too expensive to ensure a profitable return to investment

Source: Modified from South Sudan Growth Diagnostic Scoping Mission. USAID, 2013.

Comparator Selection

To apply the principles of differential diagnosis, we must benchmark the country of interest against other comparable countries, or "comparators." Following the USAID guidelines for conducting an

IGD, the IGD team employed a variety of criteria for selecting comparators, including the indicators in Table 1.3, among others, as well as historical, political, and geographic considerations. Specifically, additional considerations for comparator selection included Armenia's geographic features, particularly the fact that it is a small, landlocked, mountainous country, and the important historical considerations that arise as a former republic of the Soviet Union. Based on these criteria, we selected the following comparator countries: Albania, Georgia, Bosnia and Herzegovina, Moldova, North Macedonia, and Serbia. A middle-income country average was included where possible to provide a more general benchmark. Occasionally, special comparator selections are used to run certain tests; these are described in sources or footnotes as needed.

Table 1.3. Selected Criteria for Comparators, 2017

	GDP per capita (current US$)	Population, total	Total natural resources rents (% GDP)	Age dependency ratio (% of working-age population)
Albania	4,538	2,873,457	1.7	44.06
Armenia	**3,937**	**2,930,450**	**5.8**	**45.43**
Bosnia and Herzegovina	5,148	3,507,017	1.3	44.30
Georgia	4,045	3,728,004	1.1	51.62
Middle income	5,183	--	3.7	50.73
Moldova	2,290	3,549,196	0.3	36.25
North Macedonia	5,415	2,083,160	1.9	42.76
Serbia	5,901	7,020,858	1.3	51.10

Source: World Bank (WB) World Development Indicators.

While the IGD methodology remains an objective and quantitative exercise, it also relies on qualitative information from stakeholder interviews to provide deeper context and a nuanced understanding of the data. Key stakeholder interviews also provide anecdotes and sentiments on very recent current events in Armenia, which is particularly helpful as most quantitative data is usually at least one or two years old. For example, these interviews provided context to understand perceived changes since the "Velvet Revolution" in 2018. The IGD team traveled to Armenia in June 2019 to hold over 40 key stakeholder interviews in Yerevan, Abovyan, Dilijan, Byureghavan, and the Ararat Valley. Interviews were conducted with most Armenian planning and line ministries, private sector representatives from numerous sectors, trade bodies, international organizations, academia, and non-profits.

1.1.3 Scope and Limitations of the Analysis

While the IGD methodology can lead to significant and valuable insights that inform better decision-making, we want to make its limitations clear. Most importantly, this report will not prescribe specific interventions in response to our diagnosis of the most binding constraints to growth. In the same way that diagnosis and treatment of a disease are separate medical functions, we leave the ultimate 'treatment' of the binding constraints to others and hope that our analysis informs their decisions.

This limitation has three important implications. First, our analysis does not account formally for current reforms or initiatives that may impact economic growth. This stems from our reliance on data, which has not yet been collected on events still in motion. Second, our analysis does not attempt to incorporate political economy considerations. That is, it identifies key constraints to growth in Armenia without assessing the political or practical feasibility of reform efforts targeting these constraints. Third, our analysis does not account for the cost-effectiveness of interventions. Beyond the potential political constraints to intervention, there may also be financial or economic constraints that limit the feasibility of action.

Further research, such as a political economy analysis of reform options for Armenia, or cost-benefit analysis at the project level, would provide a more comprehensive understanding of the types of interventions that would be both feasible and impactful.

1.1.4 Challenges

Data availability

Data availability is generally good for Armenia, and government ministries and the National Statistical Committee of Armenia provide a wide variety of data sources on key topics related to the IGD methodology. Most major international indicators provided by the World Bank, IMF, and other organizations were available for Armenia and the comparators, which increased the robustness of the analysis and the number of tests that could be run. However, there were several areas of concern in data availability, particularly related to access to current data. One major area of data concern is that the most recent World Bank *Enterprise Survey* dates from 2013, and a more recent survey would have given a better sense of the key challenges that businesses in Armenia currently face (the next survey is scheduled for release in winter 2019/2020). That being said, interviews conducted for this IGD uncovered issues that largely aligned with the challenges cited in the 2013 survey, with the notable exception of corruption. Finally, more data disaggregation by youth and gender would have enhanced the inclusivity aspects of the analysis.

1.2 Syndrome: The Geographically and Geopolitically Bound State

The HRV growth diagnostic methodology recommends that the team identify a 'syndrome' that links the identified 'symptoms,' or constraints to growth. The syndrome in Armenia is the poor geopolitical hand it has been dealt: challenging geography paired with unresolved geopolitical

disputes with neighboring countries. Armenia's limited and mountainous terrain is surrounded on three sides by huge neighbors, each presenting serious political issues for economic engagement: Iran, Turkey, and Azerbaijan. To the north lies Georgia and Armenia's land connection to Russia.

Armenia's trade position is greatly constrained by unresolved geopolitical conflicts with neighboring states. The borders with Turkey and Azerbaijan are effectively closed, and trade with Iran is complicated by sanctions that the international community has imposed on the Iranian government. The border complications force almost all goods to travel through neighboring Georgia to the north. To further complicate matters, trade to Armenia's largest partner, Russia, requires transport through the Georgian-Russian border, which is notorious for long delays and is often closed for long periods in the winter. As such, the complicated and oftentimes tense Georgian-Russian political relationship has a direct effect on Armenian trade. Exports to the rest of the world must go through the relatively small, expensive, and weather-challenged Poti and Batumi ports on Georgia's Black Sea coast.

These geopolitical challenges are the underlying characteristic of the economy that connects all of the constraints identified in this IGD. It is not the constraint itself but rather the source of the constraint. This syndrome is no surprise to observers of the Armenian economy. However, it is not necessarily obvious how these challenges specifically impact private sector investment and entrepreneurship. In other words, it is not obvious how these geopolitical challenges impact firm-level decision making. The benefit of the IGD methodology is that it provides a rigorous framework to evaluate the precise mechanism by which the underlying syndrome affects private sector business and investment decisions.

From Syndrome to Constraint

The syndrome manifests itself in the form of economic constraints in every branch of the IGD diagnostic tree. In Armenia, geopolitical issues have forced Armenia into a disadvantageous exporting position with one lifeline: Georgia. Export costs are high and domestic infrastructure must grapple with difficult mountain passes heading north. High-quality transport infrastructure is expensive to develop due to the country's challenging geography but is at the same time essential for the very same reason. Infrastructure limitations along Armenia's most common trading routes add expenses with very few alternatives due to its geopolitical posture. These infrastructure deficiencies are compounded by microeconomic risks associated with trade and customs regulation. In finance, the high risks associated with investing in a small country with such tenuous and costly links to larger markets increases the risk to banks, so banks increase interest rates to compensate for that risk. Human capital, while adequate overall, suffers from a shortage of the skills necessary to further develop high-tech services export industries that can bypass transport and customs constraints. In this landlocked country with Georgia as the only route out, the high cost of trade holds back investment in the economy and opportunities for further growth.

The remaining chapters of this IGD provide a detailed assessment of each of the nodes on the diagnostic tree to determine what is and is not a binding constraint to private sector economic growth.

2 RECENT GROWTH EXPERIENCE

2.1 Introduction

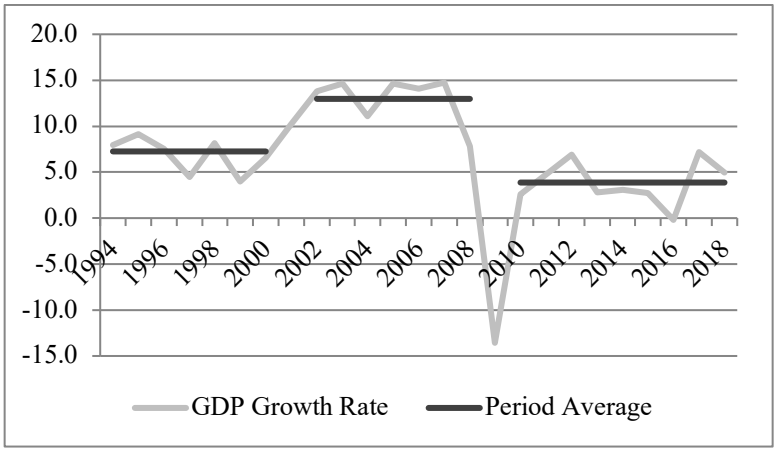
This chapter provides a brief overview of the recent economic history of Armenia with a particular focus on the past 20 years. It describes recent patterns of growth and the changes in key economic variables related to investment, capital flows, trade, labor, and poverty. This chapter describes the effect of the global financial crisis (GFC) on Armenia's economic trajectory and the slower growth and investment levels that have emerged since that time. The information provided in this chapter provides context for the reader and lays the foundation for the discussion that appears in the subsequent chapters of the report.

2.2 Economic Growth Since Independence

Armenia has gone through an impressive economic growth trajectory since declaring independence from the Soviet Union in 1991. The early 1990s were a period of difficult economic transition and political upheaval, and conflict with Azerbaijan over Nagorno-Karabakh continued until a peace agreement was brokered in 1994. The 25 years since the end of military conflict have been largely stable both economically and politically despite the difficult structural challenges of transitioning from a Communist economy to a modern free market system.

Armenia's post-Soviet economic growth path has gone through three main periods (Figure 2.1). In the first period, between 1994 and 2001, per-capita economic growth averaged 7.2 percent before jumping to an average of 13.0 percent between 2002 and 2008. The high growth during this second growth period was fueled by a large increase in domestic and foreign investment, particularly for new construction. The economy then suffered a massive negative shock from the global financial crisis, and GDP collapsed by 13.6 percent in 2009. Although the economy quickly rebounded into positive territory the following year, growth in the nine years following the crisis has averaged just 3.9 percent per year, far below previous levels. However, growth rates near 4 percent are healthy for a middle-income country, and the World Bank projects growth to stabilize near 5 percent in the medium term, which meets the stated goal of the Armenian government.

Figure 2.1. GDP Per Capita Annual Growth (%)



Source: WB *World Development Indicators*.

The profound changes that followed the global financial crisis cannot be understated; it has fundamentally reset the growth path of the Armenian economy. As the World Bank describes, Armenia has reached a new "low growth-low investment nexus".[6] The new nexus has become apparent in many economic variables beyond just patterns of growth and investment. As described in the sections below, overall investment levels have dropped from their peak. Foreign direct investment has plummeted. Unemployment rates have risen and remained stubbornly high. The rate of poverty reduction has slowed, and income inequality has begun to rise. All these changes have taken place since the 2008-2009 financial crisis and suggest that a new growth model is needed should Armenia seek to accelerate economic growth beyond current levels.

2.3 Growth Decomposition

Growth decomposition is a method of analysis that divides GDP into sub-components and provides insight into how an economy changes over time. Under the expenditure methodology for GDP calculation, GDP is measured as the sum of four parts: household consumption, government consumption, gross capital formation (investment), and the external balance (exports minus imports). Over the past 20 years, government consumption has been steady at about 12 percent, and the external balance has been consistently negative as imports have exceeded exports every year. The external balance has varied between -29 percent and -10 percent of GDP, with an overall improvement since 2009.

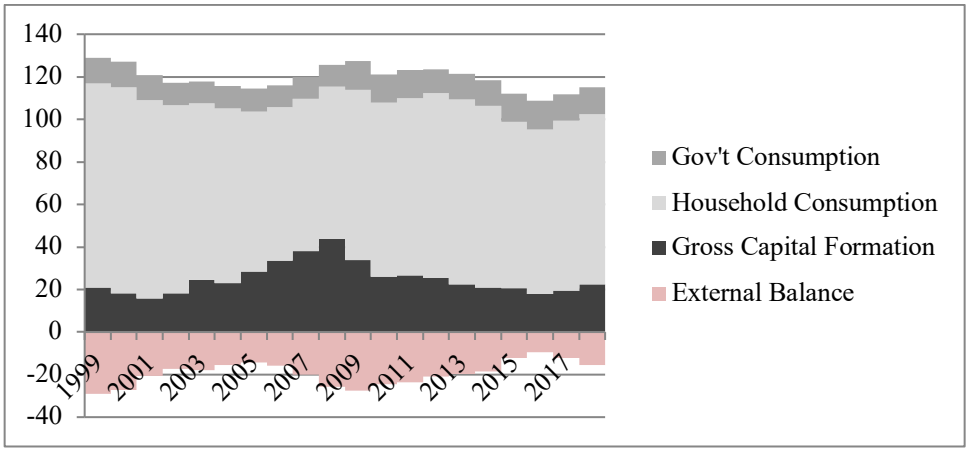
The impact of the global financial crisis is apparent in the rapid decline in gross capital formation (GCF)[7] in 2009 and 2010, shown in the green shaded area in Figure 2.2. GCF fell from its peak of 43.8 percent of GDP in 2008 to 33.8 percent in 2009 and 26.0 percent in 2010. In absolute dollar terms, GCF declined by 39 percent in inflation-adjusted value between 2008 and 2009, from $4.0

[6] World Bank Systematic Country Diagnostic, 2017

[7] Gross capital formation is defined as the sum of (1) expenditures on new or improved physical assets such as machinery, factories, roads, and buildings, and (2) changes in inventory levels.

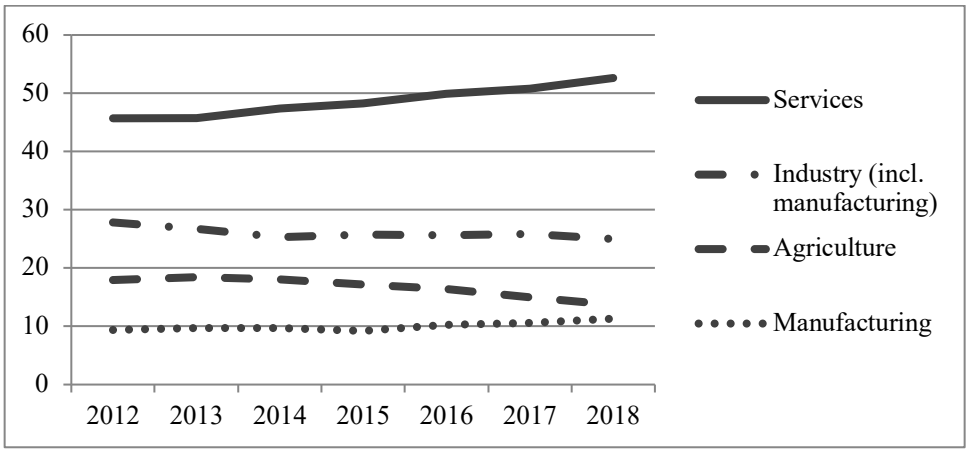
billion to $2.5 billion. GCF has since leveled off at around 18-20 percent in recent years and remains low relative to comparators. In fact, Armenia has the third lowest GCF among comparators at 22.4 percent of GDP, just a shade above Bosnia (21.7 percent) and Serbia (21.5 percent). Armenia has the lowest level of gross fixed capital formation[8] at 16.7 percent of GDP.

Figure 2.2. Growth Decomposition



Source: WB *World Development Indicators*.

Figure 2.3. GDP Composition by Sector



Source: WB *World Development Indicators*.

In terms of sectoral decomposition, Armenia's economy is undergoing a shift that is typical of developing countries but remains more agrarian than what is typical for a middle-income country. Services is the dominant sector of the economy and has increased steadily from 46 percent to 53 percent of GDP over the past 7 years (no data on sector composition is reported prior to 2012). Industry has declined slightly from 28 percent to 25 percent although manufacturing has seen a slight uptick during this time. The decline in agriculture's share of GDP from 18 percent to 13.7 percent is typical, although 13.7 percent is more common of a lower-middle income country

[8] Gross fixed capital formation is the subset of gross capital formation and only includes new and improved physical assets; it excludes changes to inventory levels.

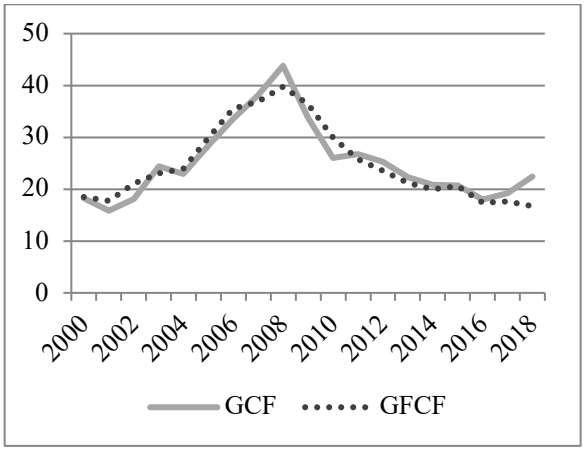
(upper-middle income countries average 5.7 percent of GDP from agriculture). The sectoral decomposition suggests that Armenia will undergo significant structural transformation in the coming years as agriculture becomes a smaller and smaller share of overall economic production relative to industry and services.

2.4 Investment

A low level of investment is one of the distinguishing features of the Armenian economy. Although the remainder of this report is dedicated to understanding the constraints to private sector investment, Armenia has gone through productive periods with high investment rates, in particular 2002-2008. Total investment, measured in gross capital formation and gross fixed capital formation, increased steadily throughout the 2000s before plummeting after the global financial crisis. Gross capital formation and gross fixed capital formation both peaked in 2009 at 44 percent and 40 percent of GDP, respectively, but today stand at 22 percent and 17 percent.

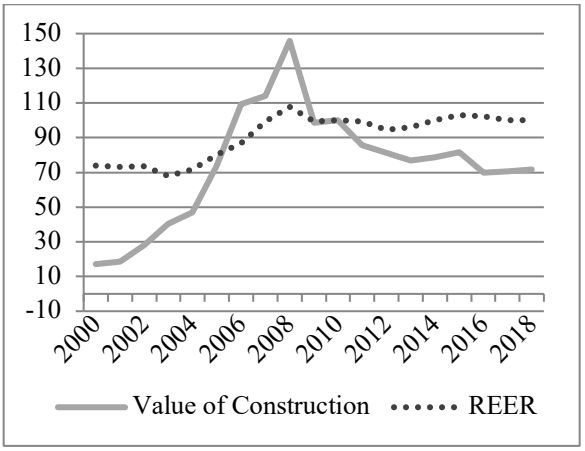
The investment and growth boom of the early and mid-2000s was fueled largely by consumption and construction and was aided by an appreciation of the real effective exchange rate (REER). The appreciation of the REER meant that domestic prices were increasing relative to foreign prices, and construction became a highly sought-after investment option. As shown in Figure 2.5, the value of construction (indexed to 2010 values) increased more than eight-fold between 2000 and 2008. But when the financial crisis hit, capital dried up and slowed new construction, and the value of construction has continued to decline in almost every year since. Figure 2.5 below shows the index of the REER and construction spending (where 100=2010 values). The REER peaked in 2008 at 108 but has stabilized somewhat, fluctuating within a range of 95-103 since the peak.

Figure 2.4. Gross Capital Formation and Gross Fixed Capital Formation (% GDP)



Source: WB *World Development Indicators*.

Figure 2.5. Index of Construction Value and the REER (2010=100)



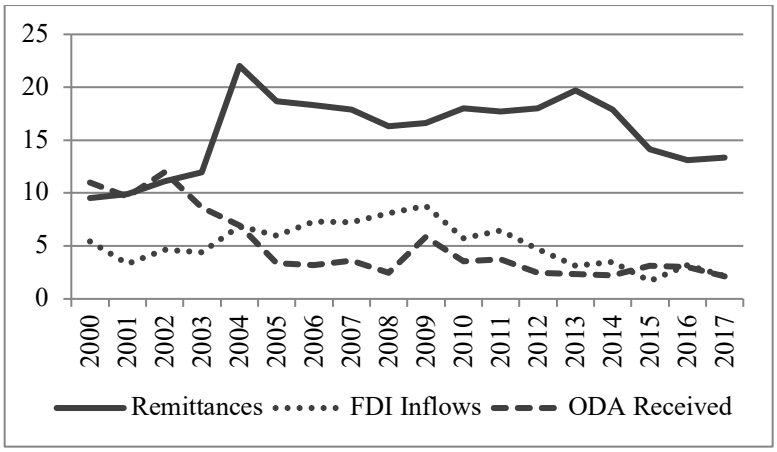
Source: Statistical Committee of the Republic of Armenia and WB *World Development Indicators*.

2.5 Capital Inflows

The flow of capital into Armenia comes from three primary sources: remittances, FDI, and official development assistance (ODA) (Figure 2.6). Armenia remains one of the largest remittance recipients in the world, mostly from Armenian migrant labor in Russia. Remittances spiked to over 20 percent of GDP in 2004 and remained near 20 percent through the next decade until the Russian recession in 2014-2016 slowed the flow of migrant earnings. Even then, remittance levels remained high by global standards. ODA fell quickly in the 2000s as Armenia's economy developed and continued to transition toward a stable market economy, and today ODA is just 2.1 percent of gross national income (GNI), down from a peak of 12 percent in 2002.

FDI, much of it directed toward the booming construction sector, increased through the 2000s to a high of 8.8 percent of GDP just prior to the financial crisis. But since that time, FDI has fallen to just one quarter of its former level and now stands at 2.0 percent of GDP. In terms of absolute value, this represents a decline of $689 million per year in investment, a substantial sum for a small economy like Armenia. Indeed, increasing FDI levels is one of the major priorities of the current government. There has been some effort to mobilize additional investment from the Armenian diaspora community, which is approximately three times larger than the current population of Armenia, but these efforts have had little success to date. The reasons for the low levels of FDI are discussed in detail throughout this report.

Figure 2.6. Capital Inflows



Source: WB *World Development Indicators*.

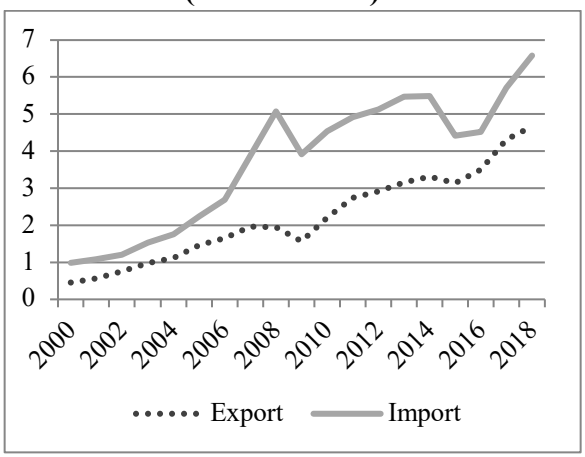
2.6 Trade

Armenia's trade position is greatly constrained by unresolved geopolitical conflicts with neighboring states. The borders with Turkey and Azerbaijan are effectively closed, and trade with Iran is complicated by sanctions that the international community has imposed on the Iranian government. The border complications force almost all goods to travel through neighboring Georgia to the north. To further complicate matters, trade to Armenia's largest partner, Russia, requires transport through the Georgian-Russian border, which is notorious for long delays and is

often closed for long periods in the winter. As such, the complicated and oftentimes tense Georgian-Russian political relationship has a direct effect on Armenian trade. The loss of trade to Turkey and Azerbaijan undoubtedly has major impact on the potential economic output of Armenia. The two countries have a combined population of 89 million people, more than 30 times greater than Armenia, and combined GDP of $890 billion, or 77 times Armenian GDP.

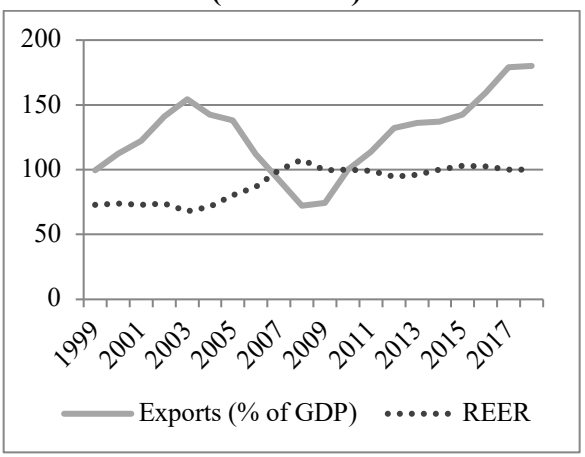
Despite its numerous geopolitical challenges, Armenia has been successful at increasing its trade volume and narrowing the trade deficit over time. The trade deficit fell significantly over the past 10 years as the real effective exchange rate (REER) stabilized (Figure 2.8), and the trade deficit reached its lowest level in 2016 with imports just 29 percent higher than exports. Total exports (in constant 2010 dollars) have risen 185 percent, or nearly tripled, since 2009.

Figure 2.7. Export and Import of Goods and Services (current USD)



Source: WB *World Development Indicators*.

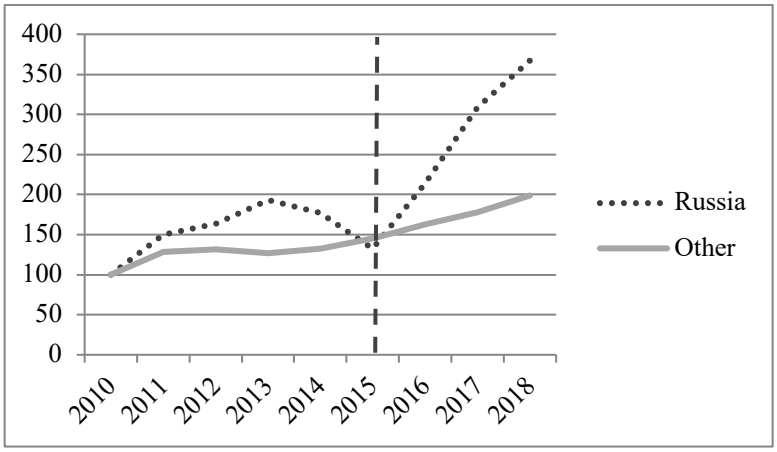
Figure 2.8. Index of Exports (% GDP) and the REER (2010=100)



Source: WB *World Development Indicators*.

The accession of Armenia into the Eurasian Economic Union (EAEU) in 2015 was a major development in international trade, particularly vis-à-vis Russia. Although it is too early to make a definitive assessment of the benefits and costs of the EAEU, trade data shows a significant increase in goods exports to Russia since accession, and as shown in Figure 2.9, the rate of increase in trade to Russia has far surpassed the rate of increase in trade to the rest of the world. Goods exports to Russia are highly diversified and are not overly dependent on commodities, so the increase in trade is more likely a result of the improved trade environment and not due to dramatic fluctuations in the international prices of a few goods.

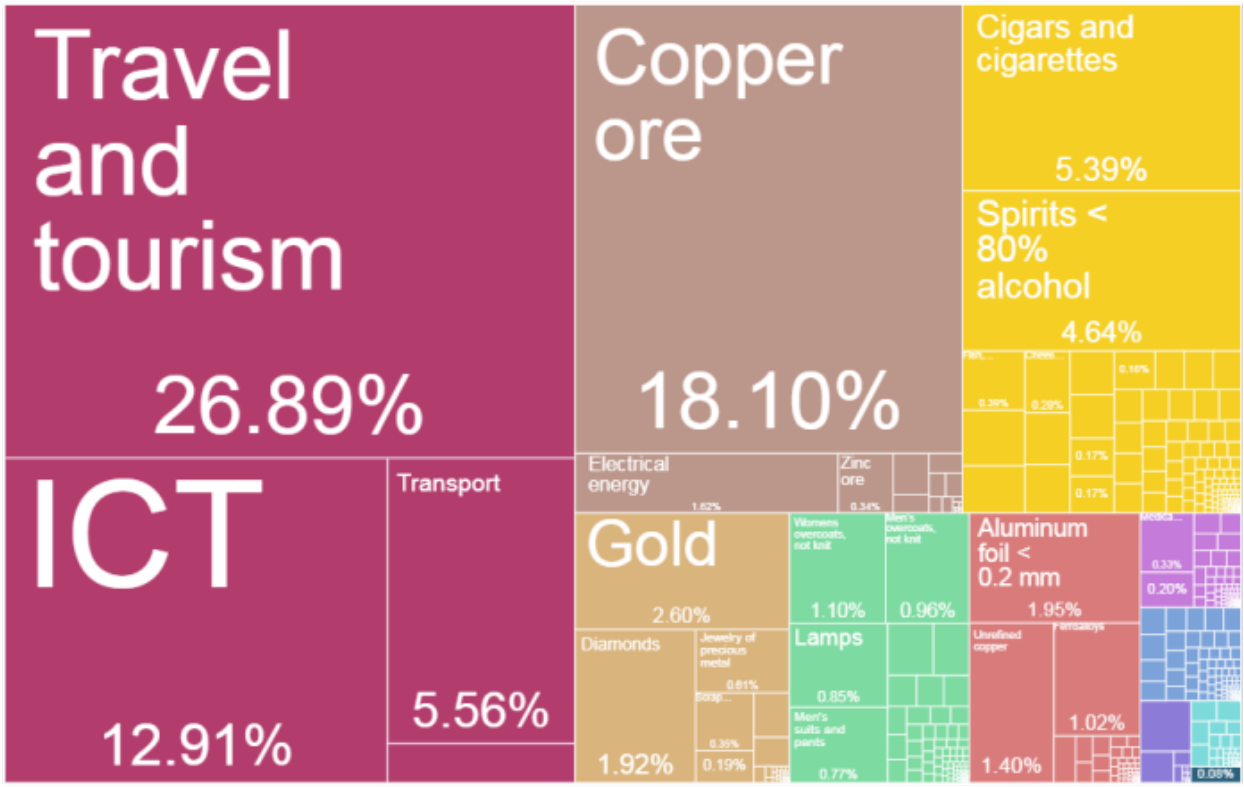
Figure 2.9. Growth of Goods Exports, 2010-2018



Source: UN Comtrade; Values are indexed: 2010 = 100.

In addition to goods, Armenia has seen strong growth in service exports over the past two decades. Today services make up 46 percent of total exports with travel and tourism the largest export industry at 26.9 percent of total exports, or $1.12 billion in 2017. ICT exports continue to play a dominant role in the economy at 12.9 percent of exports. Mining remains the largest industry on the goods side with copper ore being the primary product at 18.1 percent of total exports.

Figure 2.10. Exports by Product and Service, 2017

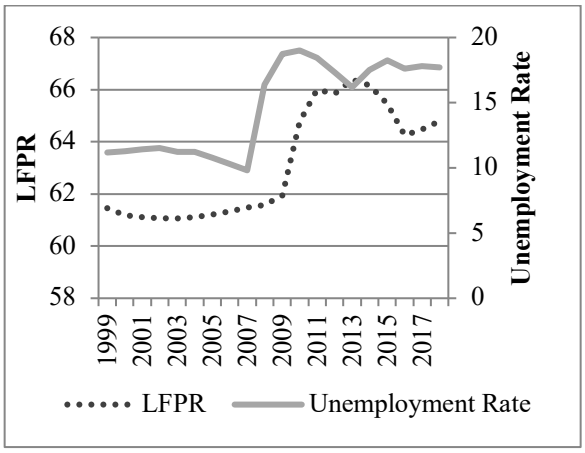


Source: Atlas of Economic Complexity, HS4 4-digit codes.

2.7 Labor Market

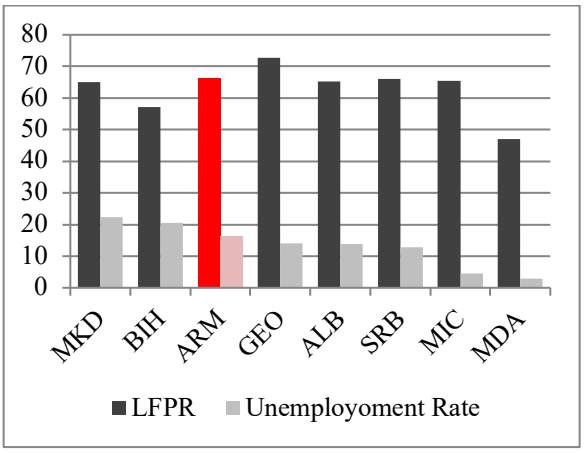
The Armenia labor market has struggled over the last decade to create new jobs and increase wages despite continued growth and recovery from the global financial crisis. Unemployment levels, and particularly youth unemployment levels, have stayed stubbornly high despite solid growth. The labor market, like so many other aspects of the Armenian economy, was profoundly affected by the global financial crisis, and the post-crisis labor market has taken on a much different character than what existed pre-crisis. As shown in Figure 2.11 below, the unemployment rate increased dramatically around the time of the crisis, from 9.8 percent in 2007 to 18.7 percent just two years later. Since that time, unemployment has hovered around 17.5 percent and never dipped below 16 percent in any year, another aspect of the post-crisis low growth-low investment nexus.

Figure 2.11. Labor Force Participation Rate and Unemployment Rate (modeled ILO estimates)



Source: ILOStat.

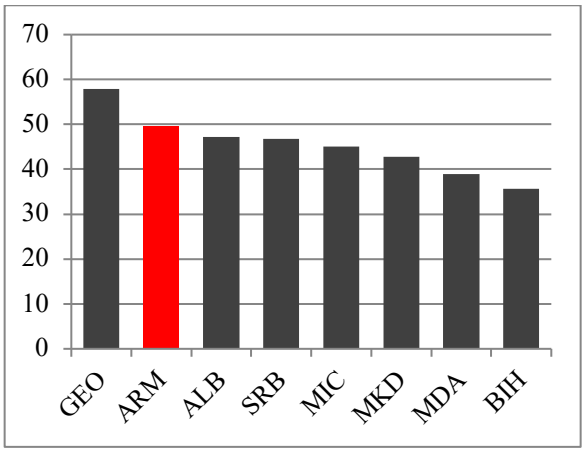
Figure 2.12. LFPR and Unemployment Rate, Armenia and Comparators



Source: ILOStat.

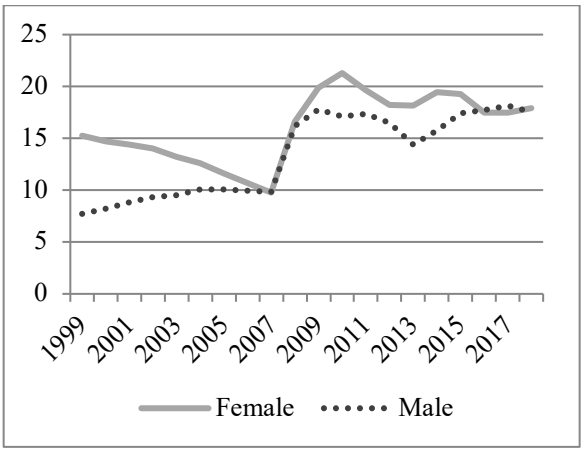
The most positive feature of the Armenian labor market is relatively high female labor force participation rate (LFPR), which is a legacy of the gender parity in the Soviet period. As shown in Figure 2.13, Armenia ranks second behind Georgia in female LFPR at 49.6 percent (Georgia leads at 57.8 percent). That being said, the labor force participation rate is consistently about 20 percentage points higher for men than women over the past two decades, resulting in a relatively low ratio of female to male labor force participation. Unemployment is also more balanced in Armenia than most other economies in the world. Although female unemployment has been higher than male unemployment in most years, the gap in unemployment has closed over the past decade, and today the unemployment rates for men and women are essentially equal. Despite these relatively equal unemployment rates, average female wages remain well below wages earned by men.

Figure 2.13. Female Labor Force Participation Rate



Source: ILOStat.

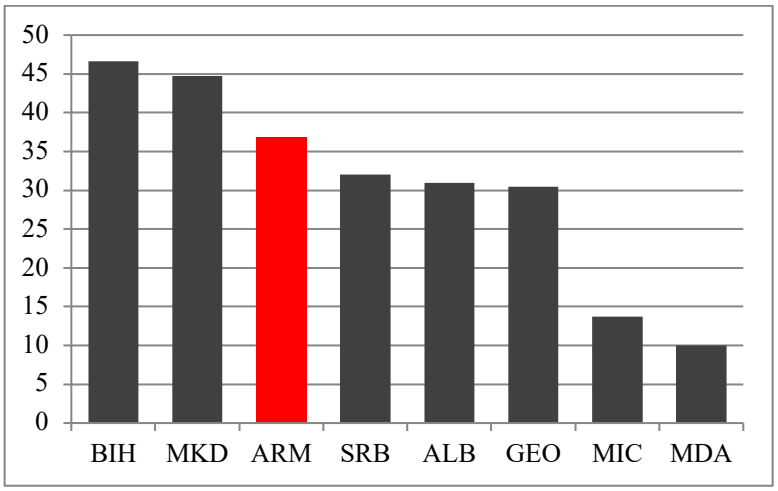
Figure 2.14. Unemployment Rate, Male and Female



Source: ILOStat.

Youth employment is a major concern in Armenia. At 37 percent, Armenia's youth unemployment rate is third highest among comparators behind Bosnia and Macedonia, and unemployment is higher for female youth than male youth. However, high youth unemployment is a major problem across the region with all comparators other than Moldova reporting youth unemployment at over 30 percent.

Figure 2.15. Youth Unemployment Rate



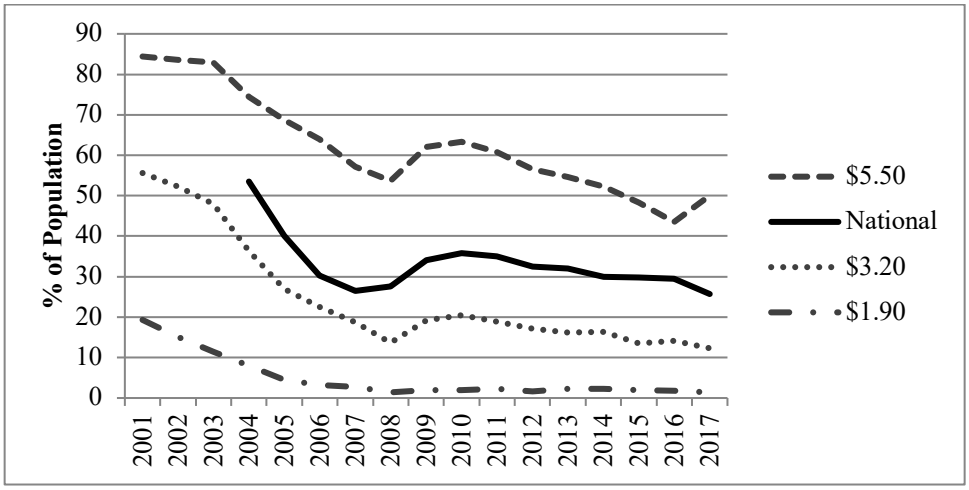
Source: ILOStat.

2.8 Poverty and Inequality

Armenia has made significant progress in poverty reduction over the past 20 years in all measures of poverty. As shown in Figure 2.16 below, poverty at the extreme level, measured as $1.90 per day in purchasing power parity, is down to just 1.4 percent, from 19.3 percent in 2001. Over the same period, poverty fell from 55.6 percent to 12.3 percent at the $3.20 level and from 84.4 percent to 50.0 percent at the $5.50 level. Poverty at national poverty lines, which has only been measured

since 2004, followed a similar trajectory and fell from 53.5 percent to 25.7 percent. The economic growth and poverty reduction over the past two decades have resulted in material improvement for much of the population. In absolute terms, the number of Armenians living in poverty at the $5.50 level has fallen by over one million since 2001, or roughly one third of the total population. Whereas 2.57 million Armenians lived in $5.50 poverty in 2001, today it is down to 1.47 million. Still, much work remains to be done.

Figure 2.16. Poverty Headcount Ratio at Various Poverty Lines (% of population)



Source: WB *World Development Indicators*.

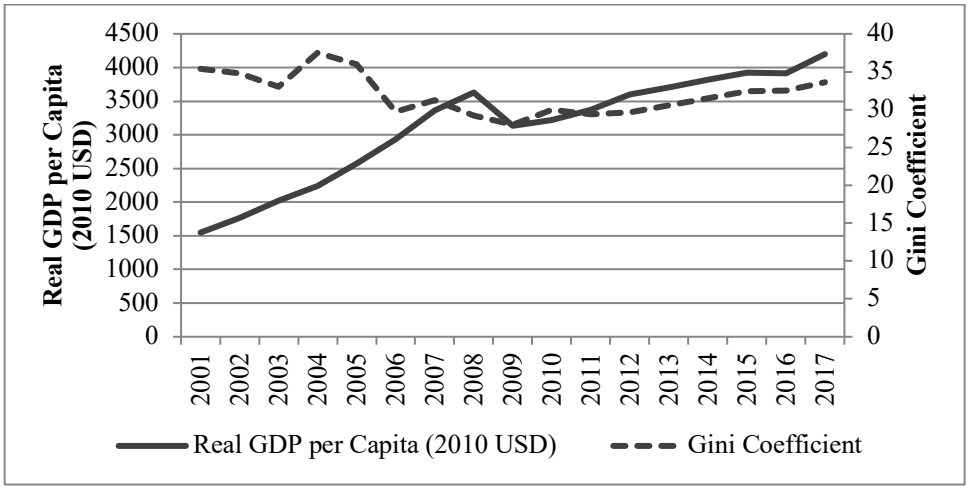
Although progress has been impressive in the overall numbers, two trends in particular paint a more pessimistic picture about poverty reduction in Armenia. First, the global financial crisis put an immediate end to the poverty decline in the first decade of the 2000s, and poverty at the $3.20 level and above actually increased for three consecutive years. Second, the rate of decline in poverty has slowed significantly since 2010. This trend mirrors the GDP growth data: still positive, but much less pronounced than the years prior to the GFC. For example, between 2001 and 2008, poverty at the $5.50 level fell 31 percentage points, yet it fell just 3.6 percentage points between 2008 and 2017. At the $3.20 level, poverty fell 42 percentage points between 2001 and 2008, but since then has creeped down just 1.3 points further.

Economic growth has been pro-poor to this point. The rapid decline in poverty during the early 2000s corresponded with the extremely high growth rates at the time. Poverty plummeted while the economy hummed along at 13.0 percent annual growth. Since the GFC, the rate of poverty decline has corresponded with the decrease in the GDP growth rate to 3.9 percent. Since 5 percent is a more realistic growth target going forward, as well as the stated growth target of the government, the slow rate of poverty reduction is likely to be the new norm unless further economic shocks impact the country.

While the overall poverty picture is positive, economic inequality has been on the rise as a greater share of income is going to the top tiers of the income distribution. The rise in inequality is yet another byproduct of the global financial crisis shock that not only affected Armenia in the few

years immediately following but has reset the entire growth trajectory. The Gini coefficient, which measures inequality on a scale of 0 (perfect equality across the population) to 1 (perfect inequality), was on a downward trend in the early 2000s, which suggests that the rapid economic growth at the time was broad-based and inclusive across all income groups. However, since 2009, inequality has crept upward from 28.0 to 33.6.[9] It is possible that inequality will continue to rise if the government is successful at implementing regressive tax policies such as a flat income tax.[10]

Figure 2.17. GDP per capita and Gini coefficient



Source: WB *World Development Indicators*.

2.9 Conclusion

The economic transition in Armenia from Soviet Republic to a modern free market state has been generally positive with more than two decades of solid economic growth, rapid poverty reduction, and expanding international trade. Many challenges remain, however, as the country moves out of lower-middle income status and toward higher levels of economic development. Ongoing geopolitical tensions, declining investment levels, and persistently high unemployment rates continue to plague the economy and limit growth potential. Armenia now finds itself in a "low growth-low investment nexus". The challenge for Armenia is to overcome this new normal and accelerate economic growth and poverty reduction. The remaining chapters of this report identify the binding constraints to this vision.

[9] Gini rescaled to 0 to 100.

[10] Flat taxes by definition are regressive, meaning that the poor pay the same tax rate as the wealthy. However, flat taxes have a major advantage in their simplicity and are easier to administer and enforce. It is not the purpose of this report to take a position on flat taxes but rather to point out the trade-off between progressivity and simplicity inherent in tax policy.

3 ACCESS TO FINANCE

Key Messages

- This chapter provides some evidence that the financial sector approached the level of a binding constraint to growth in Armenia. However, it also demonstrates that this constraint is actively easing, implying that the sector bears considerable attention to avoid backsliding on recent positive developments. As such, it is categorized as a secondary constraint.
- Borrowing has surged as interest rates have declined, consistent with the idea that finance is a binding constraint. While declining, the real interest rate remains the highest among comparators.
- Though the financial sector remains bank-dominated, new sources of financing are becoming available through the mandatory pension fund and increasing bond issuance.
- Armenian SMEs have reasonable access to finance relative to the region. However, as in many economies, SMEs have challenges accessing finance due to a lack of collateral and proper accounting—not just interest rates.

3.1 Introduction

An Inclusive Growth Diagnostic traditionally begins with an assessment of the health of the financial sector, consistent with the premise that poorly functioning financial intermediaries could represent a significant impediment to the private sector pursuing profitable investments. The data reveal a complicated context in Armenia, and discussions with a wide range of professionals active in and around the financial sector confirm that the local business community faces unusual challenges that constrain their access to finance. Interest rates on borrowing have declined in recent years but remain high, and there is strong evidence that borrowing rates in Armenia respond to changes in the interest rate, and these stylized facts are consistent with the financial sector representing a binding constraint to investment.

But there are other factors that may suggest otherwise. Most notably, there is significant evidence that the financial sector is now characterized both by high liquidity (e.g., funds available to actors in the economy) from an increasingly diverse set of institutions and by expanding private borrowing. These factors suggest that the "bindingness" of the financial sector may be easing, and the current dynamics may lead to further economic expansion as long as institutional and policy reforms are sustained.

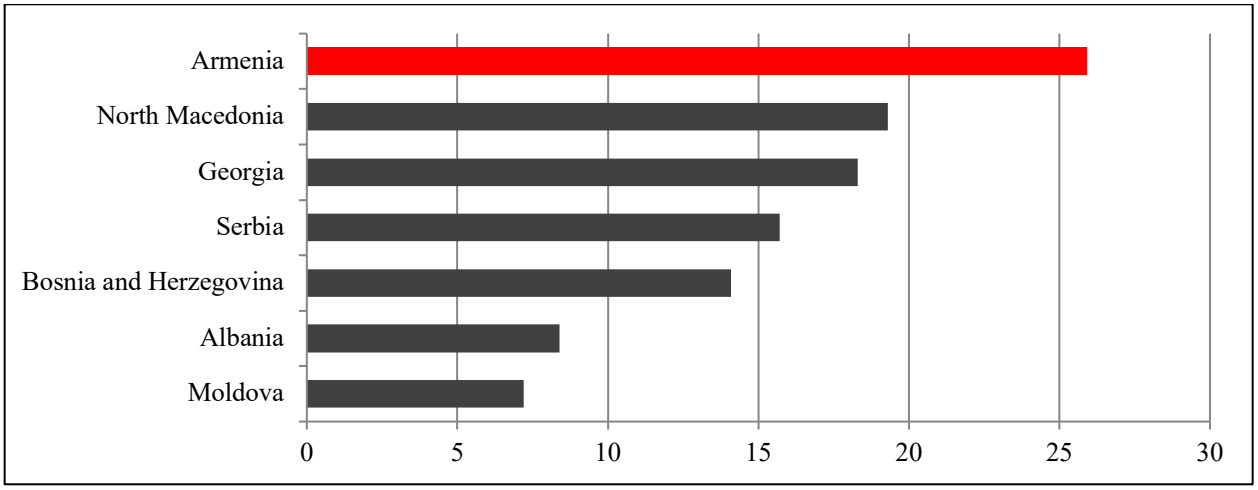
While high interest rates are clearly affecting the demand for investment capital (i.e., lower rates would be expected to lead to higher rates of investment), these high interest rates do not reflect limited availability of capital, but rather the high but declining risks in the market associated both with lenders and potential new borrowers. Were the structural weaknesses in the financial sector not improving, the current state of the financial sector could reasonably be identified as a core problem inhibiting investment, but the positive dynamics underway (most notably, the strengthening of the banking sector and the increasing diversity of potential sources of investment capital from non-bank institutions) suggest that increased investment in the coming years will not fundamentally be constrained by the structure of the financial sector.

Consequently, this diagnostic does not establish credit as a binding constraint, but given its challenges and the HRV tests it is categorized as a secondary constraint. This sector clearly bears considerable attention to ensure that positive developments continue to expand the availability of financial resources to the productive sector in Armenia.

3.2 Access to Finance

Most of the stakeholders we interviewed from the private sector and organizations working with them described access to finance as sharply limited and constraining investment. Although there have been no recent surveys to document the extent of this problem as perceived by firms in the private sector, our interviews in June 2019 were broadly consistent with data from the most recent *Enterprise Survey* in 2013, which documented a considerably higher proportion of Armenian firms (25.9 percent) identifying access to finance as a problem than in any of the comparator countries (see Figure 3.1 below). The *Armenia Competitiveness Report of 2014* similarly found that 50 percent of the firms they interviewed indicated that they were prepared to invest more if "there is increasingly accessible finance."

Figure 3.1. Firms identifying access to finance as a major constraint (%), 2013



Source: WB *Enterprise Survey.*

Potential borrowers frequently cited the high rate of interest on new loans and the requirements for collateral as the primary obstacles to private sector borrowing and investment. And indeed, common practices in the Armenian banking sector, as reported in 2013, appeared onerous, with nearly 89 percent of all loans requiring collateral, and with the average collateral demanded equal to more than 2.5 times the loan size. But such practices could be found in the comparator countries, as well, and the data presented in Table 3.1 below show that the lending conditions in Armenia were not unusually severe.[11]

Table 3.1. Collateral Requirements, 2013

Country	Proportion of loans requiring collateral (%)	Collateral needed (% of the loan amount)
Albania	87.4	166.9
Armenia	**88.7**	**263.6**
Bosnia and Herzegovina	82.4	190.1
Georgia	95.6	223.3
North Macedonia	90.7	275.5
Moldova	95.0	215.3
Serbia	66.4	149.8

Source: WB *Enterprise Survey.*

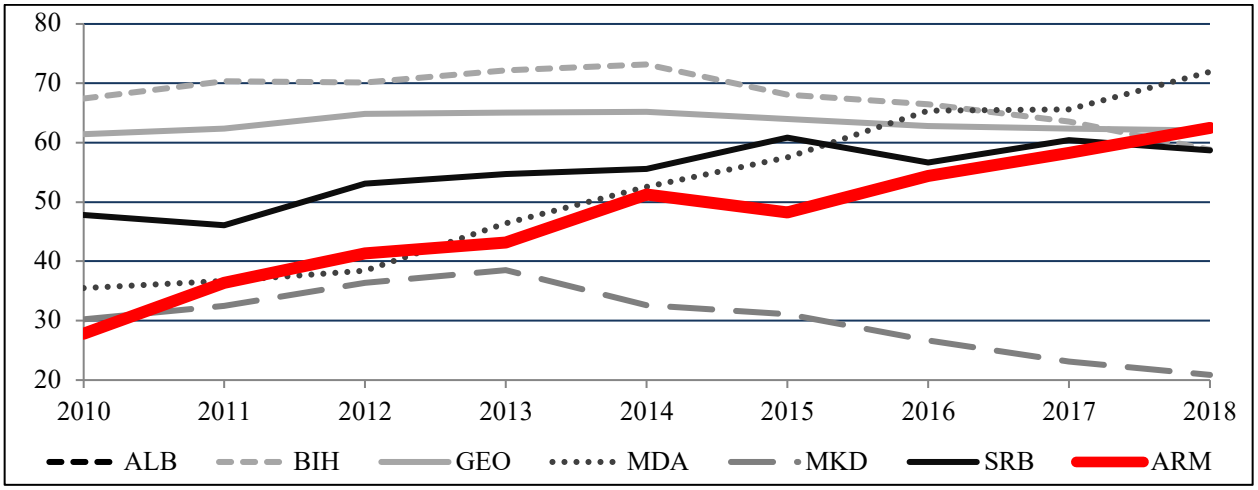
But the true test of access to finance can be seen in actual pattern of borrowing, and recent trends belie the notion that interest rates are prohibitively high, as the level of domestic credit (as a % of GDP) provided by the financial sector has expanded significantly in recent years.[12] Only 10 years ago, the level of domestic credit extended by the financial sector was only 27.8 percent of GDP, lower than all five comparator countries (the next lowest were Moldova at 30.3 percent of GDP and Serbia at 35.0 percent, and the other four ranged from 47.8 percent to Albania with 67.5 percent). Since that time, domestic credit has grown gradually in Armenia, interrupted by a one-year decline in 2015, but producing a very different image now, especially when seen in contrast to the six comparator countries. As of 2018, the level of domestic credit provided by the financial sector had reached 62.5 percent of GDP in Armenia, a level that was somewhere between its comparator countries (Figure 3.2).[13]

Anecdotal information from interviews suggested that this might be explained by a rapid expansion of household consumer debt, both from the increased use of credit cards and by home mortgage

[11] Interestingly, the data from the 2013 ES actually recorded significantly higher demands for collateral compared to the earlier survey in 2009 for all six countries.
[12] Data on domestic credit comes from the World Development Indicators (WDI).
[13] The IMF reports different statistics using data from the Central Bank of Armenia (CBA) in its Article IV report. According to those data, the credit-to-GDP ratio was 48.9% at the end of 2018, but these data also reflected the same pattern of significant increase compared to 27.4% of GDP reported by CBA for 2010.

loans. Until recently, however, the data did not support this theory. In fact, corporate credit accounts for a larger share of total credit in Armenia, and both have grown roughly proportionately between 2015 and 2018.[14] Only recently have new data confirmed this concern. According to Central Bank of Armenia (CBA) data for the first half of 2019, total loans expanded by 5.4 percent, but during this same time, new lending to non-financial corporations was basically stagnant (0.03 percent), while lending to households rose by 14.3 percent, accounting for 95.5 percent of the total growth in lending over the first 6 months of 2019.[15]

Figure 3.2. Domestic Credit Provided by the Financial Sector (% GDP)



Source: WB *World Development Indicators.*

This new pattern of borrowing in the first half of 2019 is a cause for concern, especially if it leaves banks with a portfolio of loans that has higher risk to external factors. But the short-term pause in corporate borrowing might also reflect new and appropriate demands from banks for increased transparency from potential borrowers, and it may take some time for the business community to adjust to these demands. Corporate borrowing responded positively to the declining interest rates throughout 2015-2018, and this period cannot be disregarded when looking at new patterns that emerged during the first 6 months of a political transition. Nor should the expansion of household borrowing in response to lower interest rates be perceived as a negative result, as such borrowing can lead to real welfare gains within those households as long as they are consistent with household earnings.

A more systematic consideration of the factors underpinning the availability of financial services in Armenia provides insights into how credit has expanded so rapidly in Armenia, but also provides some reasons for continued concern.

[14] IMF Article IV, page 16, using CBA data.
[15] CBA statistics.

3.3 Level of Domestic Savings

A healthy financial system attracts resources for investment in productive activities from domestic or foreign sources, and both channels appear to be functioning in Armenia. Domestic savings has been a source of concern in the past, and with good reason. Between 2003-2006, savings expanded rapidly, and remained high from 2006-2008 (17.2 percent to 18.2 percent of GDP).[16] During these years, corporate and public savings accounted for most of these resources, but what really differentiated these years of higher gross savings compared to earlier or later years was that private household savings were significant and positive.

The global financial crisis tightened resources everywhere, and its effects were seen in Armenia, as household savings became negative (i.e., households took on increasing levels of debt) and corporate and public savings contracted. Not surprisingly, the National Competitiveness Report of 2013-2014 identified this phenomenon as a source of concern, as gross savings collapsed to 0.9 percent of GDP in 2013, even as the deposit interest rate rose from 6.6 percent in 2006 to 10.2 percent in 2013.[17]

When Armenia's level of gross domestic savings bottomed out at 0.9 percent of GDP in 2013, this performance was still better than Moldova and Bosnia & Herzegovina, which experienced negative gross savings rates of -7.7 percent and -6.5 percent, but was significantly below the other comparator countries, whose gross savings rates remained in the 9-12 percent of GDP range.

But domestic savings have recovered somewhat since this nadir in 2013, reaching 7.3 percent of GDP in 2018. This level is well below the best performing comparators of Georgia (21.7 percent) and North Macedonia (20.4 percent), but approaches the performance of Serbia (13.2 percent) and Albania (9.2 percent), suggesting that in all of these countries the financial sector is successfully mobilizing capital for use by others in the economy.

To attract these additional savings, the deposit interest rate rose further during this period, peaking at 14.8 percent in August 2015 and averaging 13.5 percent between 2014-2016 before declining to 11.3 percent in 2017 and to 9.8 percent in 2018. Encouragingly, the most recent data seem to suggest that banking deposits are growing now, up 4.5 percent in the first half of 2019, despite these lower interest rates. The overall picture of domestic savings has improved considerably over the past five years, with both positive and growing savings and declining deposit interest rates.

In addition to savings held by the banking sector, the Government of Armenia's full implementation of the pension reform in July 2018 establishing mandatory contributions has generated an important new form of savings that has already generated new investment capital and

[16] All data on Gross Domestic Savings from WDI.

[17] All data on deposit interest rates reported here are from CBA and refer to deposits of longer than one year in Armenian dram. During this period, deposit rates of the same length in US dollars were less volatile and rose less dramatically, staying in the 7-8% range between 2005-2016, before declining below 7% in mid-2016 and continuing to fall to 4.7% in 2018-2019.

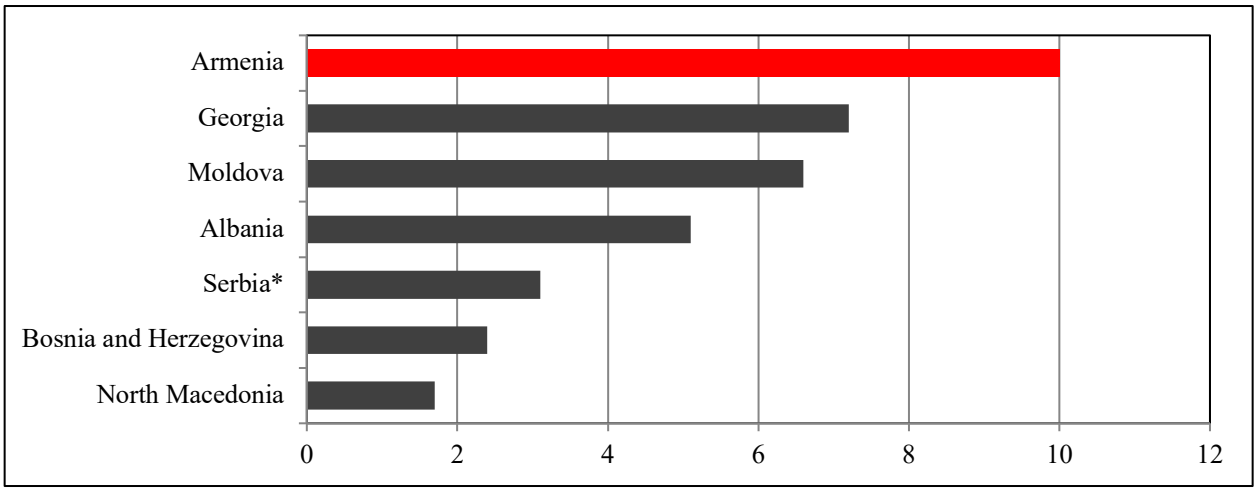
will become increasingly important in the future. Thus, while the current status suggests that there remains considerable room for sustained improvements in the mobilization of resources through increased savings, current dynamics suggest that the improvements seen since 2013 are likely to continue.

3.4 Cost of Finance

In a well-functioning financial system, private investment should move with interest rates, increasing as the cost of capital declines, and declining when the cost of borrowing increases. As a starting point, we expect to find lower levels of investment in countries characterized by higher real interest rates. In this context, Armenia has long been an outlier, characterized by real interest rates that are higher than their comparators and higher than one might expect to find in a country at its income level. This high interest rate indicates that the price of finance in Armenia is high (HRV Test #1).

Since 2013, the real interest rate in Armenia has been higher than all the comparator countries, and indeed this pattern stretches back to 2001, with only brief exceptions for Georgia (2004, 2009, and 2012-2013) and Moldova (also 2009). And by 2017, the pattern was stark: Armenia had the highest real interest rate (12.0 percent), more than twice as high Georgia and Albania (both 5.1 percent), the closest comparators. But in Armenia, the improvements in the financial sector have led to lower interest rates (10.0 percent in 2018), and it is clear that the gap between Armenia and its comparators is narrowing.

Figure 3.3. Real Interest Rate, 2018



Source: WB *World Development Indicators.* Serbia data is from 2015.

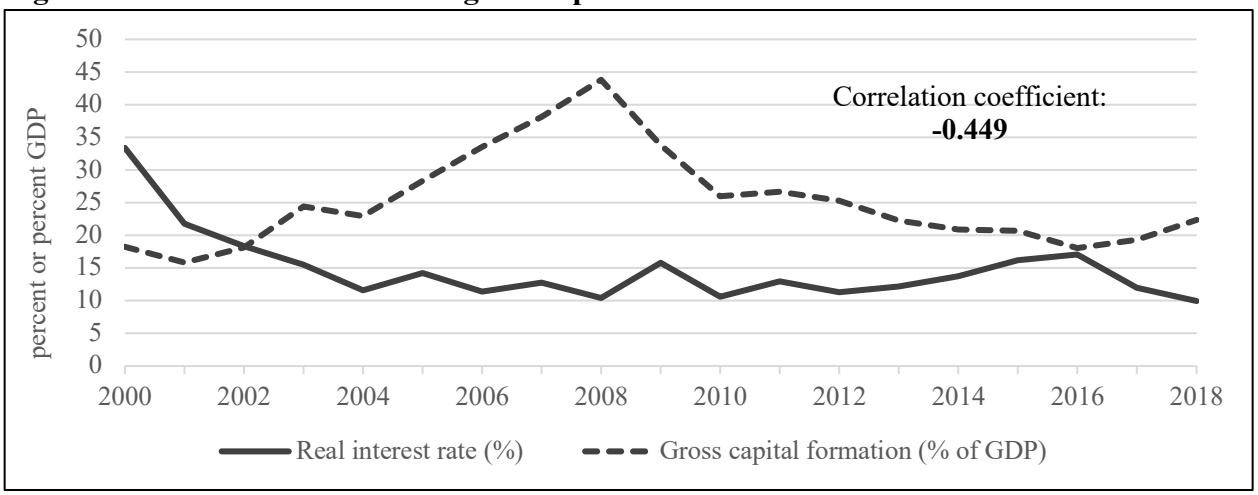
But setting aside the comparisons and looking exclusively at Armenia's recent history, the pattern suggests that Armenia may be on a new path that will establish a new period in which finance is no longer exceptionally expensive, but it is still too early to know for sure. After peaking 20 years ago with real interest rates nearing 40 percent in 1999, rates declined for 5 straight years, reaching 11.6 percent in 2004. Since then, real interest rates have bounced around a lot between 10-15

percent, before peaking at 17.0 percent in 2016. The two-year decline to 10.0 percent in 2018 has been notable and cause for optimism, but past experience suggests recent gains are not irreversible.

Interviews with private sector representatives indicated that, even with these recent improvements, the current interest rates are seen to be very high (of course, in nominal terms, the interest rates on loans are considerably higher that the real interest rates reported above, driven largely by the Government's inflation target of 4 percent, a target that has not been met in recent years).

And overall levels of investment in the economy appear to be affected by the level of the interest rate (HRV Test #2).[18] Most recently, since 2016, as the real interest rate has declined sharply, gross capital formation in Armenia has responded positively, increasing by 13.9 percent in 2017 and 28.5 percent in 2018. This relationship is not just a recent two-year phenomenon. This recent growth in investment reversed an 8-year decline in gross capital formation, a period that begin with an increase in real interest rates in 2009 (when rates jumped from 10.4 percent to 15.8 percent) and that was characterized by rates that were generally rising though much of the period. And before the abrupt increase in interest rates in 2009, Armenia's 7-year period of declining real interest rates (from 21.7 percent in 2001 to 10.4 percent in 2008) was accompanied by rapid and uninterrupted growth in gross capital formation.

Figure 3.4. Real interest rate and gross capital formation[19]



Source: WB *World Development Indicators* and authors' calculations.

The IMF staff report from the recent Article IV consultation, published in June 2019, uses other data to describe the same phenomenon. In 2015, the policy interest rate was at or above 10 percent

[18] WDI data for gross capital formation includes additions to fixed assets and net changes to inventory stocks. Fixed assets include machinery, equipment, and buildings, all used to create goods and services, while inventory includes raw materials and goods available for sale

[19] The correlation coefficient of -.449 was calculated on 19 annual observations and reflects a moderately negative relationship between Armenia's real interest rate and gross capital formation over 2000-2018 (significant at the 0.10 level). This is consistent with the hypothesis that investment is sensitive to the real interest rate, responding positively (i.e., increasing) when the real interest rate has declined.

for much of the year, and as the rate was high and steady, the rate of private sector credit growth (year-on-year), denominated in both dram and foreign exchange, declined throughout the year, eventually reaching negative growth late in the year. When the policy rate was modestly lowered to 9 percent at the end of 2015, credit growth rebounded modestly, and as the policy rate was gradually lowered throughout 2016, credit growth steadily picked up. When the policy interest rate reached and then stabilized around 6 percent at the beginning of 2017, private sector credit growth accelerated (especially in dram), reaching and exceeding 20 percent (year-on-year) through 2018.

The data and the interviews tell a consistent story about Armenia and the cost of finance. The price of borrowing has been closely related to private sector investment both historically and in recent years.[20] This suggests that further lowering interest rates could be expected to lead to increased borrowing. But the recent dynamics of lowered interest rates and the realized increases in private sector credit growth also has led to the concern that further increases in borrowing may not be sound, given other sources of risk in the economy. Interest rates remain high, but the recently lowered rates have already generated a surge in borrowing, suggesting that current rates are not *too* high, at least for some borrowers.

3.5 Availability of Finance

Historically, the financial system in Armenia has been dominated by banks, with few alternative sources of investment capital or other financial services available to the private sector. This remains true today, and this concentration has been exacerbated by common weaknesses within the banks themselves, such as continued exposure to unhedged dollar loans and lingering non-performing loans (NPL) burdens that weigh down profitability, that may have made banks wary of engaging with new borrowers. But both of these systemic challenges, the dominance of banks and their internal weaknesses, may be improving, holding out the prospect for a healthier and more vibrant financial system in the near future.

The structure of the financial system, while still dominated by banks, shows signs of evolving and becoming both deeper and more diverse. According to CBA data, the value of total assets in the financial system has grown by 86.0 percent in nominal terms between 2012 and 2017. Banks account for the vast majority of these resources, and grew by 76.7 percent over this same period, with banks' assets increasing from 58 percent of GDP in 2012 to 78 percent in 2017.[21]

But over this period, other institutions grew even more rapidly. The share of total assets held by non-bank credit organizations increased from 6.1 percent in 2012 to 9.3 percent in 2017. Mandatory pension funds, a new entrant to the financial system, accounted for only 2.1 percent of total assets in 2017, but this will clearly grow in the coming years.

[20] IMF Article IV, page 28.
[21] Data for this section are drawn from the Central Bank of Armenia and IMF documents.

The effect of these changes appears modest, given the most recent data, with the share of total assets held by banks declining from 90.1 percent in 2012 to 85.5 percent in 2017. But the overall patterns suggest that the system will continue to evolve in positive directions. While the banking sector itself may continue to deepen, the emergence of new alternatives of finance should add further resilience to the system.

Even the use of corporate bonds and the stock exchange may become more important in the near future. The value of corporate bonds issued in 2017 exceed 92 billion drams, still only 1.7 percent of GDP, but a significant and positive development since 2012, when the use of corporate bonds barely exceeded 9 billion drams. The value of shares in the stock market has not shown similar growth, remaining at roughly 1 percent of GDP over this same time period, but the growth of pension funds may generate new interest in this mechanism of financial intermediation.

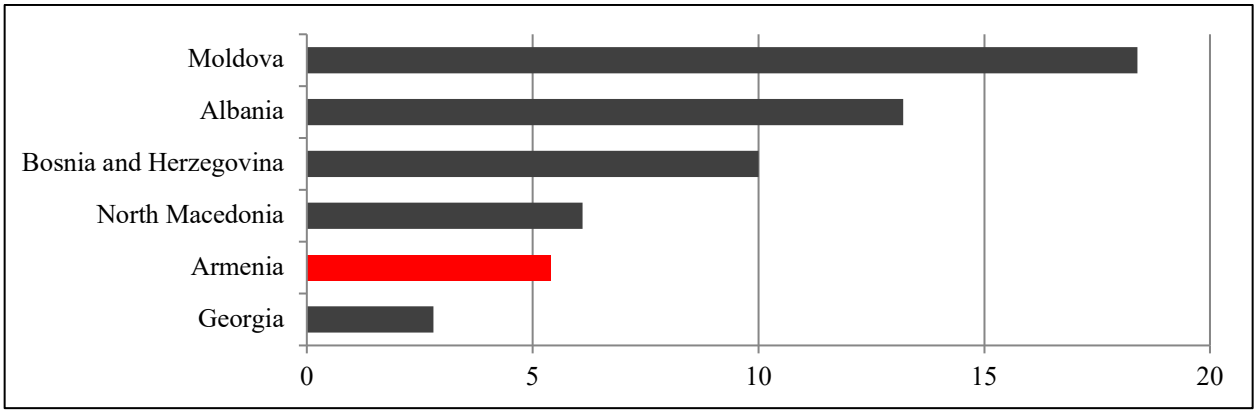
Even as the financial sector has broadened and deepened, the banking sector has shown signs of improving strength. Following the economic slowdown in 2014, the Government of Armenia has undertaken a number of steps that have produced a healthier banking sector. In addition to strengthening regulation and supervision practices, higher capital requirements led to new injections of capital into many banks as well as the merger of several banks (this increased concentration of assets in a smaller number of banks was an explicit policy objective).

As a result, the profitability of the banking sector has rebounded, although returns remain low by historical standards. Nonetheless, these profits are a clear positive sign of rebound since 2015, when the sector as a whole reported losses. And even these lower profits reflect a positive development (specifically, declining real interest rates and narrowing margins between deposit and lending rates).

Moreover, the quality of the lending portfolios appears to be improving rather than declining, a concern expressed by some observers in Armenia. The proportion of NPLs had been rising through most of the 2000s until reaching a peak of 7.9 percent of total gross loans in 2015, but the experience since then has been a clear improvement to 5.4 percent in 2017.[22] And this performance actually looks better in contrast to the comparator countries, as only Georgia reported a lower rate of NPLs (2.8 percent of total loans). The most recent CBA data indicate that the quality of loans has remained relatively stable since then, with NPLs standing at 5.3 percent of total gross loans in May 2019.

[22] WDI data.

Figure 3.5. Non-Performing Loans (NPLs), as percent of total gross loans



Source: WB *World Development Indicators,* 2017.

Taken together, the data reflect a financial system that appears to be getting stronger, even as many weaknesses and risks remain. This characterization is consistent with the composite *Financial Development Index* produced by the IMF. This index summarizes how well-developed financial institutions and financial markets are in terms of their depth (size and liquidity), access of individuals and firms, and efficiency. Armenia's performance has improved between 2013 and 2017, the most recent year for which data are available, most notably in both depth and access, but these improvements are similar to those experienced by the six comparator countries, with Armenia slipping from 5th in 2013 (ahead of Albania and Serbia) to 6th, ahead only of Albania.[23] The overall improvements have been real, but as of 2017 they remained modest and left substantial room for improvement.

3.6 SME Finance in Armenia

While the aggregate assessment suggests the financial sector in Armenia is weak but improving, many observers argue that this characterization obscures the particularly severe problems faced by SMEs. Of course, this is true in almost every country, as small businesses often fail to meet bank requirements in terms of accounting standards and collateral. Armenia is an unusual case, as its small and medium business sector is relatively small, accounting for only about 30 percent of employment (compared to roughly 50 percent in Georgia). And, according to recent IMF calculations, SMEs in Armenia actually have better access to and usage of financial services than other countries in the Caucasus and Central Asian region and appear to be very close to trend for what one would expect, given Armenia's current economic standing.[24]

This is broadly consistent with data from the most recent Global Competitiveness Report of 2018, which rates Armenia 70th overall, lower only than Serbia (65) and Georgia (66).[25] For Armenia,

[23] "Introducing a New Broad-based Index of Financial Development," IMF Working Paper, Katsiaryna Svirydzenka, January 2016; IMF data.
[24] IMF, Article IV, page 15.
[25] The other comparators' global competiveness rankings are: Albania (76), North Macedonia (84), Moldova (88), and Bosnia and Herzegovina (91).

the financial sector remains an area of relative weakness (the financial sector is ranked only 87th, which means other parts of its economy are greater sources of competitive advantage), and this is consistent with the interviews that have pointed to these weaknesses. But data on the "Financing to SME" sub-indicator (81, stronger than the overall 87 ranking) suggest that this is not one of the biggest weaknesses in the Armenian financial sector; moreover, recent data suggest the situation is improving. But further insight is gained from looking at the comparator countries, as problems with providing access to finance for SMEs are considerably worse in four of the countries, whose rankings on this sub-indicator range from 95th (Serbia) to 126th (Bosnia and Herzegovina).[26] These data again reflect the conclusion that, while the situation in Armenia leaves room for significant improvement, the magnitude of these problems is both declining and not nearly as bad as the problems seen in the comparator countries.

3.7 Conclusion

The analysis here suggests that there is some evidence that the high cost of borrowing (HRV Test #1) does represent a barrier to firms accessing the capital they need to invest and to tap into funds for working capital. The fact that borrowing has surged as interest rates have declined (HRV Test #2) provides further evidence consistent with the idea that finance is a binding constraint. The extent that the government borrows at high rates and low risk, combined with increasing consumer borrowing at high rates and higher risk, may crowd out the opportunities for productive investments at lower prices in the rest of the economy. That said, the dynamics currently underway within the financial sector seem to be easing this constraint, with new sources of finance becoming available and the interest rates charged declining. Considering this mixed evidence, access to finance is categorized as a secondary constraint to growth.

These findings have several implications for donor activities. Small and medium firms that cannot meet accounting requirements and without collateral will likely not access credit in any economy, and so the expansion of financial services to these firms will hinge more on the evolution of improved business practices within those firms than on the relaxation of requirements by banks. As the Armenia economy continues to grow and expand connections with trading partners, the incentives for firms to improve their practices should continue to grow in tandem. Efforts by donors to relax these conditions to specific kinds of firms may produce small gains to the beneficiaries but should not be expected to enhance the efficiency of the financial sector.

[26] Only Albania (67) and Georgia (69) perform better on SME access to finance than Armenia, and there may be value in exploring what these economies are doing that is generating a significantly better outcome than seen in Armenia or the poorly-performing comparator countries.

4 MICROECONOMIC RISKS

Key Messages

- Microeconomic risks related to trade and customs regulation compound the binding constraint of export-oriented transport infrastructure. Given how intertwined these nodes are, both are listed as binding constraints. Compliance with tax administration also presents substantial microeconomic risks but does not rise to the level of a binding constraint.
- Armenian firms pay high costs and experience significant delays to export goods out of the country. While there is not particularly strong evidence of irregular import and export payments to circumvent customs and trade regulations, there is evidence that Armenia is underperforming in its exports relative its income level (which could be due to a number of factors) and trade compliance costs and delays are significant, particularly for exporters. Efforts to reduce costs to exports will go a long way towards improving the competitiveness of Armenian businesses.
- There is evidence that corporate profit tax is higher than average, and that the cost of compliance with tax regulations is particularly burdensome. However, recent tax reforms in the past couple of years, and including one in June of 2019, are expected to diminish this burden. Evidence does seem to suggest that this is a burden to companies but not a binding constraint.
- Corruption and judiciary independence seem to be issues that are improving under the new government. Past evidence does suggest that Armenia performs poorly in these categories on a global scale, but well against the comparator group.

4.1 Introduction

Microeconomic constraints fall under the second branch of the Inclusive Growth Diagnostic tree – low returns to investment. The micro section focuses on Armenia's approach to the establishment and implementation of specific rules, regulations and policies that can either promote broad-based economic growth or impede its progress. The evidence reviewed in this chapter supports the conclusion that microeconomic risks and distortions are problematic to private sector growth and investment. Specifically, this chapter provides evidence that complicated and cumbersome customs and trade regulations increases the costs and risks of doing business and investing, particularly for exporters and possibly also for importers. There are also clear issues with taxes and tax administration, that raise the costs of doing business in Armenia. However, only trade and customs regulations rise to the level of a binding constraint, especially when combined with weaknesses in transport infrastructure.

Although Armenia is a highly open market and operates a liberal regime for trade and investment, it performs particularly poorly against comparators for its customs and trade regulation. More firms in Armenia will cite customs and trade regulations as problematic, influenced by high costs and time burden to export goods out of the country. While there is not particularly high evidence of irregular import and export payments to circumvent customs and trade regulations, there is evidence that Armenia is underperforming in its exports relative its income level. Measures to reduce costs to trade, both in the governance and in the physical infrastructure as discussed in the Infrastructure Chapter, will greatly improve Armenia's competitiveness in global supply chains.

Taxes and tax administration are among the top constraints identified by Armenian firms in different surveys over the past 6 years. While there is evidence that corporate profit tax is relatively high in the region and compliance costs with filing taxes are particularly high, other measures testing this constraint suggest it is not particularly problematic and, in any case, recent reform efforts are expected to improve the situation.

The new government following the "Velvet Revolution" has reportedly reduced corruption and improved competitiveness in the Armenian business climate within its short time in power.[27] Prior to the revolution these issues have often been considered extremely problematic, and likely compounded other microeconomic risks such as discriminatory compliance with tax and customs regulations that favored politically-connected firms. However, even relying on data prior to the revolution, Armenia performs relatively well relative to comparators, but poorly relative to global standards. This dichotomy is a result of the comparator group, as a whole, ranking quite low on indices examining corruption, with the exception of Georgia. In any case, this topic is examined in more depth in this chapter and in the context of the new government's anti-corruption platform. Although it seems corruption has likely been problematic for companies, we do not find corruption itself to be a constraint. Similarly, while judicial independence and competence seems to have been troublesome in the past decade, Armenia has performed relatively well against comparators and recent anecdotal evidence suggests that this situation is improving.

Despite these issues, Armenia has made progress on creating a conducive business environment, with remarkably low costs to starting a business and relatively high rankings on governance indicators, such as regulatory quality and rule of law. Nonetheless, Armenia's overall performance in international rankings, indexes, and indicators provides an indication that taxes and customs and trade regulation are in particular problematic.

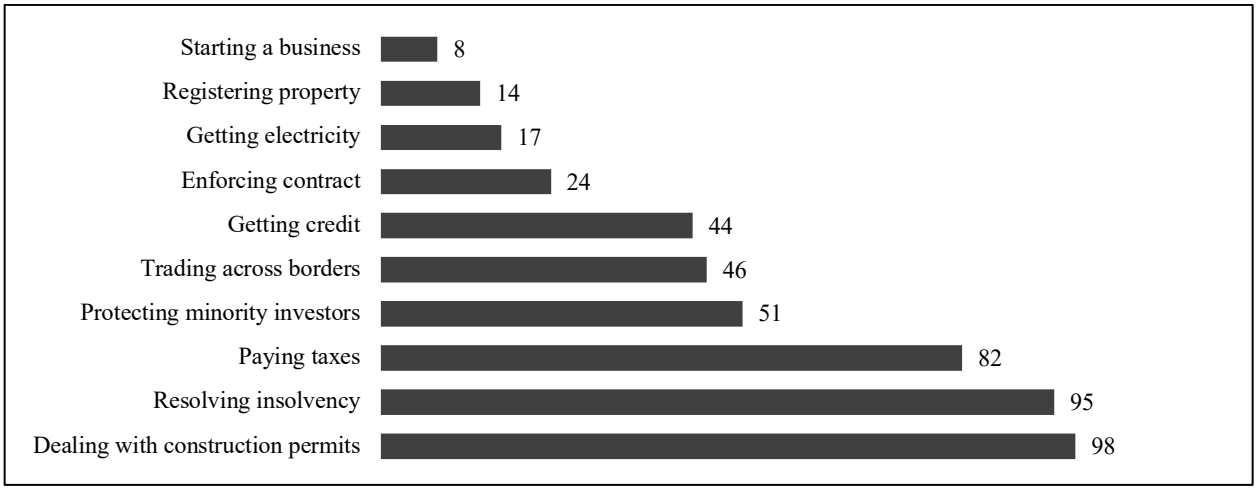
4.2 Global Performance on Microeconomic Indexes & Indicators

On a global scale, Armenia ranks relatively high globally on many measures of business competitiveness. The country ranks 41 overall in the World Bank's *Doing Business Report*, which measures obstacles to private investment and entrepreneurship in 190 countries. The country's ranking falls within the middle of the comparator countries (3rd) with particularly high scores in

[27] Widespread opinion in June 2019 interviews.

the following dimensions: starting a business, registering property, getting electricity, enforcing contracts, and getting credit. There are, however, three *Doing Business* categories where Armenia has relatively poor scores: paying taxes, resolving insolvency, and dealing with construction permits.

Figure 4.1. Doing Business Rankings in Armenia

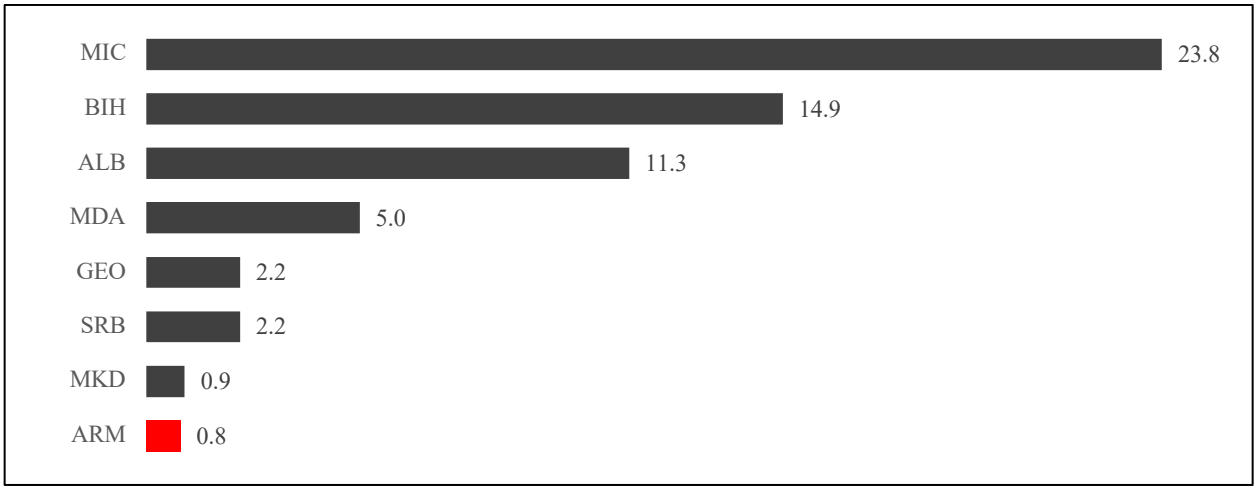


Note: Lower rankings are better.
Source: WB *Doing Business* indicators, 2019.

The *Doing Business* indicators show an interesting trend in the business regulation lifecycle. Armenian regulations are very business friendly in the early stages of firm startup: the country ranks very highly in starting a business, registering property, getting electricity, and getting credit, all of which are basic needs of a new business (the notable exception being construction permits). And in fact, Armenian firms experience very low costs to start a business, both in absolute and relative terms (see Figure 4.2). Very likely as result of this, Armenia exhibits a high rate of entrepreneurship; Armenia ranks among the top countries in terms of the share of the adult population that has tried to set up a business, with the share also rising by 7 percentage points since 2010.[28] The most productive firms tend to be young firms that are more reliant on technology and innovation.[29] Small firms and firms in the services sector are leading job creation.[30]

[28] World Bank, SCD (2017), page 23.
[29] World Bank, SCD (2017), page 22.
[30] World Bank, SCD (2017), page 22.

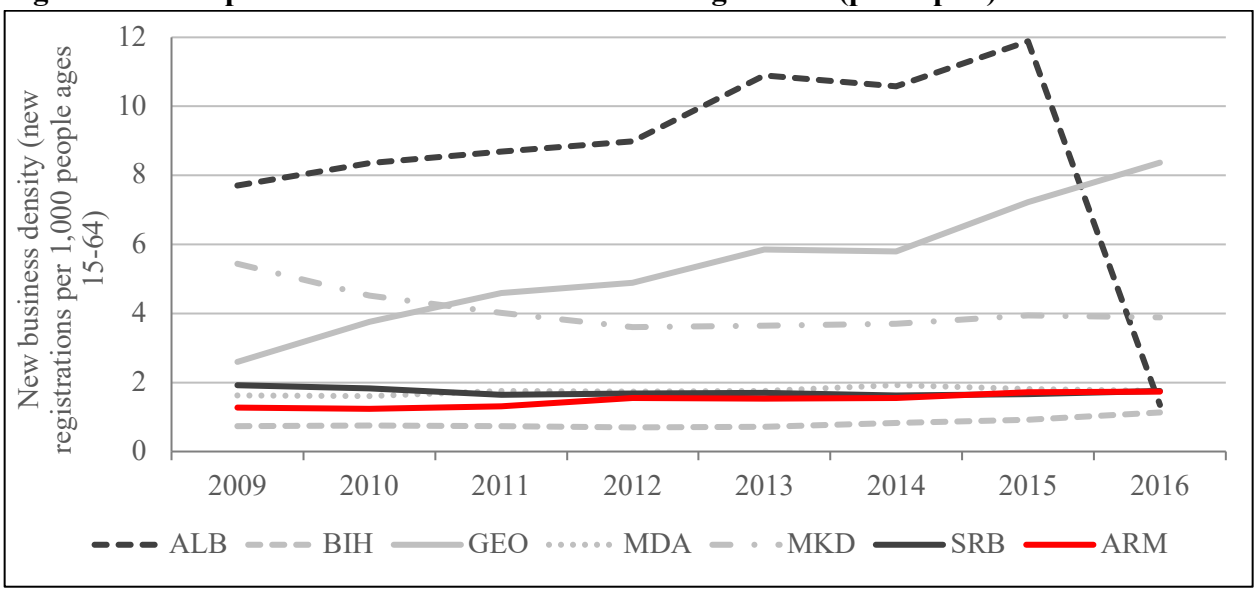
Figure 4.2. Comparative cost of starting a business (% GNI per capita)



Source: WB *Doing Business* indicators, 2018.

However, once a company is established and begins to grow, the business environment becomes relatively more challenging: Armenia ranks very poorly in the operational regulations related to paying taxes and resolving insolvency in the *Doing Business* indicators. The success rate among Armenian entrepreneurs is among the lowest in the region, with almost 40 percent of start-ups failing to survive.[31] And despite a seemingly welcoming start-up environment, the number of new registrants has only increased slowly from 2009 to 2016 from 1.3 per 1,000 people to 1.7 per 1,000 people, much slower than neighboring Georgia for example (see Figure 4.3). Armenia currently ranks 5th in the comparator group for number of new registrants per 1,000 people, with very similar levels to most comparators and behind Georgia (8.4) and North Macedonia (3.9).

Figure 4.3. Comparative number of new business registrants (per capita)

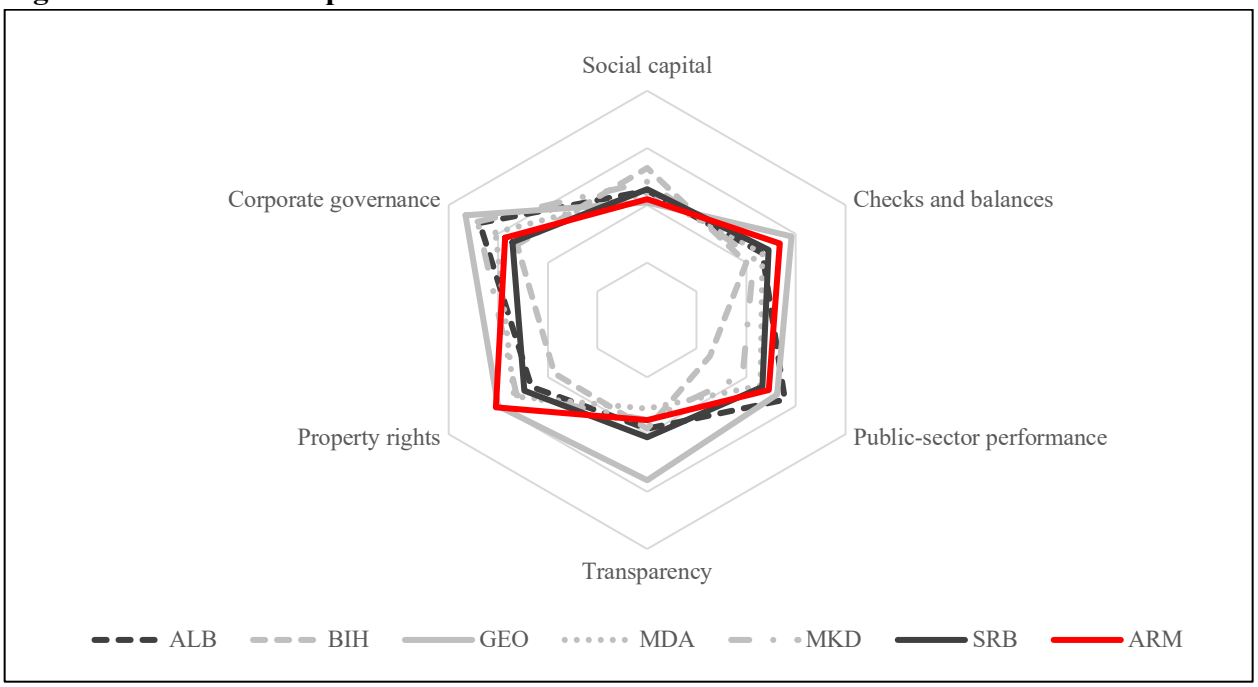


Source: WB *Doing Business* indicators, 2018.

[31] World Bank, SCD (2017), page 23.

Another international data source with cross-country comparisons of the business environment is the World Economic Forum (WEF) *Global Competitiveness Index (GCI)*, a collection of economic indicators from publicly available international indicators and annual *Executive Opinion Surveys*. In 2017-18, Armenia had an *Institutions* ranking of 67 out of 137 countries, placing it second among the group of comparator countries, behind Georgia with a ranking of 40, for the quality of its governance institutions. Armenia is performing well, relative to comparators: it is the top performer in the comparison group for property rights and the efficiency of the legal framework to settle disputes. It is the second in the comparator group for checks and balances which measures budget transparency, judicial independence, efficient legal frameworks in challenging regulations, and freedom of the press. Lastly, it is third in the comparator group for public sector performance that looks at the burden of government regulation, and the digital orientation of the government – see figure below. On the other hand, Armenia is performing relatively worse in transparency (tied for 5th in the comparator group), and social capital (6th in the comparator group), which is a measure of trust and generosity among the population and the government's online interaction with the population. It could be that recent changes in the new government, particularly the emphasis on anti-corruption, may improve these measures over time as well.

Figure 4.4. Global Competitiveness Institutions Scores



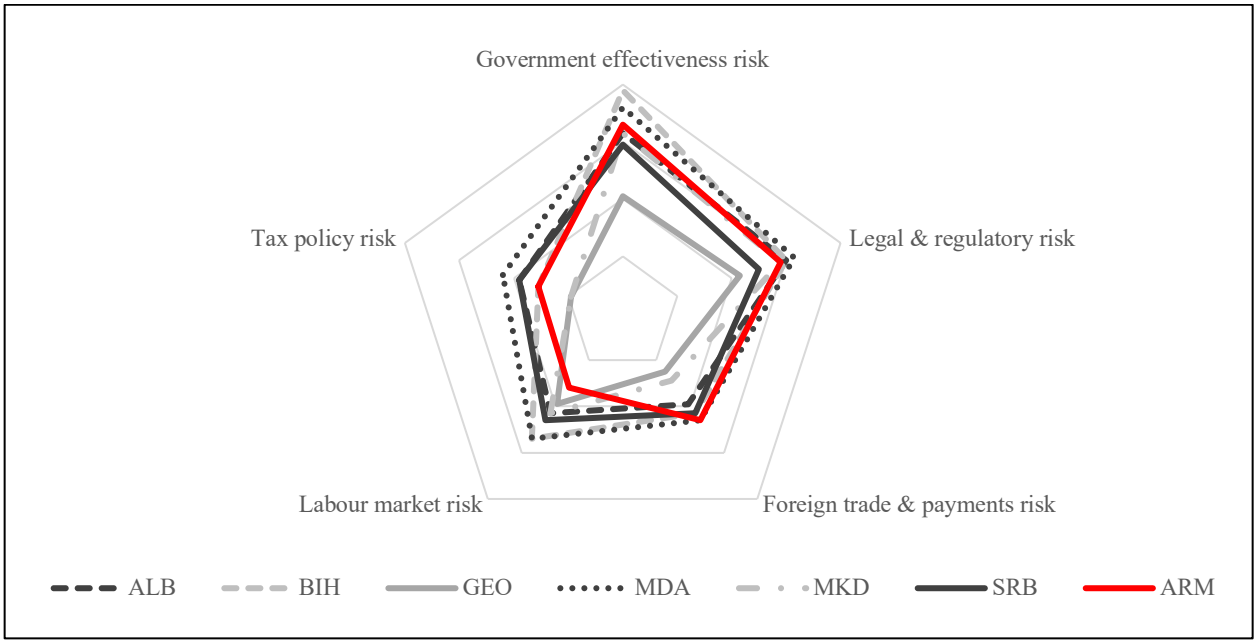
Source: WEF *Global Competitiveness Index*, 2018.

Armenia also scores well in the WEF *GCI* for labor market flexibility, ranked 33rd in the world and second in the group of comparators behind Georgia (ranked 31). This is an indicator of the labor market flexibility (e.g. labor-employee relations; wage determination), meritocracy, and market incentives. It should be noted that despite its high ranking in this category, Armenia does have a low internal labor market mobility ranking (110 out of 137 countries), which is 6th in the

comparator group.[32] This is a measure of the extent to which people move to other parts of the country for professional reasons and Armenia's low ranking is likely a reflection of the limited professional opportunities outside of Yerevan.

The *Economist Intelligence Unit* sees the largest problems in Armenia to be government effectiveness and legal and regulatory risk when compared globally (see Figure 4.5, where lower scores are better).[33] In the comparator group, Armenia ranks fifth for government effectiveness risk but is the third highest performer in legal and regulatory risk. Additionally, Armenia performs relatively poorly for foreign trade and payments risk (tied for worst with Moldova in the comparator group), possibly related to high rates of dollarization in Armenia (as discussed in the Macroeconomic and Finance chapters) and ranks 6th among the comparators for risks associated with customs and trade regulations (discussed further below in this chapter).

Figure 4.5. Economist Intelligence Unit Risk Scores in Comparator Group



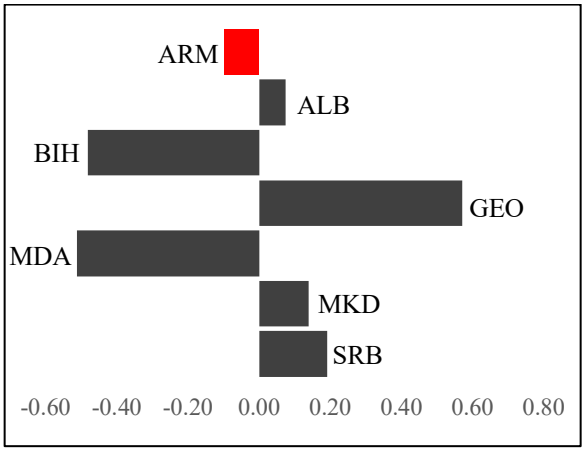
Note: Figures closer to the center are less risky, figures towards outside edge are riskier.
Source: Economist Intelligence Unit. Data as reported in August 2019.

The World Bank's *Worldwide Governance Indicators* (WGI) ranks countries on a series of indicators, as shown below for Armenia and its comparators. Note that aggregate indexes are scored from a high of 2.5 (good governance) to a low of -2.5 (poor governance). Armenia ranked fifth among comparators on government effectiveness, above Moldova and Bosnia and Herzegovina. This indicator captures various measures of the quality of public service, degree of civil service independence, and quality of policy implementation. The indicator on regulatory

[32] WEF *Global Competitiveness Index*, 2018.
[33] Economist Intelligence Unit, Risk Ratings (data as reported in August 2019).

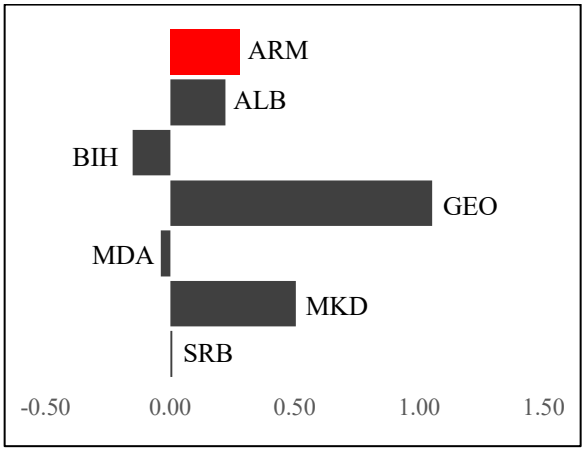
quality was the only variable for which Armenia scored a positive rating, ranking third among comparators behind Georgia and North Macedonia.

Figure 4.6. Government Effectiveness, Comparative



Source: WB *World Governance Indicators*, 2017.

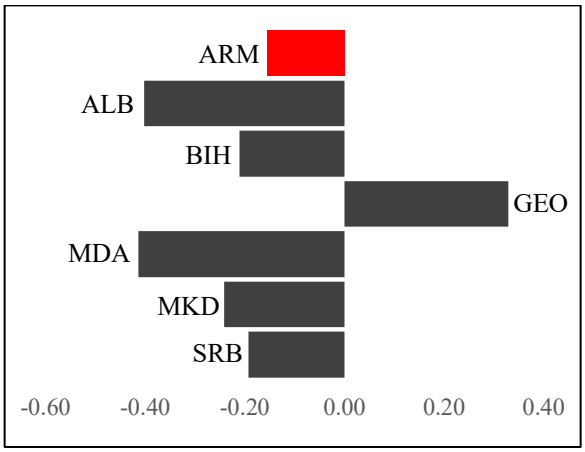
Figure 4.7. Regulatory Quality, Comparative



Source: WB *World Governance Indicators*, 2017.

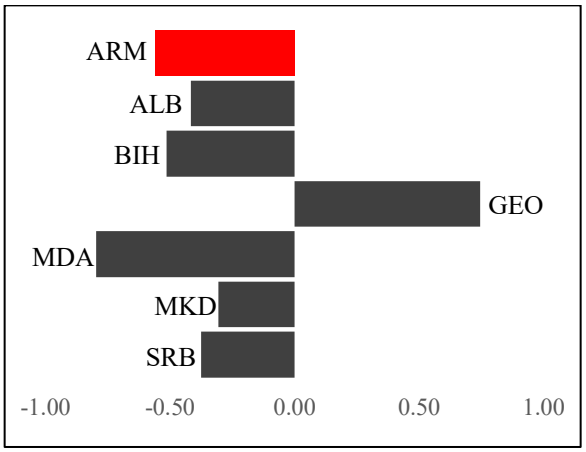
For the *WGI* indicator on rule of law, which captures the extent to which the population has confidence in and obeys rules of society, including police, the courts, property rights, and contract enforcement, Armenia ranked second highest, behind Georgia, although it still received a negative rating. Armenia ranked 6th among comparators for control of corruption (see Figure 4.8 and Figure 4.9).

Figure 4.8. Rule of Law, Comparative



Source: WB *World Governance Indicators*, 2017.

Figure 4.9. Control of Corruption, Comparative



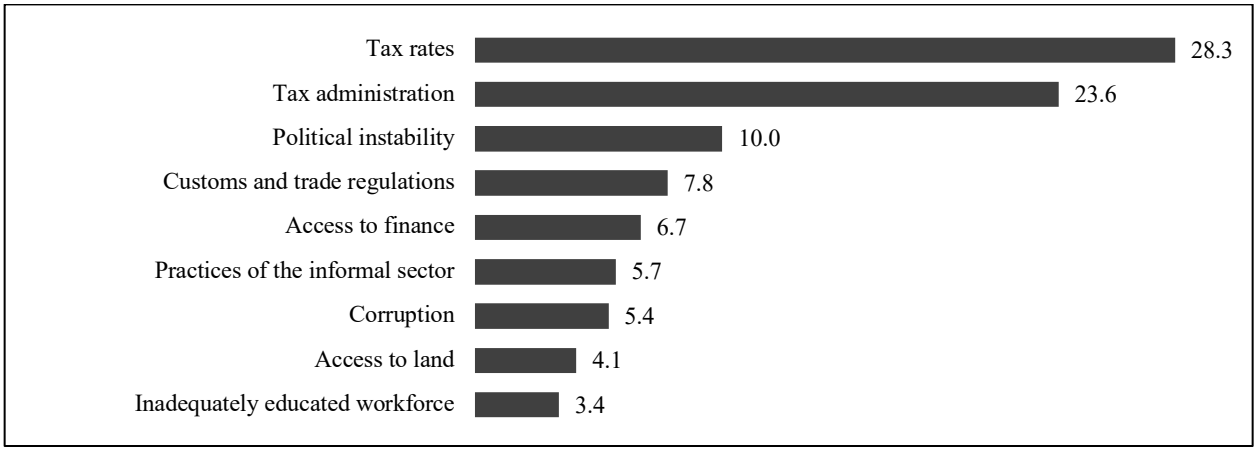
Source: WB *World Governance Indicators*, 2017.

A number of surveys of successful businesses over the years point to recurring issues facing firms. In Figure 4.10 below, Armenian firms in the 2013 *Enterprise Survey* identified tax rates, tax administration, political instability, customs and trade regulations, and access to finance as their top five constraints. Despite the passage of time, many of issues still appear problematic in the

most recent *Executive Opinion Survey* by WEF in 2017, where access to financing, tax rates, tax regulations, corruption and inefficient government bureaucracy are the top five issues facing firm executives (see Figure 4.11 below). Access to finance, tax costs, the burden of tax administration, and corruption were all frequently discussed topics in discussions with stakeholders in June 2019. Access to finance is addressed in the finance chapter, and tax issues and corruption are explored in more depth later in this chapter.

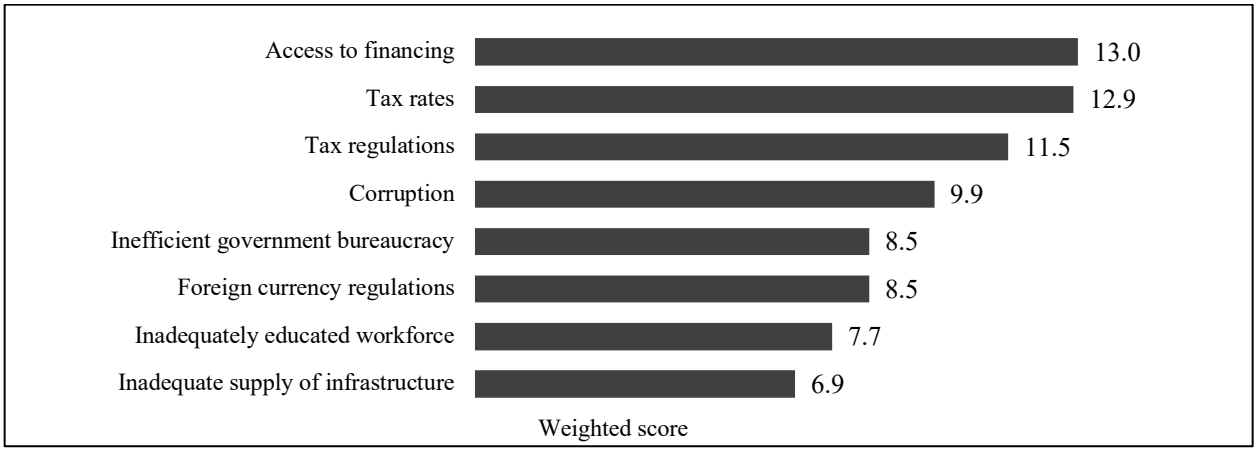
Whereas many stakeholders still perceive tax issues and access to finance to be issues in the new government, corruption uniquely seems to be an issue that is perceived to be changing very rapidly post-revolution. Nearly unanimously, international and local stakeholders felt that high-level government corruption was waning, and several institutions shared anecdotes that reinforced this message (for example, reduced requests for extra-legal payments by government officials in the past year). Many international observers felt that this issue is less prevalent than it was at the time of the 2017 *Executive Opinion Survey*; as discussed later in this chapter.

Figure 4.10. Enterprise Survey of Constraints in Armenia, 2013



Source: WB *Enterprise Survey*, 2013.

Figure 4.11. Executive Opinion Survey of Constraints in Armenia, 2017



Source: WB *Executive Opinion Survey*, 2017.

To conclude, Armenia's overall performance in international rankings, indexes, and indicators provides an indication that tax rates and administration, customs and trade regulation, corruption and judicial independence/competence might be particularly problematic. These microeconomic variables are the focus of the remainder of this chapter.

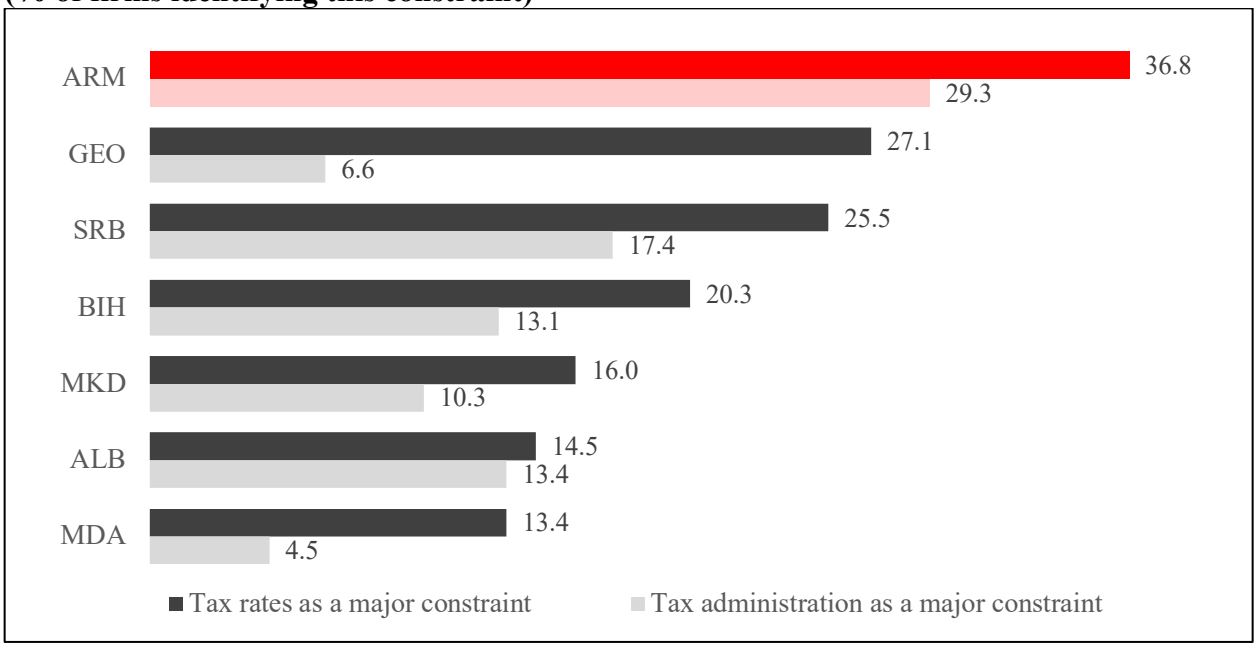
4.3 Microeconomic Issues in Armenia

4.3.1 Taxes

Tax rates and tax administration are two topics of particular importance to private sector growth. It is the job of the government to strike a balance with a tax system that generates the revenue necessary for pro-growth investments in human capital, infrastructure, security, and other areas of public interest, while also fostering a competitive business environment. While there is no single tax rate that is appropriate for all countries, it is always important that the tax system be transparent, fair, and predictable while imposing a low administrative burden on firms that are looking to comply with the law.

In 2013, the top two constraints identified in the *Enterprise Survey* by firms were tax rates (by 36.8 percent of firms) and tax administration (by 29.3 percent of firms), significantly higher than all comparators as shown in Figure 4.12 below. Perhaps unsurprisingly, these two issues were also ranked as the two biggest barriers overall by firms in that year.

Figure 4.12. Enterprise Survey Results on Tax Cost and Administration, 2013 (% of firms identifying this constraint)

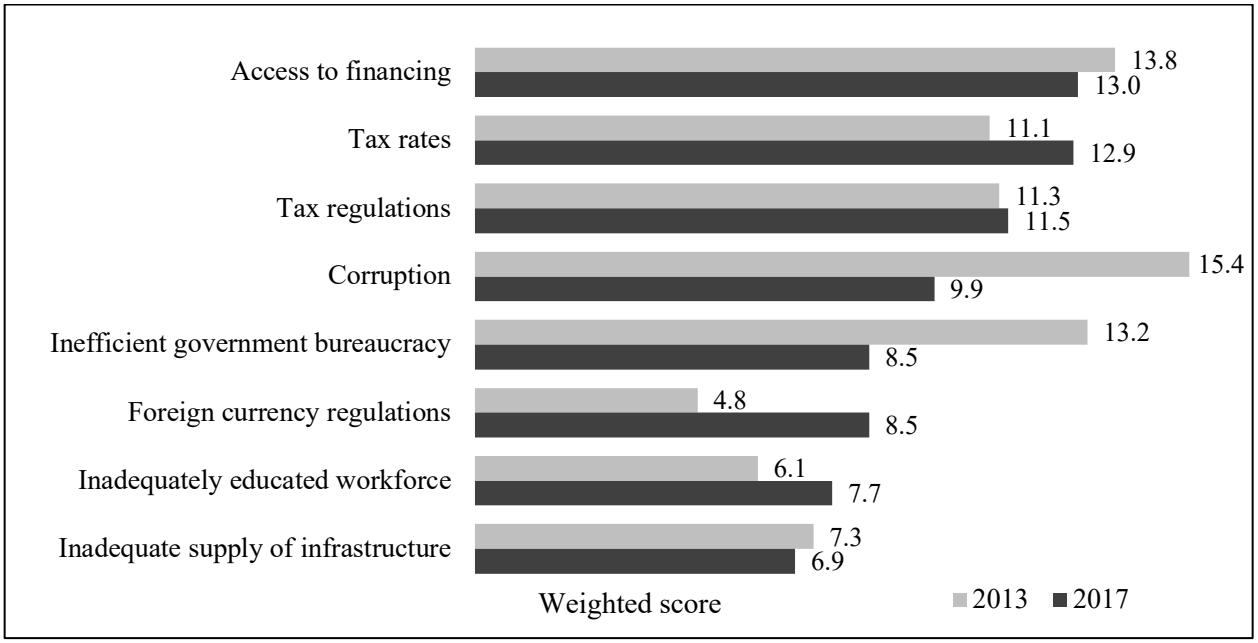


Source: WB *Enterprise Survey*, 2013.

Despite the passage of time, tax costs and the burden of tax administration also came up frequently in discussions with stakeholders in June 2019. Additionally, tax cost and tax regulations continue

to rank high as a constraint in surveys of businesses: in the WEF *Executive Opinion Survey* in 2017 businesses ranked tax costs as the second highest constraint just behind access to finance (a topic addressed in detail in Chapter 3: Access to Finance), followed by tax regulations (see Figure 4.13). Over time, executives have remained fairly consistent that tax rates and regulations are a problem, and in fact this issue seems to have increased in relevance as other issues are perceived to be less problematic over time (i.e., corruption and inefficient government bureaucracy).

Figure 4.13. Executive Opinion Survey of Constraints in Armenia, 2013 and 2017

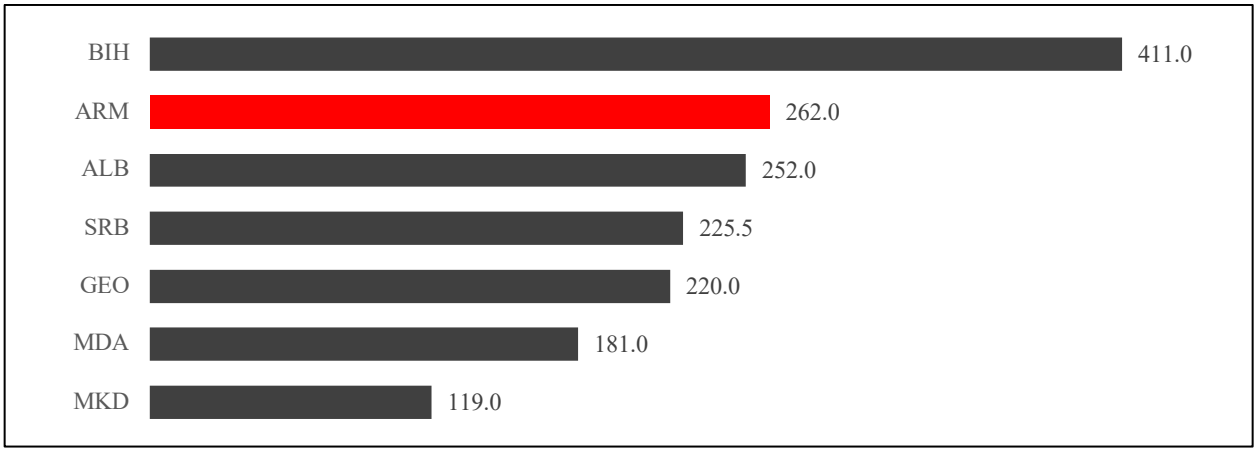


Source: WB *Executive Opinion Survey*, 2013 and 2017.

Shadow Price of Taxes Test: If tax rates and administration are indeed a binding constraint, then firms should observe a cost of taxes that is greater than comparator countries. In the 2019 *Doing Business Ease of Paying Taxes*, which is an indicator capturing both the cost of taxes and the burden of complying with tax administration, Armenia places fifth among comparators and 82 out of 190 economies. In terms of tax administration, Armenian firms submit an average of 14 tax payments per year, which is the 4th most in the group of comparators, and spend 262 hours filing, preparing, and paying these taxes. The number of hours spent on paying taxes is above the international median of 224 hours and 6th in our group of comparators ahead of Bosnia and Herzegovina (where it takes 411 hours).

Interviews with stakeholders in June 2019 suggested that the cost of tax compliance is a relatively heavier burden for smaller companies than larger ones. One stakeholder said the time it takes to prepare, file, and pay taxes is due to trying to understand the tax regulation, which is reportedly complicated, and that this process takes longer for smaller firms who do not have the legal resources to make quicker decisions.

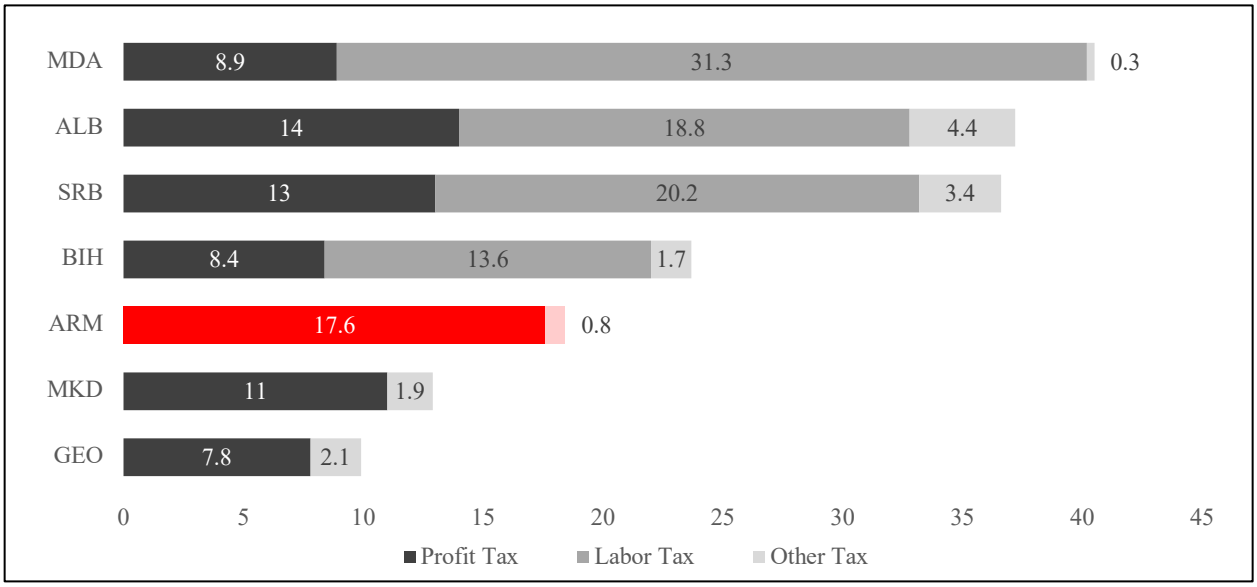
Figure 4.14. Tax Burden (hours to file taxes)



Source: WB *Doing Business* indicators, 2019.

When looking at the cost of taxes as a percentage of firm profits, Armenia falls in the middle of the comparators for total taxes. Total tax cost is 18.5 percent of total corporate profit for a medium-sized company in Armenia, which is the third lowest cost vis-à-vis comparators (see next figure). However, of these total taxes, Armenian firms do pay the highest corporate income taxes or profit rates (as a percentage of profit) at 17.6 percent, followed by Albania at 14 percent. However, firms also do not pay any labor taxes and relatively few other taxes[34] (0.8 percent of profit) whereas other countries have much higher tax rates in these categories – contributing to the overall low tax rate.

Figure 4.15. Tax Cost (% of profit)



Source: WB *Doing Business* indicators, 2019.

[34] Such as property taxes, property transfer taxes, dividend tax, capital gains tax, financial transactions tax, waste collection taxes, vehicle and road taxes, and any other small taxes or fees.

These rates already reflect a sharp 20.3 percentage-point decrease in rates paid by corporations (as a percentage of profit) since the 2013 *Enterprise Survey,* especially after social security contributions were combined with income tax and now borne by the employees rather than the employer.[35] Regardless, statutory corporate tax rates are currently 20 percent, which according to the IMF, is high relative to the regional statutory average of 15.4 percent as of 2017 and these rates have been uncompetitive since 2006.[36] The new Armenian corporate tax rate, at 18 percent, is expected to go into effect in 2020 and is still higher than these regional averages. Parliament approved a new tax policy reform in June 2019, which includes measures to improve tax administration, flatten the personal income tax rates to 23 percent (effective 2020), marginally cut corporate income taxes, and provide preferential tax rates for startups and small businesses. The corporate tax rate will decrease from 20 percent to 18 percent (effective 2021), and the revenue ceiling to qualify for a turnover tax (rather than profit and value added tax) would be raised to 115 million AMD ($240,000) in annual revenue. Additionally, small enterprises with an annual income under 24 million AMD ($50,000) registered outside of Yerevan will be exempt from all corporate taxes.[37] The IMF expects these measures will improve compliance and tax efficiencies[38] and it seems on track to decrease the costs of tax to businesses.

Test of Circumvention: If taxes are a constraint, firms might be expected to begin circumventing their tax obligations. Evidence for this might come from high rates of tax evasion. By definition, tax evasion rates are difficult to measure. However, measures of tax productivity, which is the ratio of actual to potential or theoretical tax revenue, indicates that there are significant leakages in Armenia: IMF figures from 2016 and 2017 show that Armenia, along with Albania and Serbia, have the lowest corporate income tax productivity among comparators:

In the past, numerous tax studies in Armenia have pointed at tax evasion as the chief cause of these leakages, as opposed to exemptions which are another common reason for low productivity.[39] Interviews in June 2019 made it clear that widespread tax evasion, underreporting of profits, and shadow accounting are persistent problems in Armenia. EV Consulting, an Armenian consulting firm, also states that "tax evasion is a pervasive business practice" in Armenia.[40] June 2019 consultations also cited companies not maintaining official financial records for the tax authorities as a reason why banks could not find sufficient and transparent information to provide financing to companies in Armenia.

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[35] PWC (2015). Paying Taxes 2015: The Global Picture. The Changing Face of Tax Compliance in 189 economies worldwide. PWC and the World Bank.
[36] IMF (January 2019). Technical Assistance Report—Public Investment Management Assessment. IMF Country Report No. 19/33.
[37] Elliott, Raffi (June 26, 2019). "National Assembly Approves New Tax Code, AYF Protests." The Armenian Weekly. Source: https://armenianweekly.com/2019/06/26/national-assembly-approves-new-tax-code-ayf-protests/
[38] IMF (June 2019). Republic of Armenia: Selected Issues. IMF Country Report No. 19/155.
[39] World Bank (2011). Republic of Armenia Fiscal Consolidation and Recovery (In Two Volumes) Volume I: Synthesis Report. Report No. 62587-AM
[40] EV Consulting (2014). National Competitiveness Report of Armenia 2013-2014: Growth Imperatives and Constraints. EV Consulting, Economy and Values Research Center.

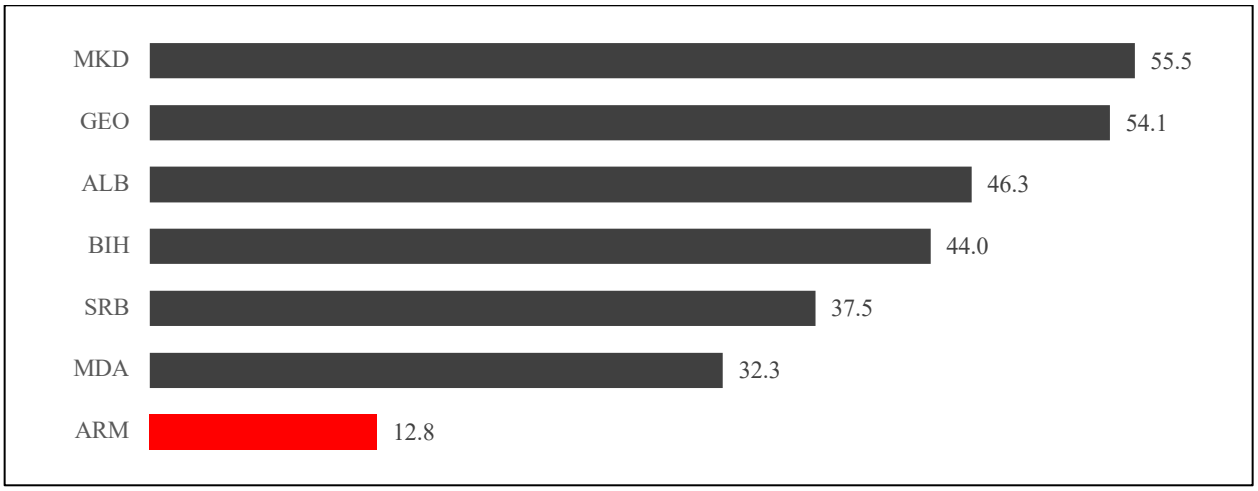
Table 4.1. Comparative Corporate Income Tax (CIT) Productivity, 2016 and 2017[41]

Country	CIT Productivity
Armenia	0.13
Albania	0.13
Bosnia and Herzegovina	0.15
Georgia	0.21
Moldova	0.21
North Macedonia	0.18
Serbia	0.13
Regional average, excluding Armenia	0.18

Source: IMF, January 2019.

Firm Survival and Performance Test: The HRV method hypothesizes that if the ability of a firm to survive and thrive in Armenia is dependent on reducing the impact of taxes, this constraint would be binding. If taxes are a constraint, the most successful firms are those firms with a lower tax burden, and firms unable to bear this burden will choose to operate in the informal economy. One test to examine this relationship is to look at the competitiveness of the informal economy – firms that are not paying taxes – from the perspective of formal firms. In the figure below, Armenian formal firms do not see competition with informal firms as particularly constraining, especially when compared to other economies where informal competition appears to be a bigger constraint.

Figure 4.16. Firm competition with unregistered or informal sector firms (%), 2013



Source: WB *Enterprise Survey*, 2013.

[41] IMF (January 2019). Technical Assistance Report—Public Investment Management Assessment. IMF Country Report No. 19/33.

This result could also be a symptom of low informality in the economy, but equally suggests that informality does not provide firms with a significant competitive advantage over formal firms.

In sum, taxes seem to be a significant hindrance relative to other microeconomic risks; however, the situation does appear to be improving. The government has been working on both pro-growth tax reform to reduce costs to businesses and individuals, as discussed above, and improving tax administration. A series of tax reforms since 2016 have aimed to simplify tax policy and administration and make it more transparent. Armenian tax authorities have relied on online systems to expand e-filing nearly universally, channel tax payments through commercial banks to reduce handling, and an automated risk assessment system for audit selection and e-invoicing, which authorities in Armenia believe removes the opportunity for evasion and allows for a more objective and automated tax auditing process.[42] Recent improvements in tax policy and efforts to reduce tax administration will likely lead to improvements in this area.

4.3.2 Customs and Trade Regulation

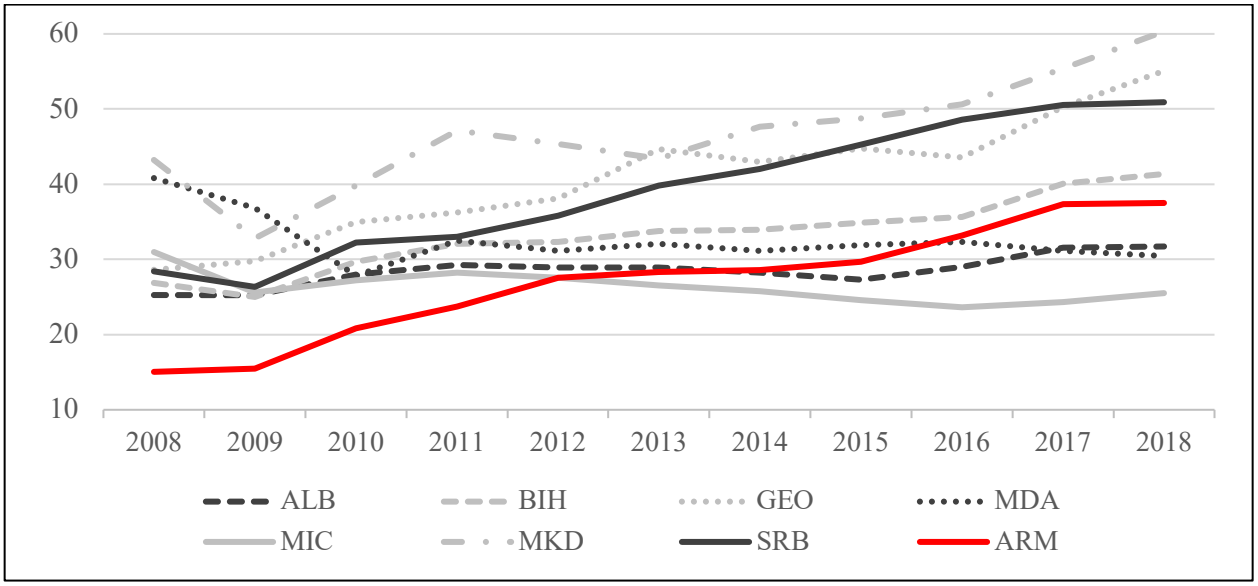
Armenia is ranked 46 out of 190 countries when measuring trading across borders in the *Doing Business* indicators; this places Armenia fairly high on a global scale but still manages to be the lowest rank (7th) in our group of comparators. Armenia has a highly open market and a liberal regime for trade and investment[43] and offers many incentives to exporters (e.g., no export duty, value-added tax (VAT) refund on goods and services exported) and foreign investors (e.g., income tax holidays, the ability to carry forward losses indefinitely, VAT deferral, and exemptions from customs duties for investment projects).[44] It has been a member of the World Trade Organization (WTO) since 2002 and acceded to the EAEU in 2015. The economic benefits of trade include increased competition, lower consumer prices for goods and services, and access to new markets. Membership to the EAEU could attract investors interested in accessing the broader EAEU market, especially given its relatively open trade regime in services vis-à-vis other EAEU members.[45] On the other hand, the EAEU has a complex system of standardization that could change or complicate imports into Armenia.[46] Lastly, Armenia also qualifies to export its products under the EU's Generalized System of Preferences (GSP) and the U.S. GSP program and most recently in 2017, reached a Comprehensive and Enhanced Partnership Agreement with the European Union (EU).

Armenia's exposure to international trade has been improving in recent years, although it stagnated in 2018. Since 2008, Armenia's relative exposure has increased remarkably vis-à-vis comparators and is now 5th among comparators with exports representing 37.5 percent of its GDP, a large change from 2008 when Armenia was the least exposed economy with exports at just 15 percent of GDP, far below any other comparator (see Figure 4.17). Exports to Russia have increased in

[42] Interviews in June 2019.
[43] World Bank SCD (2017).
[44] U.S. Department of State (2019). Investment Climate Statement: Armenia.
[45] World Bank SCD (2017).
[46] Export.gov (2019). Armenia-Trade Barriers. Date published February 12, 2019. Source: https://www.export.gov/article?id=Armenia-trade-barriers

particular. Since Armenia joined the EAEU, goods exports to Russia have grown four times faster than goods exports to other countries in the world (see Figure 2.9). This is a version of the impulse-response test.

Figure 4.17. Exports in comparator group (% GDP)



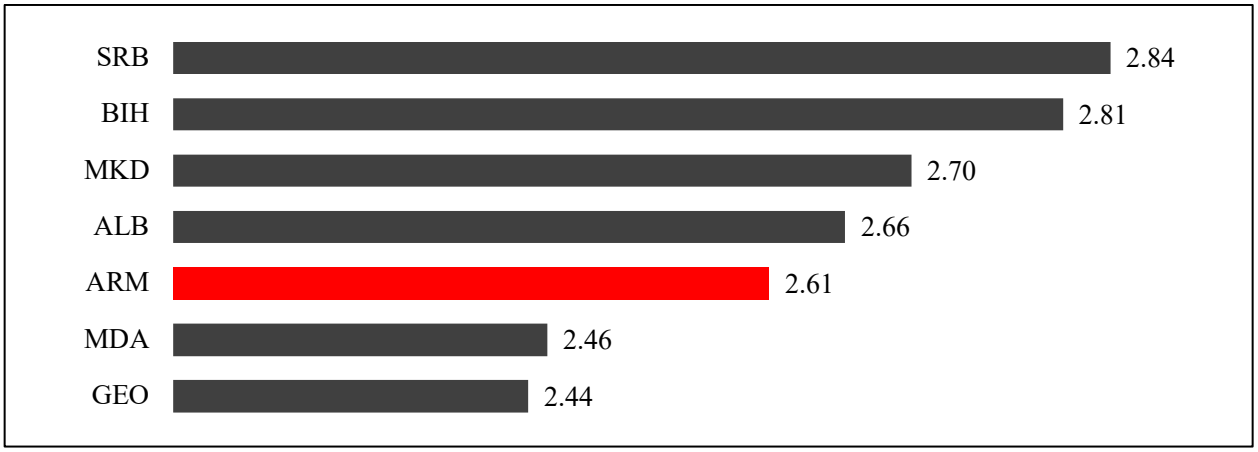
Source: WB *World Development Indicators*.

Interviews in June 2019 discussed at length the difficulties around exporting, which primarily focused on challenges in transiting these goods. There are several reasons transiting goods and services could be difficult, one being the quality of the physical infrastructure itself—which is discussed in the Infrastructure Chapter—and the quality of the transportation services and regulations, which we examine in this chapter to determine to what extent the Armenians customs and logistics policies and regulations may be problematic.

The 2018 *Logistics Performance Index (LPI)* ranks Armenia as 92nd in the world (out of 160) and 5th in our group of country comparators on overall logistics[47] (see Figure 4.18), which is a benchmarking tool used to identify strengths and weaknesses of trade logistics on a scale of 1 (very low) to 5 (very high). These ratings are based on a survey of global freight forwarders and express carriers who operate in multiple countries. According to these professionals, only Moldova and Georgia have lower scores for their logistics. Armenia's score is relatively high (2nd in the comparator group) for infrastructure - a measure of perceived quality of trade and transport infrastructure - and customs (3rd in the comparator group) – a measure of efficiency of customs and border clearance.

[47] LPI 2018.

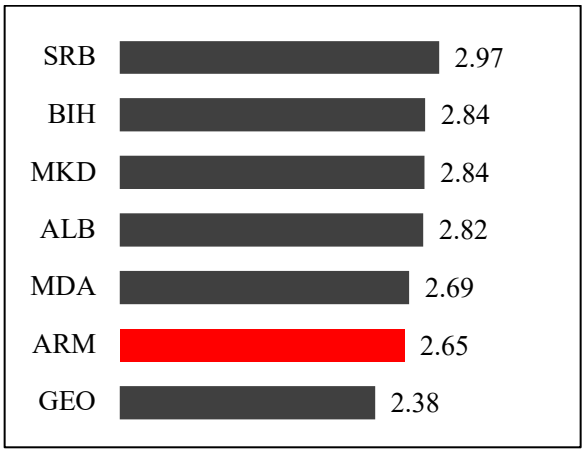
Figure 4.18. Comparative Logistics Performance Scores, Overall Logistics



Source: WB *Logistics Performance Index (LPI)*, 2018. Higher scores are better.

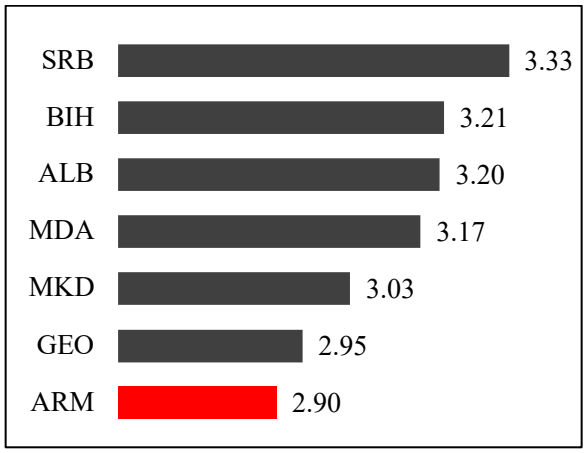
However, Armenia had relatively low scores for several sub-indices: Armenia was ranked 5th among comparators for both logistics quality and competence and tracking and tracing consignments. The World Bank recently reported that logistics services are highly segmented in Armenia. There is room to develop the domestic logistics industry by adopting modern supply chain management techniques by manufacturers and importers, and better regulating the traditional transport services and freight forwarding industry.[48] Interviews suggested a large problem was a highly concentrated logistics sector dominated by one major player in trucking.[49]

Figure 4.19. Comparative Logistics Performance Scores, International Shipments



Source: WB *Logistics Performance Index (LPI)*, 2018.

Figure 4.20. Comparative Logistics Performance Scores, Timeliness



Source: WB *Logistics Performance Index (LPI)*, 2018.

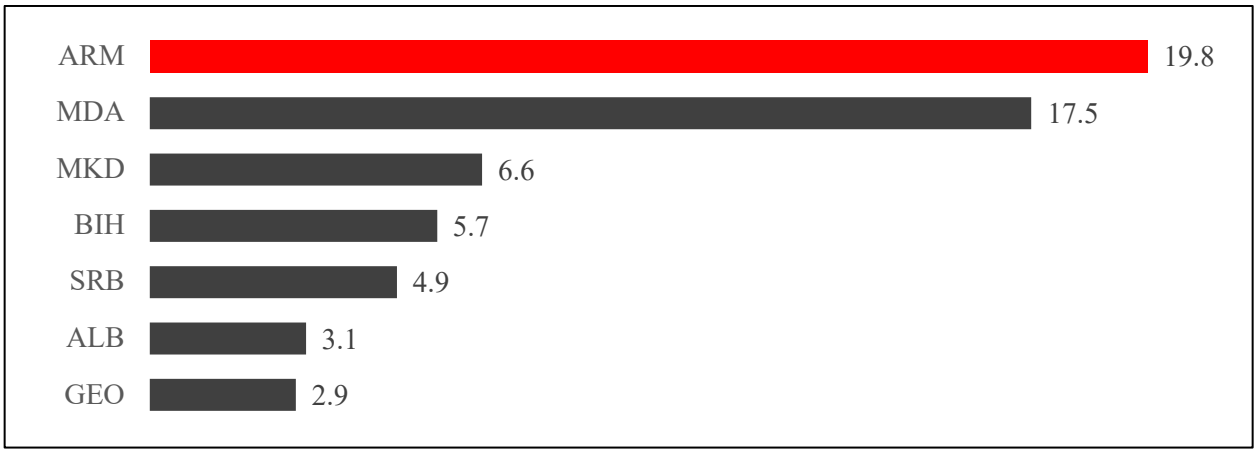
[48] World Bank SCD (2017), page 18.
[49] Interviews June 2019.

Additionally, Armenia ranks 6th among comparators for its ability to arrange competitively priced shipments and ranks at the bottom among comparators for its timeliness with which shipments reach consignees within the scheduled or expected delivery times (see Figure 4.20).

Timeliness could possibly be related to Armenia's challenging transit routes, primarily through Georgia to the Lars border with Russia, which often causes long delays for weather or other unexpected reasons, or through Georgia to the Black Sea, where weather also can cause delays. Georgia's relatively low ranking on timeliness is evidence that this rating might be caused by exogenous factors that affect both countries. However, the *Doing Business* indicators suggest that Armenia's customs and trade regulations might be adding their own trade costs (discussed below). Additionally, both local and foreign businessmen indicate that cumbersome and ambiguous laws and procedures as well as their poor and inconsistent administration are major obstacles in dealing with the customs authorities.[50] However, since the new government came to power in May 2018, significant improvements have been reported[51], although businesses have reported that reforms to customs are still needed.[52]

Shadow Price of Customs: If trade is a binding constraint, then actors should experience customs and trade regulation costs that are higher than competitors. According to Armenian firms, they do perceive higher challenges with customs and trade regulations: nearly 20 percent of Armenian firms reported customs and trade regulation as a major constraint in 2013, above all other comparators (see Figure 4.21).

Figure 4.21. Firms perceiving customs and trade regulations as a major constraint (%)



Source: WB *Enterprise Survey*, 2013.

In the *Doing Business Ease of Trading Across Borders*, Armenia's low score vis-à-vis comparators is primarily driven by high costs and time burden to export goods out of the country. In the table below, it is clear that Armenian firms experience lengthy and costly delays in exporting in

[50] International Business Publications (2016). Armenia: Business and Investment Opportunities Yearbook: Volume 1.
[51] Export.gov (2019).
[52] U.S. Department of State (2019). Investment Climate Statement: Armenia.

particular, although documentary compliance costs for importing are also high relative to comparators. For exporting, Armenian firms wait the longest to comply with border customs regulations and other mandatory inspections as well as the time for handling at the border: for Armenian firms this process takes 39 hours to export, far worse than the next nearest comparator at 9 hours (Albania). Armenian firms pay $100 for this border process, which is in the middle of the comparators. Similarly, the cost for documentary compliance, including obtaining, preparing, processing, presenting, and submitting documents for exporting to customs or other relevant authorities is high: this process costs $150 dollars in Armenia, which is the highest of all comparators and far more than the next nearest country at $92 (in Bosnia and Herzegovina).[53]

Table 4.2. Time and Cost to Export and Import, disaggregated figures

Country	**Time Burden of Compliance (hours)**		**Cost of Compliance (USD)**		
	Documentary Compliance – Export	Border Compliance – Export	Documentary Compliance – Export	Documentary Compliance – Import	Border Compliance – Export
Albania	6	9	10	10	55
Armenia	**2**	**39**	**150**	**100**	**100**
Bosnia and Herzegovina	4	5	92	97	106
Georgia	2	6	0	189	112
Moldova	2	9	45	50	103
North Macedonia	48	3	44	41	76
Serbia	2	4	35	35	47

Source: WB *Doing Business* indicators, 2019.

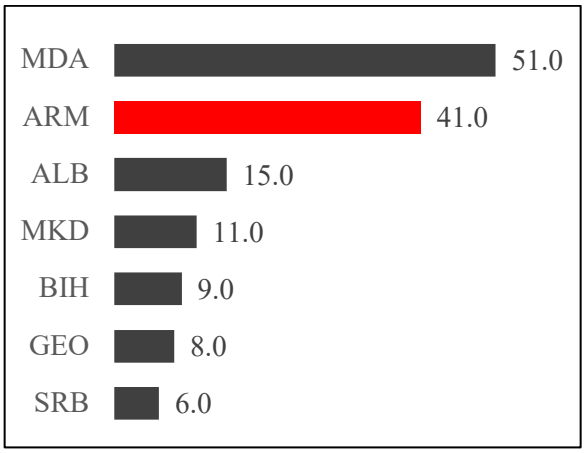
The *Doing Business* indicators suggest that costs to import are not particularly high in 2019, when firms are able to follow regulatory requirements in accordance with the law. It is important to note that in the 2013 *Enterprise Survey*, firms reported a much higher burden to import and far higher than the rest of the comparators. Firms in Armenia in 2013 reported an average of 17.6 days for imports to clear customs, far more than the next highest comparator which was North Macedonia with only 6.7 days to clear customs. Since 2013, border management has reportedly improved; but the World Bank notes significant implementation gap between central reforms and the realities on the ground.[54] The upcoming *Enterprise Survey* in Armenia should shed some light on whether

[53] World Bank *Doing Business* indicators, 2019.
[54] World Bank SCD (2017), page 18.

importation, from the perspective of Armenian firms, remains a challenge in reality and if it continues to deviate from the import and export procedures in the formal regulations.

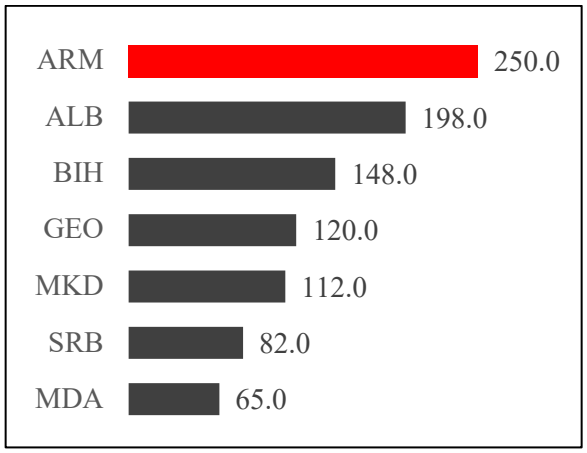
What does emerge is a clear picture that Armenia's regulatory export controls impose a high time and cost burden, more so than in the group of comparators. Taking together the cumulative costs of border and documentary compliance, Armenia is the most expensive country for exports in terms of cost (at $250) and second most expensive in terms of time (at 41 hours) in the comparative group in 2019, as shown in Figure 4.22 and Figure 4.23.

Figure 4.22. Time to export, cumulative figures (hours)



Source: Own calculations based on WB *Doing Business Indicators*, 2019.

Figure 4.23. Cost to export, cumulative figures (USD)



Source: Own calculations based on WB *Doing Business Indicators*, 2019.

While the Customs Code facilitates export transactions with much less documentation than for customs clearance of imports, most exporters report hassles in the customs houses as of 2016 that may be creating these increased costs and time burden. One of these is the informal requirement to submit a special permit issued by the head of the customs house to the customs officer. To get such a permit, exporters must petition the head of the appropriate customs house in writing. Although there are no reported cases of rejection, this practice is not in line with the existing legal framework.[55]

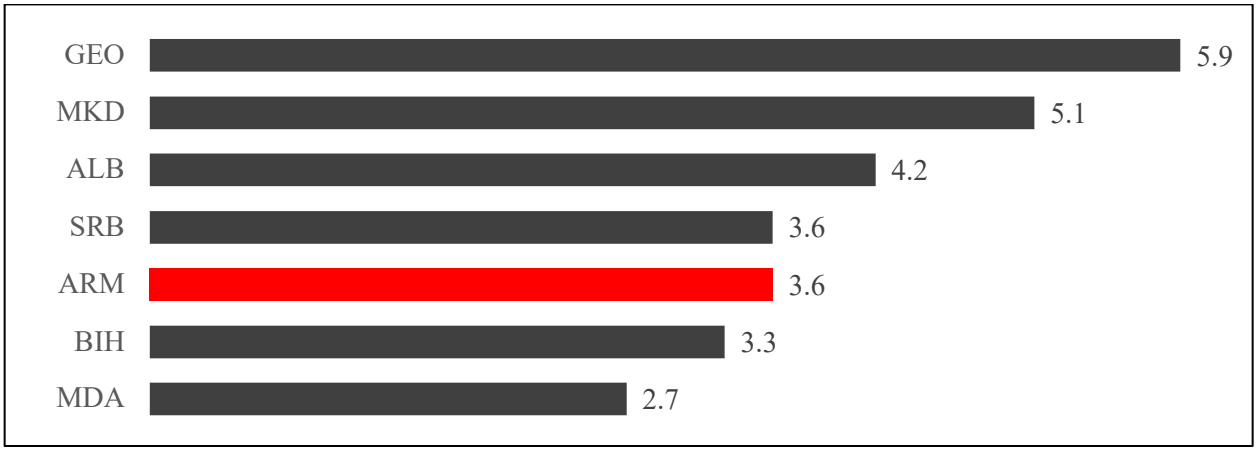
Certification of origin is reportedly also a complicated and costly procedure for exporters. Exporters must present a certificate of origin from the Armenian Chamber of Commerce and Industry (ACCI), which applies a complicated and expensive mechanism for issuing certificates. ArmExpertiza – a specially created sub-division of the ACCI, charges high fees to specifically

[55] International Business Publications (2016). Armenia: Business and Investment Opportunities Yearbook: Volume 1.

study samples of goods to be exported. Exporters, especially those that export goods in relatively modest quantities, are confused and discouraged by the procedures and complicated fees.[56]

Test of Circumvention: If customs and trade regulations are a binding constraint, firms should be attempting to circumvent the costs or time burdens associated with official trade channels. Data on informal trade flows would be helpful but are not available. However, the latest *Global Enabling Trade Report* (2016) reports that executives in Armenia reported that firms pay an average amount of undocumented extra payments or bribes connected with imports and exports, a value of 3.6 on a scale of 1 to 7, with 7 being "never occurs".[57] This places Armenia as 75th globally out of 136 countries, and 5th in the group of comparators, with Bosnia and Moldova having more reported irregular payments for exports and imports. As such, there is some evidence that non-tariff barriers could be causing actors to bypass official trade channels: firms are paying some irregular payments for importing and exporting but are not demonstrating extraordinary behavior vis-à-vis the comparator group.

Figure 4.24. Irregular payments connected to imports and exports



Source: WEF *Global Executive Opinion Survey*, 2016.

The World Bank Systemic Country Diagnostic (SCD) also detected constraints in trade and transport facilitation (logistics and border management) and identified the risk management approach to have significant weaknesses and lacks efficiency. According to the World Bank, importers have to go in person to the Customs office to validate their declarations and pay in cash, while the electronic payment system is still not effective ten years after its introduction.[58] Overlaps

[56] International Business Publications (2016). Armenia: Business and Investment Opportunities Yearbook: Volume 1.
[57] Average score across the following *Executive Opinion Survey* question: In your country, how common is it for firms to make undocumented extra payments or bribes connected with imports and exports? The answer ranges from 1 [very common] to 7 [never occurs].
[58] World Bank SCD (2017), page 18.

and inconsistencies persist, despite significant efforts to reduce agency overlaps under the National Single Window initiative, for example in the clearance of goods, or container clearances.[59]

Overall, the evidence on customs and trade regulation shows that Armenia performs poorly, particularly on export procedures; combined with weaknesses in transport infrastructure, this evidence implies that trade and customs regulation is a binding constraint.[60] While there is no particularly strong evidence of irregular import and export payments to circumvent customs and trade regulations, Armenian firms regard trade and customs regulation as a particularly problematic challenge vis-à-vis comparators. This is possibly driven by lengthy and costly export procedures and a gap between import regulations and compliance with these regulations at the border.

4.3.3 Corruption

Endemic corruption was undoubtedly a serious issue in Armenia, which directly led to massive street protests in 2018 overturning the Republican Party of Armenia that had ruled since 1999, launching the "Velvet Revolution". Nikol Pashinyan became Prime Minister on a public platform heavily predicated on anti-corruption. High-profiles arrests of notorious oligarchs and other measures have led to a clear perception among stakeholders interviewed in June 2019 that corruption issues have significantly diminished following the revolution, a feeling that was shared by both domestic stakeholders and international observers of Armenia. An International Republican Institute poll done within the first 6 months of the revolution suggested that 81 percent of Armenians surveyed believe that the corruption problem has improved, compared to 15 percent who say it has remained the same and two percent who think it has deteriorated.[61]

Until the Velvet Revolution, signs suggest that corruption was a major problem for businesses in Armenia. The country presently ranks 99th (out of 180) in Transparency International's 2018 *Corruption Perceptions Index*, which is an index aggregating data from a number of different sources that provide perceptions of business people and country experts of the level on corruption in the public sector.[62] The organization's *Global Corruption Barometer* in 2016 found that Armenia was the world leader in not reporting corruption: 77 percent of respondents said that reporting incidents of corruption was socially unacceptable.[63] Armenians perceived government officials to be the most corrupt group (45 percent of those surveyed), see next table.

[59] World Bank SCD (2017), page 18.
[60] The customs regulation area is rapidly changing, with some anecdotal signs that the situation is better than the data indicates, including very recent developments (e.g. rollout of single window initiative) occurring since the IGD team's consultations in June 2019.
[61] International Republican Institution (2018). New Poll: Armenians Optimistic About Future, New Government. October 9, 2018. Online here: https://www.iri.org/resource/new-poll-armenians-optimistic-about-future-new-government
[62] Transparency International (2018), *Corruption Perceptions Index* 2018: Global Scores.
[63] Transparency International (2016), Global Corruption Barometer.

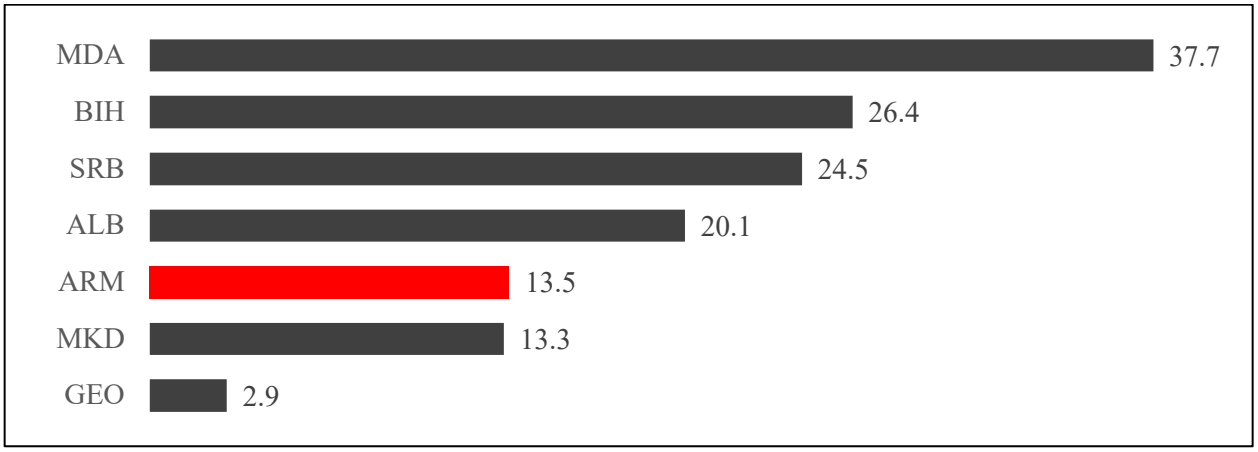
Table 4.3. Perceived Corruption among officials in Armenia, 2016[64]

Officials	Perceived Corruption (% of survey respondents)
Government officials	45
President/Prime Minister	44
Tax Officials	43
Members of Parliament	42
Judges	41
Police	40
Local government officials	37
Business Executives	31

Source: Transparency International *Global Corruption Barometer,* 2016.

Corruption translates to discriminating bureaucracy, especially as it relates to tax inspections and treatment, at customs, and arbitrary enforcement of the tax law.[65] Over 13 percent of Armenian firms identified corruption as a major constraint in the 2013 *Enterprise Survey*, which is relatively low within the comparator group (see Figure 4.25). If Armenian firms were asked to give a gift to get work done, they were most likely to pay a gift to get a construction permit (20.9 percent of firms), followed by gifts to get an operating license (10.6 percent of firms), and gifts to tax officials (for 4.6 percent of firms).[66]

Figure 4.25. Firms identifying the corruption as a major constraint (%), 2013



Source: WB *Enterprise Survey*, 2013.

Since the 2013 *Enterprise Surveys*, it seems this issue has remained problematic: in the most recent *Executive Opinion Survey*, corruption was the fourth highest ranked problematic factor for

[64] Question: How many of the following people do you think are involved in corruption? Percentage of people answering "All of them" and "Most of them".
[65] World Bank SCD (2017).
[66] World Bank *Enterprise Survey*, 2013.

Armenian executives (see Figure 4.11).[67] However, when benchmarked against comparators, Armenian executives were one of the least likely to pay a bribe for public services: Armenian firms reported the second fewest irregular payments behind Georgia in 2017 and were ranked 61 out of 140 for irregular payments globally.

Corruption was clearly a problematic factor for Armenian firms leading up to the revolution, though perhaps not as problematic as in the comparator countries. This led to problems for businesses and has possibly compounded other issues discussed in this chapter in tax administration, customs, and judiciary independence. Many signs suggest that this is improving significantly in the new government, although sufficient data do not yet exist to determine to what extent they have been successful; however, corruption is unlikely a binding constraint to business in the current environment. The upcoming *Enterprise Surveys* in Armenia and the comparators will shed some light on this issue.

4.3.4 Judicial Independence and Competence

Although the WEF *GCI* indicators suggest that Armenia is doing relatively well in its efficiency of the legal framework to settle disputes (top performer in the comparison group), judicial independence and the efficiency of the legal framework to challenge regulation (2nd in comparator group), numerous sources including the recent World Bank's SCD highlighted the competence and judicial independence as a weakness. This sentiment was echoed in the interviews with stakeholders in June 2019 and therefore, examined in this chapter.

The lack of an independent and competent judiciary is problematic for doing business in Armenia. These weaknesses are reflected in the *Doing Business* survey indicator for the time to enforce contracts, which has remained at 570 days since 2012. However, when evaluated against the comparator group, Armenia is the third fastest court system behind Georgia (with 285 days) and Albania (at 525 days).[68]

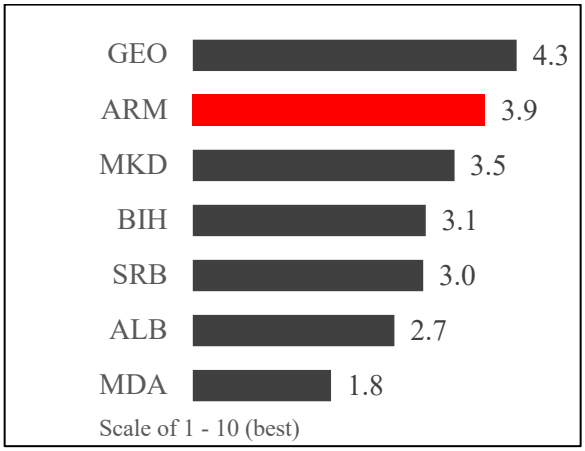
There were signs of improvement even before the revolution: Armenian judicial independence ranked 106th out of 140 countries by the *Global Competitiveness Report* 2015-16, and now ranks 85th just two years later, an indicator which is based on the WEF *Executive Opinion Surveys*.

The Fraser Institute *Economic Freedom Index* places Armenia as relatively well performing vis-à-vis comparators in 2016, although far from high performing on an absolute scale (see Figure 4.26 and Figure 4.27). Armenia has the second highest score for judicial independence (although only 3.9 on a scale of 10), and the highest score for impartial courts (with a score of 4.2) when benchmarked against comparators. Armenia's relatively high performance on this indicator is driven by a low benchmark set by the comparators: Transparency International's *Global Corruption Barometer* suggests that Armenia, Bosnia and Herzegovina, Moldova, and Serbia are

[67] WEF *Executive Opinion Survey*, 2017.
[68] World Bank *Doing Business* Report, 2019.

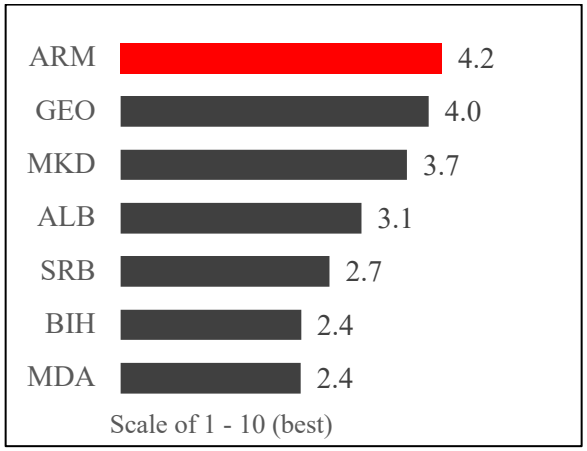
among the countries in Europe and Central Asia with the most severe corruption issues, which could also be influencing their judiciaries.[69]

Figure 4.26. Fraser Freedom Index, Judicial Independence, 2016



Source: Fraser *Freedom Economic Index*, 2016.

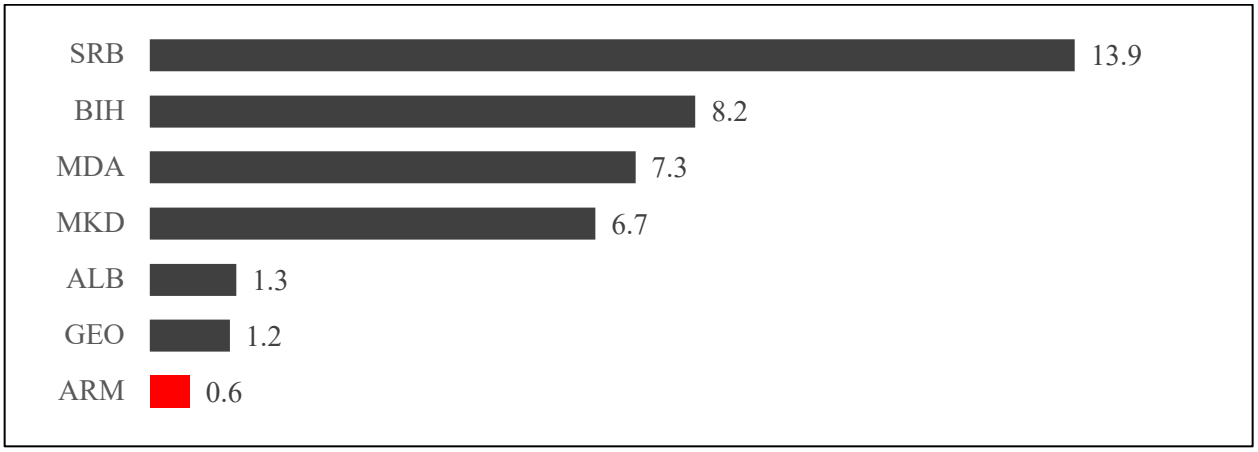
Figure 4.27. Fraser Freedom Index, Court Impartiality, 2016



Source: Fraser *Freedom Economic Index*, 2016.

Although problems with the judiciary has been cited in the literature and was raised by stakeholders in June 2019, these issues do not overwhelmingly seem to translate to constraints for businesses. In the 2013 *Enterprise Survey,* only 0.6 percent of Armenian firms identified the court system as a major constraint (see Figure 4.28), which is lowest percentage of all comparators.

Figure 4.28. Firms identifying the court system as a major constraint, 2013



Source: WB *Enterprise Survey,* 2013.

However, interviews with firms in June 2019 did raise concerns that the judiciary has not be sufficiently independent in the past, or what was described as "telephone judiciary", where judicial decisions were politically influenced from afar, rather than decided in the court room. Related to the changes discussed above to corruption, there was also a feeling that the judiciary is less reliant

[69] Transparency International (2016), Global Corruption Barometer.

on external decision making after the revolution, but anecdotes shared with the IGD team suggest that now, there are delays as the court system must now learn how to decide cases for itself.

Last year, the Organization for Economic Cooperation and Development (OECD) reported that, despite judicial reform efforts in the past few years, there is still significant room for political influence on judges that should be addressed through further reforms. The report recommends improvement of the procedure to select non-judicial members of the Supreme Judicial Council who form a half of its composition. Additionally, the heavy workload and insufficient funding of the Armenian courts should also be addressed – reinforcing comments heard during interviews in June 2019. OECD reports that, in general, the judicial reform in Armenia is on the initial stage of its practical implementation and has not yet had a significant impact on the integrity and independence of the judiciary.[70]

There is evidence that the judiciary system is weak in Armenia, although not a binding constraint relative to comparators or as reported by firms in the latest available *Enterprise Survey*. With the new government in place, it seems there may be signs of improvement looking forward and efforts to strengthen the judiciary will likely reinforce this trend.

4.4 Conclusion

The overall evidence provided in this chapter shows that the trade and customs regulations seem to be a binding constraint to private sector economic growth and investment in Armenia. Taxes and tax administration also seem particularly problematic, although there are signs of improvement with recent tax reform. Similarly, under the new government, concerns about corruption and judiciary independence are likely also improving.

[70] OECD (2018). Anti-Corruption Reforms in Armenia: Fourth Round of Monitoring of the Istanbul Anti-Corruption Action Plan.

5 MACROECONOMICS

Key Messages

- The macroeconomic environment is not a binding constraint on growth and investment.
- Armenia's government revenues and expenditures are the smallest among comparators. An upcoming tax reform could reduce revenues further if offsetting measures are not taken.
- Public debt levels are sustainable, though the large share of foreign currency debt is a risk.
- While inflation has been historically volatile, it has fallen below the Central Bank of Armenia's target band in recent years. The exchange rate is stable but potentially overvalued.

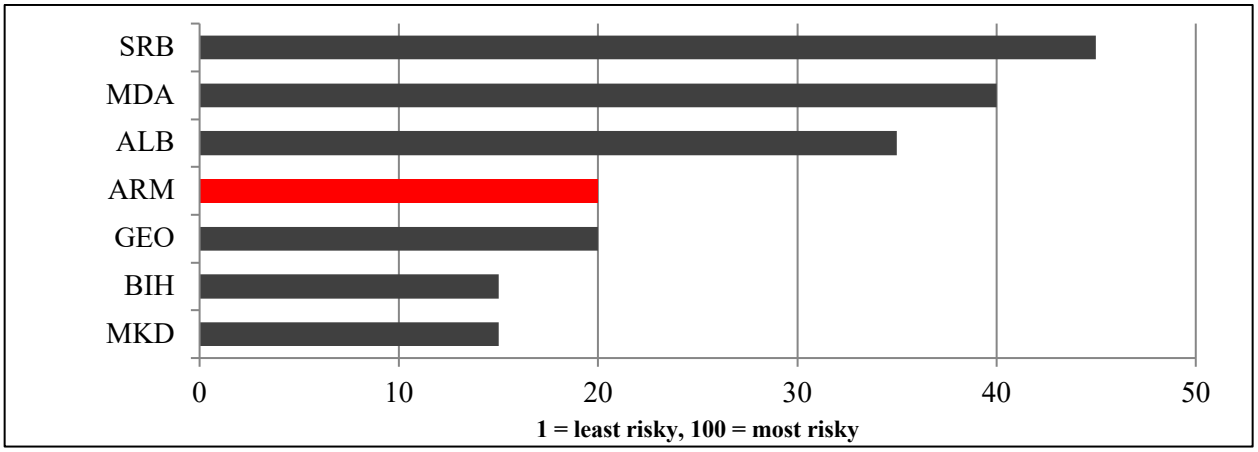
5.1 Introduction

Macroeconomic risks can be a binding constraint to growth when they significantly reduce the ability of private investors to appropriate the returns to their investment. This can occur through two channels: current trends and policies and the expectation of future risks. First, current macroeconomic trends and policies may expropriate the returns to investment through inflation, public debt default, a financial sector crisis, or an artificially overvalued exchange rate, among other factors. Second, the expectation of macroeconomic risk may lower expected returns, discouraging potential investment.

Armenia's macroeconomic environment is not judged to be a binding constraint to growth. While there are few formal HRV tests conducted in this chapter, the overall health of macro indicators is clear: fiscal consolidation is on track, public debt has started to decline, inflation is under control, and exchange rate pressures are limited. Anecdotally, no stakeholders stated that macroeconomic risks were binding during the June 2019 interviews. Nonetheless, risks remain: the economy is vulnerable to external shocks, public debt (though declining) remains high,[71] and upcoming revenue reforms could threaten domestic resource mobilization. However, these risks are not outsized related to Armenia's comparators, based on a meta-index compiled by the Economist Intelligence Unit (Figure 5.1).

[71] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 1.

Figure 5.1. Macroeconomic risk rating



Source: Economic Intelligence Unit, as reported August 2019.

In May 2019, the IMF approved a three-year, $250m stand-by arrangement (SBA) for Armenia. The SBA is intended to be precautionary, with the government planning to draw from it only in the case of a balance of payments shock. Instead, it is meant to support a reform agenda including improved tax compliance, property tax reform, higher capital expenditure, restrained current spending, improved corporate transparency and government, and the implementation of active labor market policies.[72] While the government's pursuit of this SBA indicates that the country is subject to some macroeconomic risk, its choice to seek international support and expertise through the SBA signals a commitment to sound macroeconomic policymaking.

5.2 Fiscal Policy

Fiscal policy can constrain growth through excessive taxation that appropriates profits,[73] excessive or inefficient public spending that crowds out private sector investment, or large fiscal deficits that require unsustainable borrowing. Conversely, with small fiscal deficits, low tax rates, and responsible borrowing, government revenues may be insufficient to support competent regulators or investments in infrastructure and education crucial for private sector activity. In Armenia, the key medium-term challenge for fiscal policy is preserving debt sustainability while also maintaining fiscal space for investment and social spending.[74]

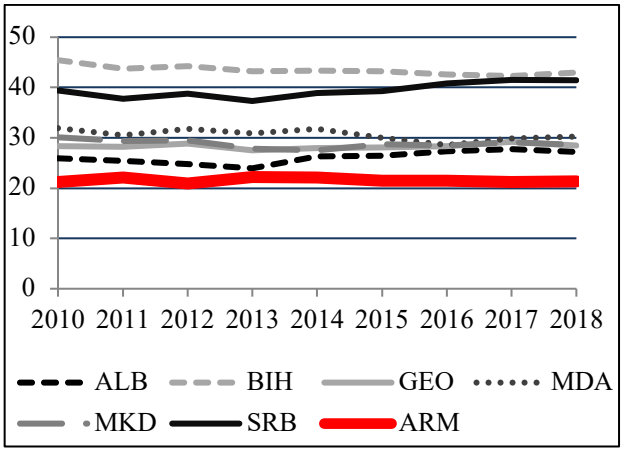
5.2.1 Government Revenues

Armenia's government revenues are the lowest among comparator countries, averaging 22 percent between 2010-2018 (Figure 5.2). While this may not be harmful itself, it does limit fiscal space for the government to make capital investments, respond to macroeconomic shocks, and make social expenditures in health or education. IMF staff analysis indicates that there is some scope to

[72] Economist Intelligence Unit, Armenia Country Report. July 2019. 6.
[73] Taxes are dealt with in more detail in the microeconomic risks chapter, as both tax rates and administration affect firms' investment decisions.
[74] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 10.

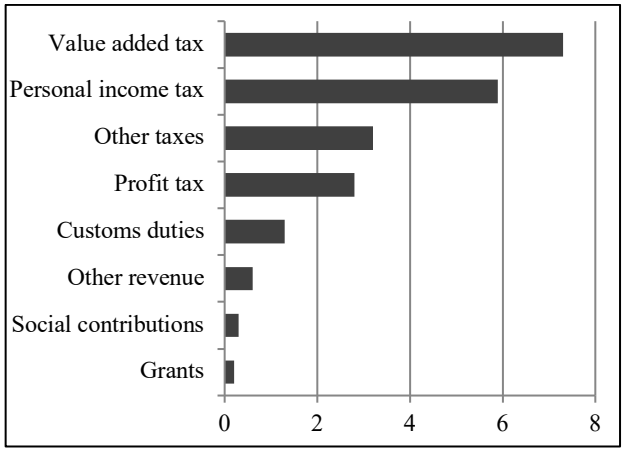
increase Armenia's actual tax collection by reducing inefficiencies in tax administration. As such, the IMF is currently providing technical assistance to the Government of Armenia on improving core tax administration functions and developing a tax compliance strategy.

Figure 5.2. General government revenue (% GDP)



Source: IMF *World Economic Outlook*, April 2019.

Figure 5.3. Sources of government revenue (% GDP), 2018



Source: IMF *Article IV*, 2019.

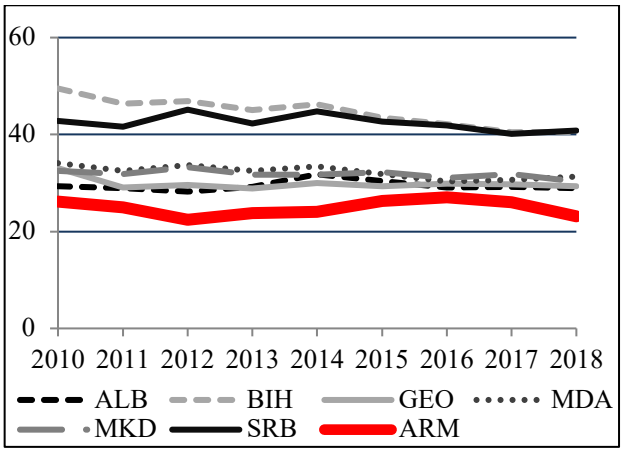
Like most countries, the bulk of Armenia's government revenue comes from taxes (Figure 5.3). As discussed in the micro chapter, Armenia implemented a tax code change in 2016 and is proceeding with a further tax reform that will lower and flatten the personal income tax rate to 23 percent (effective 2020) and lower the statutory corporate income tax rate from 20 to 18 percent (effective 2021). To offset the loss in tax revenue and equity that will result from this reform, the Armenian authorities have proposed an overhaul of property taxation to improve progressivity and the introduction of new taxes on tobacco, gambling, and alcohol, among other measures.[75]

5.2.2 Government Expenditures

Corresponding to its government revenues, Armenia's government expenditures have also consistently been the lowest among comparator countries, averaging 25 percent of GDP between 2010-2018. Given the relatively small size of government revenues, this low level of expenditure is a prudent choice that supports macroeconomic stability. While expenditures had been above average between 2015-2017, they dropped sharply to 23 percent of GDP in 2018 (Figure 5.4). This drop was largely due to suspensions or delays in public expenditures resulting from the recent change in government; expenditures are expected to tick back up in 2019.[76]

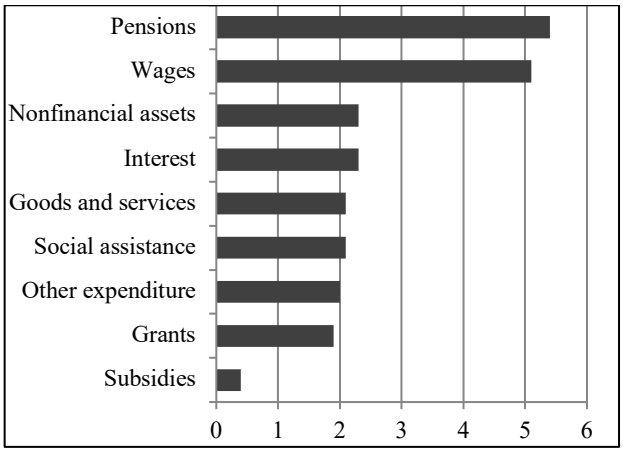
[75] Ibid., 10-12
[76] Economist Intelligence Unit, Armenia Country Report. July 2019. 6.

Figure 5.4. General government total expenditure (% GDP)



Source: IMF *World Economic Outlook*, April 2019.

Figure 5.5. Expenditures by type (% GDP), 2018



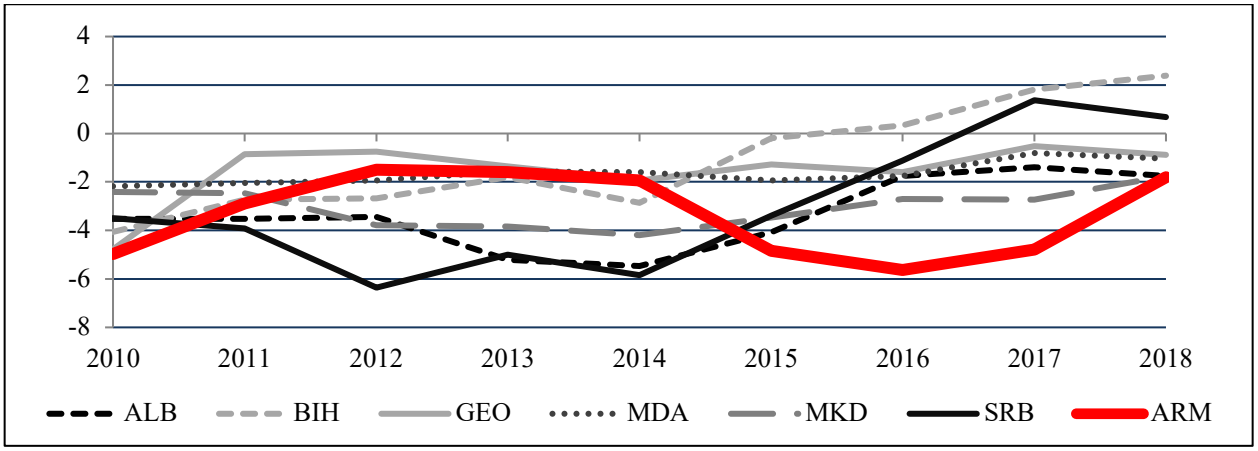
Source: IMF *Article IV*, 2019.

Of government expenditures, capital expenditures have fluctuated between three to four percent of GDP in recent years (with the exception of 2018, when they dropped to 2.3 percent). While wages and pension contributions remain the largest line items in the government budget (Figure 5.5), current expenditures[77] have been declining and are projected to continue this trend.[78]

5.2.3 Fiscal Balance

While consistently in deficit, Armenia's fiscal balance has fluctuated since 2010, ranging from -1.5 percent of GDP in 2012 to -5.6 percent in 2016. As a result of increased tax revenues from the 2016 tax code reform[79] and under-executed capital spending, the fiscal deficit contracted to -1.8 percent of GDP in 2018 (Figure 5.6).

Figure 5.6. General government net lending/borrowing (% GDP)



Source: IMF *World Economic Outlook*, April 2019.

[77] Current expenditures are goods and services that are consumed within the year.
[78] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 27, 37.
[79] Ibid., 27.

5.3 Public Debt

Public debt can constrain growth because excessive borrowing by the government can raise the real interest rate, thus raising the cost of borrowing for private sector investors. Further, large amounts of external debt can expose a country to sharp increases in the ratio of debt to GDP if the exchange rate depreciates and/or if foreign borrowers lose faith in the country's ability to repay its debts. Large amounts of short-term debt exacerbate the latter issue, regularly exposing a country to unpredictable borrowing costs.

Armenia's public debt levels have been on an upward trend since 2008 and both public and external debt are moderate to high among comparators (Figure 5.7 and Figure 5.8). Similarly, interest payments as a percent of debt payments and average interest rates on new external debt are the highest among comparators (Figure 5.9 and Figure 5.10). Nonetheless, the IMF's most recent debt sustainability analysis indicates that public debt levels remain sustainable. Public debt fell to 55.8 percent of GDP at end-2018 (from 58.9 percent of GDP at end-2017) due to favorable macroeconomic conditions, improved tax administration, and underspending.[80] The government's commitment to its revised fiscal rule bodes well, and supports its plan to bring government debt below 50 percent of GDP by 2023.[81] Positively, most external debt is contracted on concessional terms with multilateral donors, and long-term domestic financing sources are increasing due to the recent pension reform. However, the continued high share of foreign currency debt remains an important vulnerability. Compounding this risk is the relative increase in short-term debt.[82]

Armenia's sovereign credit rating falls below investment grade but is in line with comparators.[83] Moody's last rated Armenia's senior unsecured debt as B1 in March 2018. While this rating was unchanged from the last assessment, Moody's upgraded the outlook for Armenia from stable to positive. Per Moody's, this credit rating "balances credit strengths from robust growth potential and improving institutional strength against credit challenges stemming from a small and low income economy that remains exposed to external developments, a moderately high debt burden that relies on external funding, and latent geopolitical tensions with neighboring Azerbaijan."[84] Fitch similarly held Armenia's long-term foreign currency debt at a B+ rating in December 2018, and upgraded its outlook from stable to positive.[85]

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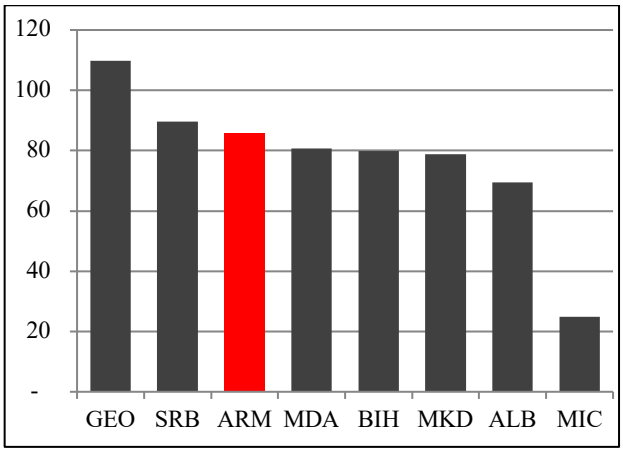
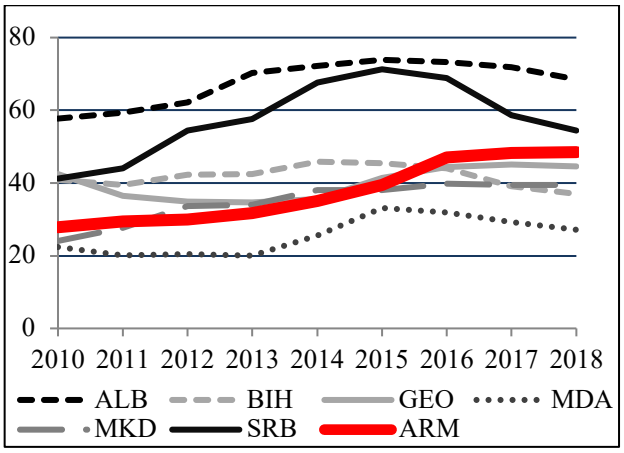
[80] International Monetary Fund, Republic of Armenia Article IV Consultation, Debt Sustainability Analysis. 2019. 53-54.
[81] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 10.
[82] International Monetary Fund, Republic of Armenia Article IV Consultation, Debt Sustainability Analysis. 2019. 53-54.
[83] Trading Economics, "Armenia – Credit Rating." Accessed August 1, 2019. https://tradingeconomics.com/armenia/rating
[84] Moody's Investor Service, "Rating Action: Moody's changes outlook on Armenia's rating to positive from stable; B1 rating affirmed." March 9, 2018.
[85] CBonds, "Fitch Ratings affirms Armenia at "B+" (LT Int. Scale (foreign curr.) credit rating); outlook positive." December 3, 2018.

Figure 5.7. External debt stocks (% GNI), 2017



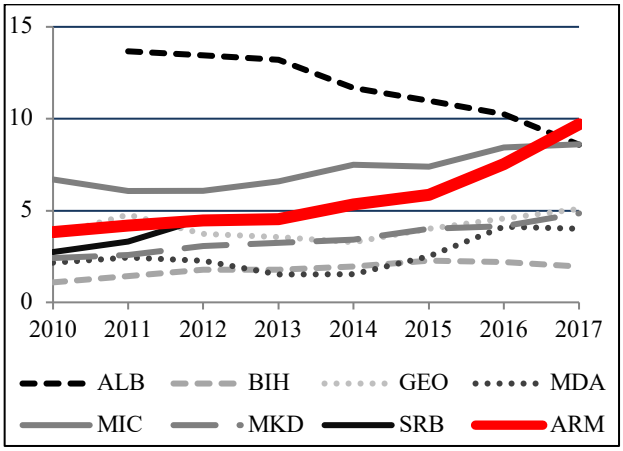
Source: WB *World Development Indicators*, 2017.

Figure 5.8. General government debt (% GDP)[86]



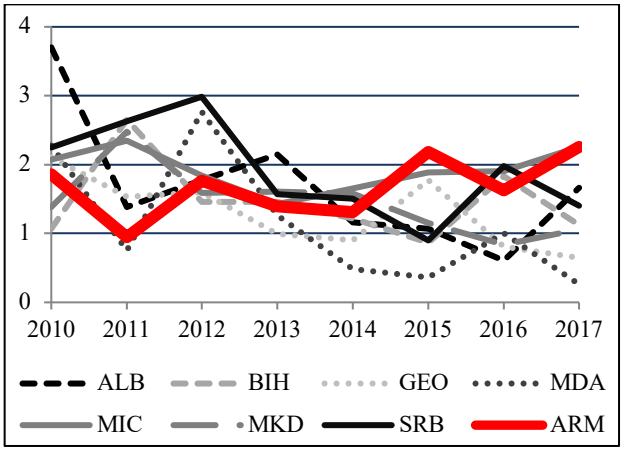
Source: IMF *World Economic Outlook*, April 2019.

Figure 5.9. Interest payments (% of expense)



Source: WB *World Development Indicators*.

Figure 5.10. Average interest rate on new external official debt (%)



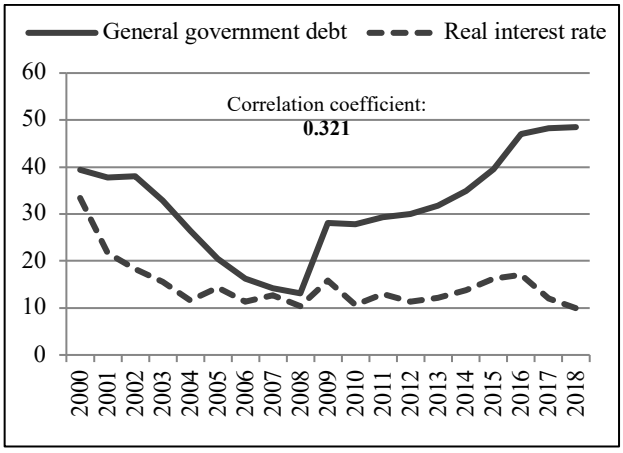
Source: WB *World Development Indicators*.

When governments borrow excessively, this borrowing may crowd out potential private investment by driving an increase in the real interest rate. If the government is crowding out private investment, there should be strong correlation between government debt and the real interest rate. For debt stocks—as measured here by gross government debt—this correlation would be positive, while for debt flows (i.e. the fiscal balance, or net lending/borrowing) it would be negative. In Armenia, there is a positive correlation between debt and the interest rate, though it is extremely weak (Figure 5.11). Examining the fiscal balance, however, tells a clearer story: here there is a relatively strong but still not significant relationship between the real interest rate and the fiscal balance (Figure 5.12). This indicates that government borrowing in Armenia does have a moderate impact on the real interest rate—if the government runs higher fiscal deficits, borrowing costs are

[86] Armenia's debt numbers in this figure only include central government debt. The slightly higher 55.8 percent of GDP in 2018 statistic cited is for total government debt, including the central bank.

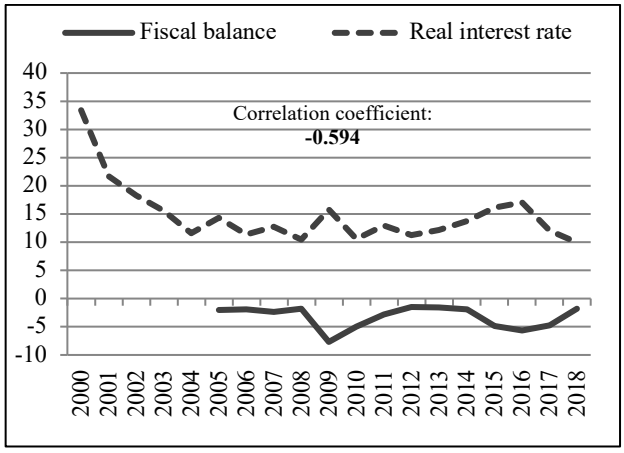
higher for private investors. While this is not a particularly surprising result in a country with shallow capital markets, it does highlight the importance of restraining fiscal deficits and thus reducing further public debt accumulation.

Figure 5.11. Gross government debt (% GDP) and real interest rate (%)



Source: IMF *World Economic Outlook*, April 2019.

Figure 5.12. Fiscal balance (% GDP) and the interest rate (%)



Source: WB *World Development Indicators.*

5.4 Monetary Policy

Monetary policy plays a central role in Armenia's efforts to properly manage macroeconomic variables like inflation, the exchange rate, and foreign reserves. If improperly managed, the private sector and Armenian households could experience expropriation of profits. The Central Bank of Armenia (CBA) is the monetary policy-making institution in the country. It maintains a high level of independence,[87] allowing it to pursue the monetary policy best-suited for the economy.

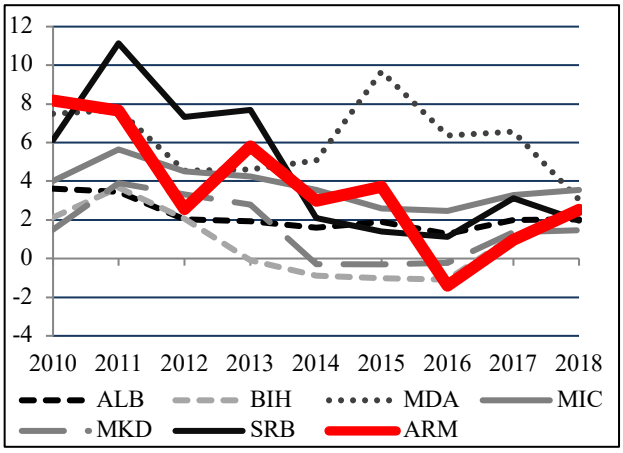
5.4.1 Inflation

Inflation can lower the returns from an investment because volatility or significant increases in the price level can reduce the purchasing power of consumers and raise the cost of inputs for producers. Since 2006,88 the CBA has exercised an inflation-targeting strategy[89] with a medium-term target of 4 percent headline inflation (±1.5 percent). Given the high external exposure of the economy, it is understandable that there have been some fluctuations in inflation (Figure 5.13), resulting in Armenia having the second-highest inflation volatility among comparator countries over the 2008-2017 period (Figure 5.14). However, inflation has nonetheless remained within or below the target band for at least the past 5 years, indicating that inflation expectations are anchored around the CBA's target. As inflation has recently undershot the 4 percent target range,

[87] Dincer, N. Nergiz and Barry Eichengreen, "Central Bank Transparency and Independence: Updates and New Measures." International Journal of Central Banking, March 2014. 216.
[88] Central Bank of Armenia, "Monetary Policy: Objective." https://www.cba.am/en/SitePages/mpobjective.aspx
[89] Central Bank of Armenia, "The Rationale for the Adoption of Inflation Targeting Strategy by the Central Bank of Armenia." https://www.cba.am/Storage/EN/publications/DVQ/npatakadrum%20english.pdf

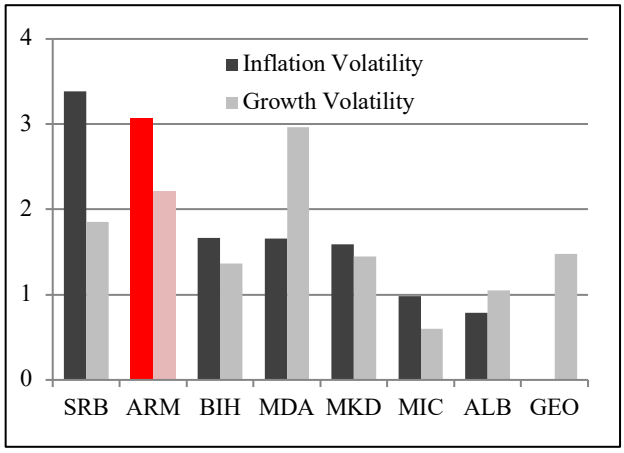
the CBA recently lowered its policy rate by 25 basis points to 5.75 percent in January 2019 (where the rate has remained since, as of June 2019) for the first time since February 2017. The IMF judges this monetary policy stance to be appropriate, given the CBA's medium-term target and the small but negative output and credit gaps.[90]

Figure 5.13. Inflation, consumer prices (% annual change)



Source: WB *World Development Indicators*.

Figure 5.14. Inflation and growth volatility (standard deviation, 2008-2017)



Source: WB *World Development Indicators* and authors' calculations.

5.4.2 Exchange Rates

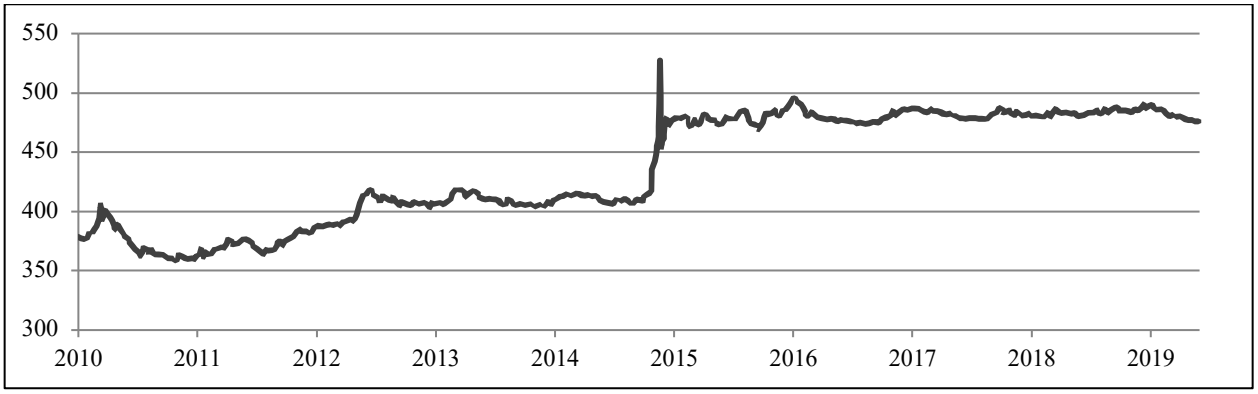
The exchange rate is a critical macroeconomic indicator for an open economy because it determines the relative costs of a country's imports and exports. All else equal, the exchange rate and inflation rate are linked to the extent that production inputs or consumption goods are imported. As the exchange rate depreciates, it raises the relative price of imports, which in turn raises the prices of those consumer goods requiring imported inputs. Similarly, depreciation leads a relative decrease in the price of a country's exports, making them more competitive on the world market.

The CBA closely monitors the impact of interest rates on the exchange rate,[91] and considers the exchange rate a key shock absorber for protecting competitiveness and maintaining adequate foreign reserves. Its policy is to limit foreign exchange interventions to addressing large and disorderly swings, such as the sharp depreciation at the end of 2014.[92] Outside of this depreciation—an external shock that occurred throughout the region due to the Russian financial crisis—the exchange rate has remained remarkably stable, particularly since 2015 (Figure 5.15). While the dram remains exposed to fluctuations in the Russian ruble, it appears to be relatively

[90] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 5, 13-14.
[91] Economist Intelligence Unit, Armenia Country Report. July 2019. 6.
[92] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 14.

more stable (e.g. when the US imposed new sanctions on Russia in April and August 2018, the dram depreciated along with the ruble against the U.S. dollar, but subsequently recovered.).[93]

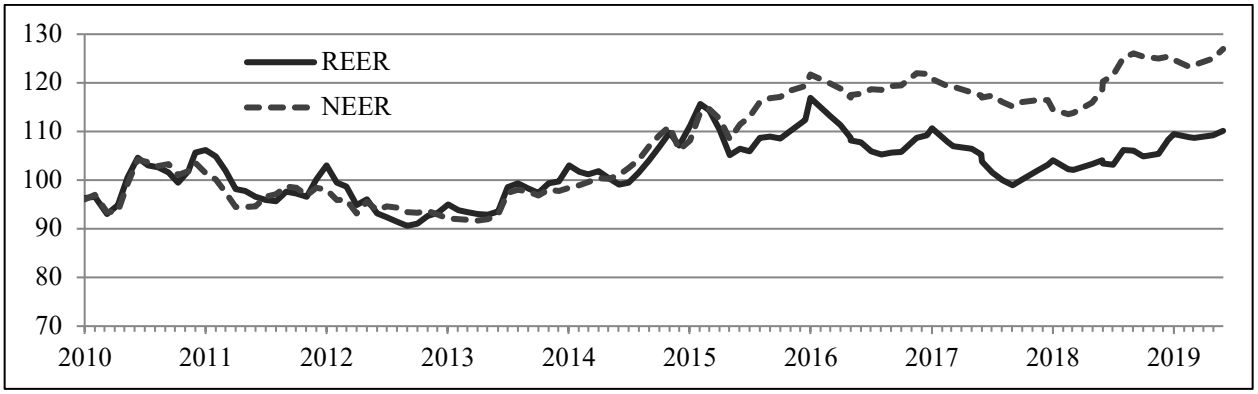
Figure 5.15. Armenian dram to U.S. dollar (daily rate)



Source: Central Bank of Armenia.

Rather than looking simply at the exchange rate with the U.S. dollar, it is also possible to look at the value of the dram against the currencies of Armenia's most important trading partners. For this information we can look at the REER, which is the inflation-adjusted weighted average of bilateral exchange rates between Armenia and its trading partners.[94] While the REER is not a direct indicator of whether a currency is properly valued, long-term trends can signify an underlying disequilibrium in the exchange rate. While the REER has generally fluctuated around 2010 levels, it has been appreciating since mid-2017 (Figure 5.16), indicating an underlying appreciation (i.e., a potential over-valuation) of the dram. An IMF model also estimates that the Armenian dram was overvalued by 6-8 percent in 2018, though the Armenian authorities are skeptical that this is the case.[95]

Figure 5.16. Real and nominal effective exchange rates, monthly (index, 2010 = 100)



Source: Central Bank of Armenia and Authors' calculations.

[93] Economist Intelligence Unit, Armenia Country Report. July 2019. 12.
[94] The nominal effective exchange rate (NEER) is the weighted average of bilateral exchange rates between Armenia and its trading partners, unadjusted for inflation.
[95] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019., 16-17.

5.4.3 Foreign Reserves

Adequate foreign reserves are essential to maintaining stable exchange rates and access to external financing in small open economies. Poor management of reserves can exacerbate inflationary pressures, induce speculative attacks on the exchange rate, and reduce investor confidence in the macroeconomic environment.

There are a variety of ways to measure the adequacy of a country's foreign exchange reserves, some of which are presented below (Table 5.1). One general rule of thumb is that total reserves should exceed the value of three months of imports. While Armenia does meet this import coverage metric, its position weakened slightly from 2017. Another metric is that total reserves should exceed short-term external debt. If this short-term debt were larger than reserves, the country could face a liquidity crisis. Here again, Armenia's reserves are adequate. The IMF's composite reserve adequacy metric also rated reserves as adequate and projects them to remain so over 2019-21. Continued exchange rate flexibility will help protect reserve buffers.[96]

Table 5.1. Foreign reserves, various measures

	2014	2015	2016	2017	2018
Total reserves (current US$, millions)	1,489	1,775	2,204	2,314	2,259
Total reserves in months of imports	2.9	4.4	5.1	4.4	3.7
Total reserves (% of total external debt)	17.4	19.9	22.1	22.4	—
Short-term debt (% of total reserves)	61.0	37.4	48.6	38.7	—

Source: WB *World Development Indicators*.

5.4.4 Dollarization

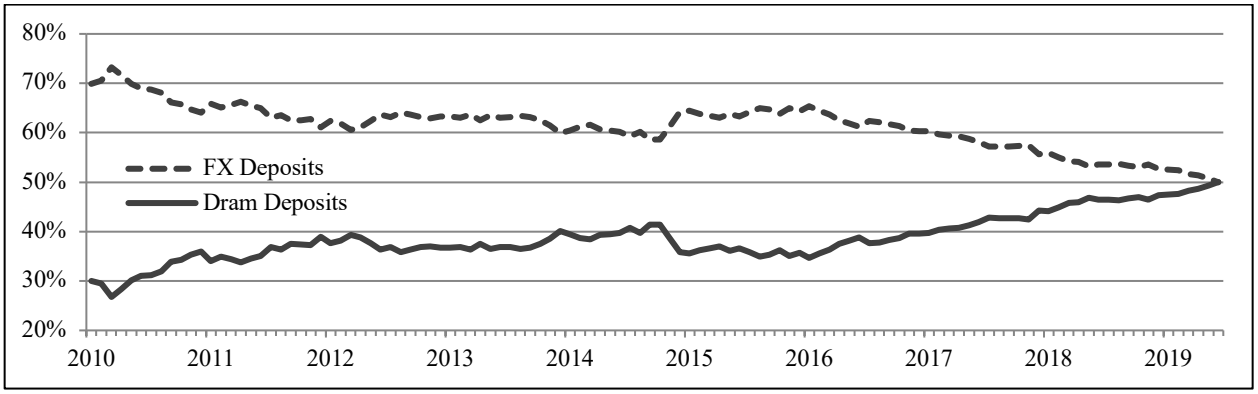
Dollarization refers to the use of the U.S. dollar or other foreign currency in parallel to or instead of the domestic currency. Among other things, high dollarization can indicate that residents' distrust that the domestic currency is a true store of value. It can introduce important sources of risk: for example, if businesses take out a domestic loan in a foreign currency but its revenues are in the domestic currency, the business is subject to significant exchange rate risk. Furthermore, high dollarization weakens monetary policy transmission channels, limiting the ability of a central bank to influence inflation levels, for example.

Armenia's dollarization level is high but declining. While some part of this is likely due to historical distrust of the currency, it is also a result of structural factors like the Armenian diaspora and labor migration.[97] Foreign exchange deposits were finally matched by dram deposits in June 2019, the most recent month of data available, with dram deposits accounting for 50.03 percent of

[96] Ibid., 17.
[97] Cherkasov, V.Y. and J.A. Maklakova, "Dollarization in Armenia: Structural Causes and Evolution of Monetary Policy." Financial Journal (Russian language), 2018.

the total (Figure 5.17). This is the result of a particularly rapid decline since 2015,[98] supported by the stable exchange rates mentioned earlier in this section.[99] Despite the high base of dollarization, this trend of de-dollarization is a clear indication that macroeconomic risks are not binding.

Figure 5.17. Deposit dollarization (% of total resident deposits)



Source: Central Bank of Armenia.

5.5 External Sector

Armenia is a small, open economy whose relationship with international markets has a significant influence on its growth. This relationship is summarized by Armenia's balance of payments—the record of net international payments between the country's residents and non-residents, comprised of three accounts (the current account, the capital account, and the financial account) that balance to zero. If there is a deficit in one account, there must be a surplus in another. Similarly, to sustain investment levels that are higher than national savings levels—as is the case in Armenia—a current account deficit is necessary, implying net financing from abroad. This financing could come in the form of direct investment, portfolio investment, public sector borrowing, remittances, or use of foreign reserves.

While there are many aspects of the external sector that could be explored, this section examines two major segments that have a bearing on Armenia's macroeconomic performance: the external trade balance and remittances.

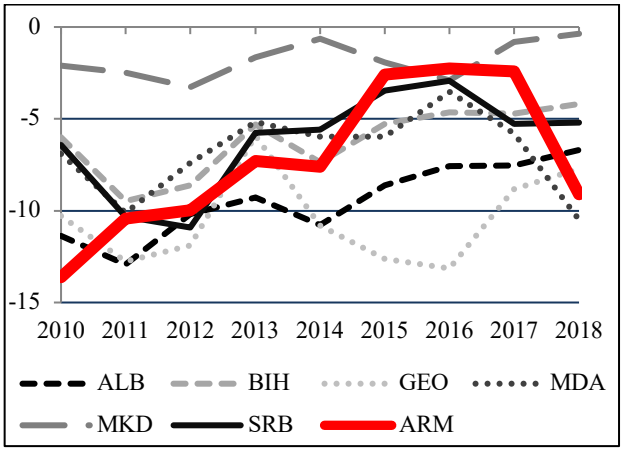
5.5.1 International Trade

Armenia's external trade balance (exports minus imports) and current account balance[100] have been consistently negative since 2010, as they have been in all of the comparators. While it does require a source of financing, the current account deficit is not necessarily a bad thing: the current account is structurally affected by Armenia's persistent need for investment-related imports.

[98] In 2000, foreign exchange deposits equaled 76 percent of residents' deposits, falling to 70 percent in 2010 and 64 percent in 2015. When accounting for non-residents' holding in Armenian banks, foreign exchange deposits were 82 percent of total domestic deposits in 2000, 74 percent in 2010, 71 percent in 2015, and 59 percent in June 2019.
[99] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019., 29.
[100] The current account includes the trade balance, as well as primary income (e.g. salaries and investment returns) and current transfers (e.g. remittances).

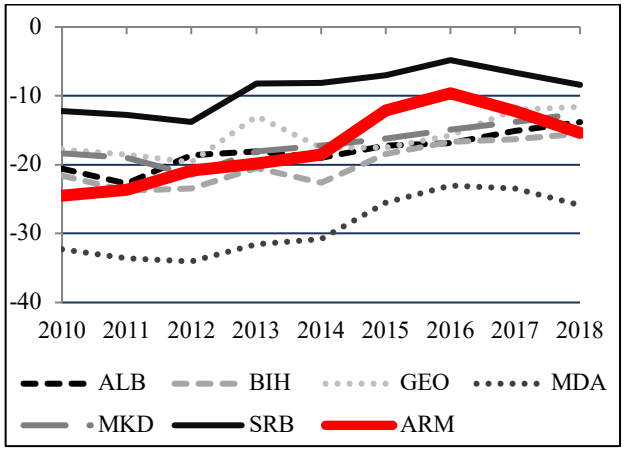
However, the deficit is also emblematic of the country's relatively narrow export base. After declining from 2010 through 2017, Armenia's current account deficit widened to 9.1 percent of GDP in 2018 (Figure 5.18), as domestic demand and imports of capital goods and durables recovered to pre-2014 levels. The external trade deficit was financed mainly by remittances, other private inflows, and foreign direct investment.[101]

Figure 5.18. Current account balance (% GDP)



Source: WB *World Development Indicators*.

Figure 5.19. External trade balance (% GDP)



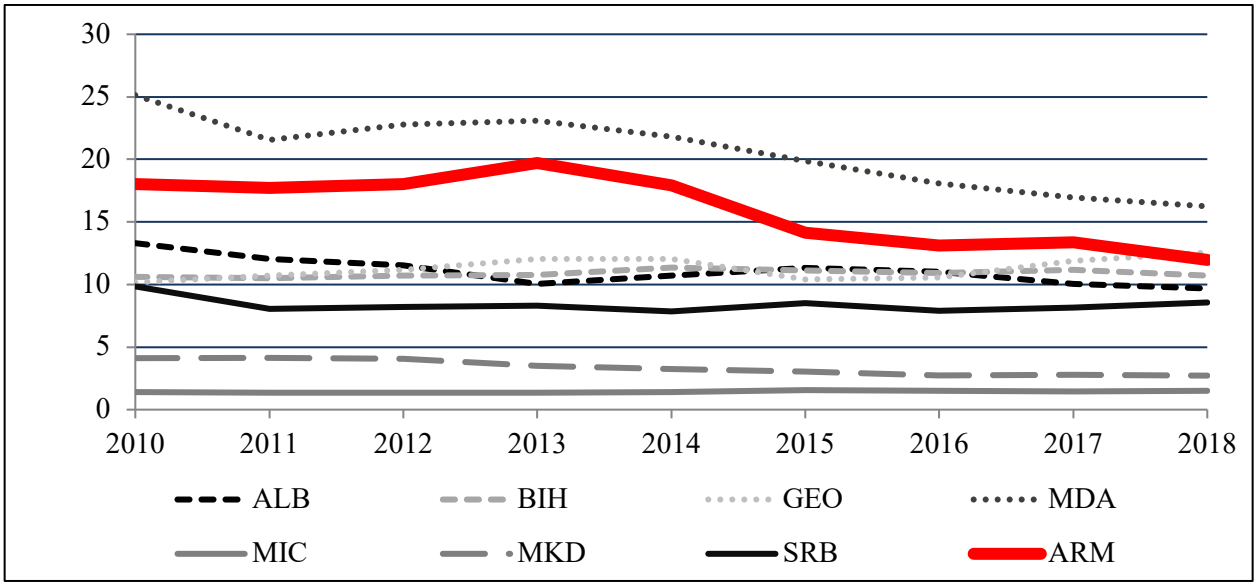
Source: WB *World Development Indicators*.

5.5.2 Remittances

Remittances are a crucial financial inflow for Armenia, equaling 12 percent of GDP in 2018. In countries with significant macroeconomic risk, a high level of remittances could be an indicator that the country's citizens are choosing to instead invest and earn in countries with more stable currencies and policies. However, that does not appear to be the case in Armenia—migration is predominantly motivated by the need to find work, particularly for Armenians from under-developed rural areas.[102] While Armenia has consistently received the second-most remittances among comparator countries,[103] these flows have been trending downwards since the Russian financial crisis in 2014-2015 (Figure 5.20). With the majority of migrants working in the Russian construction sector,[104] that crisis clearly put a damper on the earnings of Armenian workers abroad.

[101] International Monetary Fund, Republic of Armenia Article IV Consultation. 2019. 17, 26.
[102] Campbell, Duncan, Susanna Karapetyan, and Per Ronnas, "The Armenian Labor Market: Considerations for the next National Employment Strategy." 2018. p. 11.
[103] With the exception of 2018, when Georgia's remittances totaled 12.5 percent of GDP.
[104] See human capital chapter.

Figure 5.20. Personal remittances received (% GDP)



Source: WB *World Development Indicators*.

5.6 Conclusion

The evidence presented this chapter supports the conclusion that Armenia's macroeconomic environment is not a binding constraint to growth. While there are some macroeconomic challenges and risks, they are not abnormal for a small open economy like Armenia and are generally well managed. The government budget is relatively small due to low revenue collection, but fiscal deficits are not excessively large. The upcoming tax reforms could have a negative impact on revenues, but current tax proposals are considering offsetting taxes to regain lost revenues and progressivity. Though the real interest rate does appear to be sensitive to the fiscal balance, in the context of small fiscal deficits, this relationship is more an indicator of the shallow capital markets discussed in Chapter 3: Access to Finance than a warning sign for macroeconomic risk. Public debt levels are rising but sustainable, though the large share of foreign currency debt is a risk. Helpfully, much of the external debt is on a concessional basis. In terms of monetary policy, inflation has been historically volatile but has fallen below the Central Bank of Armenia's target band in recent years. The exchange rate is stable (though potentially overvalued), supporting a decline in the high level of dollarization in the economy. Taken together, this information is sufficient to conclude that macroeconomic risks, while present, are not binding.

6 MARKET FAILURES

Key Messages

- Market failures are not a binding constraint to growth in Armenia.
- Export volumes (particularly to Russia) have increased substantially since 2010, as has the number of products exported. Sophisticated ICT exports have grown faster than exports of agricultural or mining products or tourism.
- The innovation capability of Armenia is high relative to comparators.

6.1 Introduction

In a well-functioning economy, innovation is an important source of economic growth, as new ideas are paired with financial resources with the anticipation of profitable returns. As traditional industries in a country lose ground to competition from other countries, new products and new processes are expected to take their place and emerge as new dynamic sectors that create jobs and wealth. In some country contexts, however, this marriage of ideas and funding may be impeded by a variety of obstacles that private sector actors are unable to overcome on their own. For example, in the presence of information externalities (e.g., when the value of certain information to an economy exceeds the value seen or realized by individual firms) or coordination failures (e.g., when the value to an economy from a set of investments exceeds the sum of the gains earned by individuals acting alone), private actors may fail to pursue new opportunities that would generate economic expansion exactly because the economy would not fully compensate them for their efforts, even though adequate returns would be generated.

While market failures are common in *every* economy (the notion of perfectly functioning, complete markets are an implausible theoretical construct), the conditions necessary to establish that such failures rise to the level of a primary barrier to broad-based economic growth are not so common.

During interviews in Armenia, we heard multiple suggestions that a combination of a small market size and limited exposure of entrepreneurs to outside markets might be sufficient to dampen the returns to innovation, but the data do not reflect the absence of self-discovery as a binding constraint. Instead, evidence of a recent expansion in exports, increasing diversity and complexity of export products, and the necessary institutional and policy support for innovation suggest that Armenia is actually on a desirable growth trajectory in which innovation will play its necessary role.

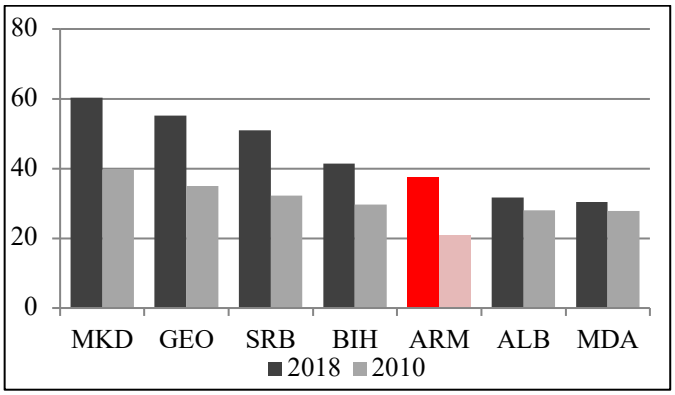
6.2 Recent Export Performance

Because of the relatively small size of the domestic economy, the export of goods and services will need to be an important contributor to economic growth for Armenia, and Armenia's recent track record has been positive. After experiencing year-on-year declines in exports in 2004 and 2006-2009, Armenia has experienced a steady growth in exports over the past 10 years. And while growth rates appeared to be slowing from 26.5 percent in 2009 to 4.9 percent in 2015, the past three years have averaged 14.3 percent growth (albeit with an attenuation to 5.2 percent in 2018).[105]

As a result of this growth in exports, Armenia's standing when contrasted with the six comparator countries has changed, despite the fact that all six have experienced growth in exports, as well. In 2010, Armenia had the lowest level of exports (20.8 percent of GDP) and was a clear outlier, as the other six generated exports ranging from 27.8 percent of GDP (Moldova) to 39.8 percent of GDP (North Macedonia).

But a decade of growth in exports for all seven countries has generated a new pattern, no longer characterized by Armenia as the smallest exporter. Instead, as of 2018, Albania and Moldova are now the two weakest export performers with exports near 30 percent of GDP. Armenia has joined Bosnia and Herzegovina as part of a second tier with exports nearer 40 percent of GDP. The other three comparators, North Macedonia, Georgia and Serbia, have achieved export levels between 50-60 percent of GDP.

Figure 6.1. Exports of Goods and Services (% GDP)



Source: WB *World Development Indicators*.

6.3 The Structure and Sophistication of Armenian Exports

The evidence of a decade of export growth in Armenia is not, on its own, evidence that market failures are not limiting innovation. And indeed, the composition of the export bundle has long been a source of concern, as minerals and agricultural commodities have comprised a large share of exports in the past, giving some credence to concerns that the economy is missing opportunities for profitable value-adding activities. But even while taking these concerns seriously, the

[105] World Development Indicators.

preponderance of data suggests that this concern has been generally misplaced, as Armenia has performed increasingly well on measures of economic complexity and appears poised to continue this pattern.

An analysis of trade patterns in 2012, using the methodology developed by Hidalgo and Hausmann (2009), assessed countries according to their pattern of exports and the complexity of those products, and Armenia ranked 34th, behind only Georgia (31st) among the six comparators.[106] A more recent analysis of Economic Complexity using a revised methodology did not include Armenia in the country rankings, but for those countries included in both, the patterns look generally consistent, especially for North Macedonia, Moldova and Albania, the three worst performing countries according to both analyses.

Table 6.1. Economic Complexity Rankings

	Global Ranking		Comparator Ranking	
Country	**2011**	**2017**	**2011**	**2017**
Albania	82	92	6	6
Armenia	34	—	2	—
Bosnia and Herzegovina	45	44	3	1
Georgia	31	63	1	3
North Macedonia	64	70	4	4
Moldova	69	76	5	5
Serbia	—	40	—	2
Number of Countries	124	126	124	126

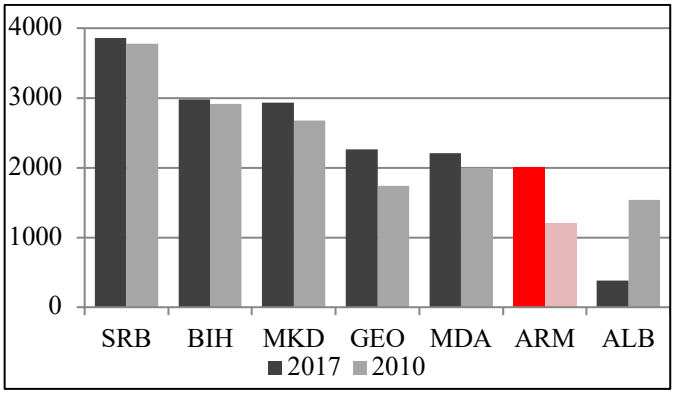
Sources: J. Felipe, et al, 2012, providing 2011 data for 124 countries, omitting Serbia, and The Observatory of Economic Complexity (OEC), https://oec.world/en/resources/about/, providing 2017 data for 126 countries, omitting Armenia from the rankings.

The comparison of the two analyses suggest that Armenia was not a weak outlier in 2011, and is likely to continue to not be one today, as its level of exports has grown rapidly (almost doubling between 2011 and 2018, significantly more than any comparator country[107]) and as its export bundle has become increasingly sophisticated in recent years as its exports of ICT-related services have been growing. Between 2015-2017 alone, Armenian ICT exports grew by 61 percent, outpacing the growth of exports of agricultural products (57 percent), mining and minerals (45

[106] Jesus Felipe, et al, "Product Complexity and Economic Development," in Structural Change and Economic Dynamics, 23, 2012, pp. 36-68.
[107] WDI data. The value of Armenian exports of goods and services grew by 96% between 2011-2018; Georgia experienced the second fastest growth rate (71%) of exported goods and services over the same period, and the simple average growth rate of the six comparator countries was 45%, less than half as fast as Armenia.

percent), and tourism (20 percent).[108] Even as the export of raw materials continues to account for almost one-third of total exports, largely unchanged between 2011 and 2017, the share of total exports accounted for by consumer goods has grown from 26.1 percent in 2011 to 42.0 percent in 2017.[109]

Figure 6.2. Number of products exported



Source: World Integrated Trade Solution.

A similar picture emerges when considering the diversity of the export basket from Armenia. As recently as 2013, Armenian trade statistics identified 1,340 product lines, significantly lower than any of the six comparator countries. But between 2014-2017, the diversity of the export basket increased rapidly to 2,009 products, not only surpassing Albania's export basket (which experienced a dramatic fall off in diversity) but also approaching a middle tier of comparators (Moldova with 2,210 and Georgia with 2,622).[110] This performance is again consistent with the general impression both of a country that has experienced significant recent improvements in its export performance even as it remains relatively unsophisticated in its export basket when compared to North Macedonia, Bosnia and Herzegovina, and Serbia, the three top-tier performers.

6.4 The Enabling Environment for Innovation in Armenia

Even as the economy has grown, exports as share of GDP has grown, and the export mix has become increasingly diverse, many interviews in Armenia generated concern over the lack of dynamism and innovation in the economy, suggesting that performance remains below what many think possible for the Armenian economy. The continued importance of both agriculture and mineral resources provides some credence to this concern, and there is nothing unusual about economic policymakers and observers *anticipating* a more modern, more diverse economy than exists today.

[108] Data from the National Statistic Service: Yearbook 2017, Social Economic Situation in Armenia 2017 January-December, and Central Bank of Armenia. Reported by the US Department of Commerce's International Trade Administration at https://www.export.gov/.
[109] World Integrated Trade Solution (WITS) data.
[110] Ibid.

But even in countries characterized by far less dynamism and growth, the problems may lie elsewhere than the realm of innovation. The *Global Competitiveness Report*, generated each year by the World Economic Forum, assesses 140 countries on a range of characteristics, including their "innovation capabilities." The 2018 Report ranked Armenia 70th overall, a median country with half of the countries performing better and half worse. Of the comparator countries, only Serbia (65th) and Georgia (66th) performed better overall.

Table 6.2. Global Competitiveness Rankings, 2018

Country	GCR Index	Innovation Capability
Albania	76	91
Armenia	**70**	**60**
Bosnia and Herzegovina	91	114
Georgia	66	85
North Macedonia	84	98
Moldova	88	105
Serbia	65	56

Source: WEF *Global Competitiveness Report,* 2018.

But focusing more closely on the issue of the sources of innovation, only Armenia and Serbia performed better than their overall ranking, meaning that this is a source of comparative strength for Armenia rather than one of weakness.

Of course, even ranking 60th out of 140 countries reflects a situation with considerable room for improvement, and closer inspection of the ten sub-indicators identifies a number of areas of concern. Indeed, Armenia scores substantially worse than its overall ranking of 70 on three innovation sub-indicators, and these reflect features that were identified as points of concern on numerous occasions in our interviews:[111]

- Diversity of workforce (96)
- Research & Development expenditure (86)
- Quality of research institutions (78)

But on four other innovation capability sub-indicators, Armenia is performing significantly better than its overall ranking of 70, and these factors help explain why the innovation capability score is better than the overall ranking:

- International co-inventions (49)
- Patent applications (51)
- Buyer sophistication (35)

[111] Others sub-indicators lie with +/- 5 spots, i.e., between 65-75, and so are assessed to be consistent with the overall ranking of 70.

- Trademark applications (64)

The *Global Competitiveness* rankings provide additional information that characterizes current scores relative to the previous year's report. On all but one of the 10 innovation sub-indices the arrow is pointing up,[112] reflecting an improvement across the board.

With scores on innovation below their overall scores, five of the comparator countries could be concerned about their environment for fostering innovation could delve deeper to look for serious bottlenecks, but in Armenia (and Serbia), the evidence does not appear consistent with this concern.

Within the *Global Competitiveness Index*, the pattern of ICT adoption might provide one additional piece of information, but here, too, Armenia (ranked 56) can identify this as an area of relative strength. In fact, all 6 comparator countries are ranked higher on ICT adoption than they are overall, as well, but there is nothing in the pattern that suggests that this is a relative weakness for Armenia.

6.5 Conclusion

The identification of market failures as the binding constraint is often difficult. Market failures exist everywhere, but these tend to be ephemeral as information asymmetries are undermined by profit-seeking investors and coordination failures are addressed, eventually, by industry associations and business groups. Outside observers, including those within governments and donor organizations, sometimes see gaps in the economy (e.g., business ventures missing where profitable opportunities are perceived to exist) and look for policy and program interventions to create and sustain them. But such "gaps" in the economy often have better explanations that are seen by potential investors better than their public sector counterparts. As a result, efforts to direct investment to such exercises often founder and cost significant public resources, both in terms of institutional capacity and financial resources.

In Armenia, a snapshot view of the economy can appear to be filled with gaps needing attention. But viewing the economy over time, the system appears to be characterized by sufficient dynamism, both in the past and heading into the future, to generate an increasingly complex modern economy.

[112] The "quality of research institutions" sub-index is trending down.

7 HUMAN CAPITAL

Key Messages

- Human capital is not a current constraint to growth. However, it may become one, particularly in the context of limited opportunities for youth to gain quality practical experience, moderate female labor force participation, and a shrinking population.
- Government expenditure on education is remarkably low at just 2.8 percent of GDP. However, educational attainment is relatively high for Armenia's income level, averaging 10.73 years per student.
- While general education quality is adequate for economic growth, there are concerns about the relevance of tertiary and vocational education.

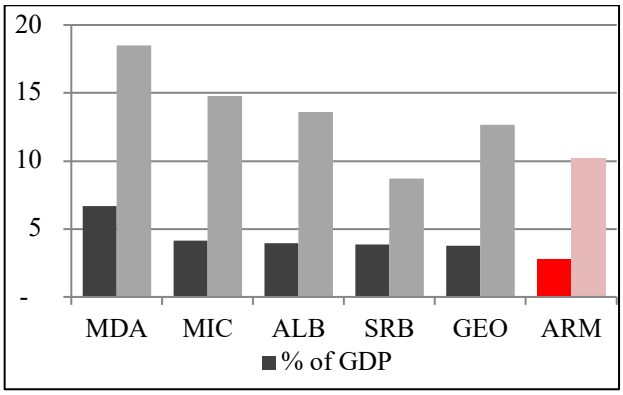
7.1 Introduction

A sufficient quantity and quality of human capital is an essential input for economic activity. In the context of the growth diagnostic methodology, a human capital shortage can pose a binding constraint to growth if private investors are unable to secure the skilled labor, they need to operate their businesses competitively. Education is one of the most important aspects of human capital, as a better-educated workforce can improve productivity and thus quicken growth. As such, this chapter will largely focus on how well the Armenian education system prepares students to integrate into the labor force. While many countries have active educational and labor market policies to improve workforce skills, human capital only poses a binding constraint to growth if the demand for these skills substantially exceeds supply. In other words, the HRV tests must reveal serious deficiencies on the supply side, indicating that there is insufficient human capital available to support firm growth. While the tests conducted in this chapter do not indicate that human capital is currently a binding constraint to growth for Armenia, it has the potential to become binding if investments in the educational and workforce training systems are not made, particularly given limited opportunities for youth to gain practical experience, moderate female labor force participation, and a shrinking population. Though human capital is currently adequate for the core of the economy, it is at risk of disadvantaging dynamic sectors.

7.2 Education Expenditure

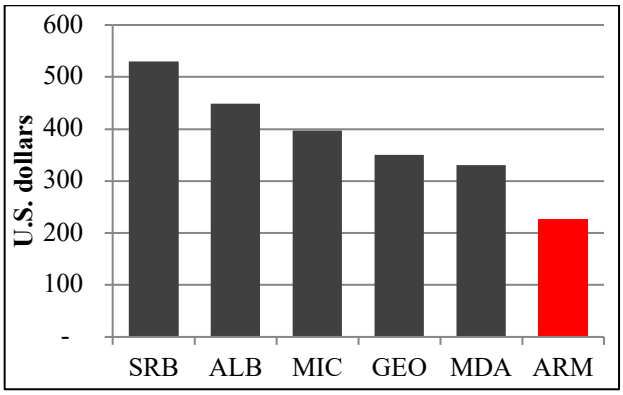
Government spending on education in Armenia lags behind its peers. The Government of Armenia spends the lowest amount on education as a percent of GDP (2.8 percent) and the second lowest as a percent of government expenditures (10.2 percent). In dollar terms, it spends the least per pupil among the comparator countries at $226 (Figure 7.1). The low level of spending implies that there could be significant issues with the education system in Armenia, which will be investigated in the sections that follow.

Figure 7.1. Government expenditure on education, 2016



Source: WB *World Development Indicators,* 2016.

Figure 7.2. Per capita education spending, 2016

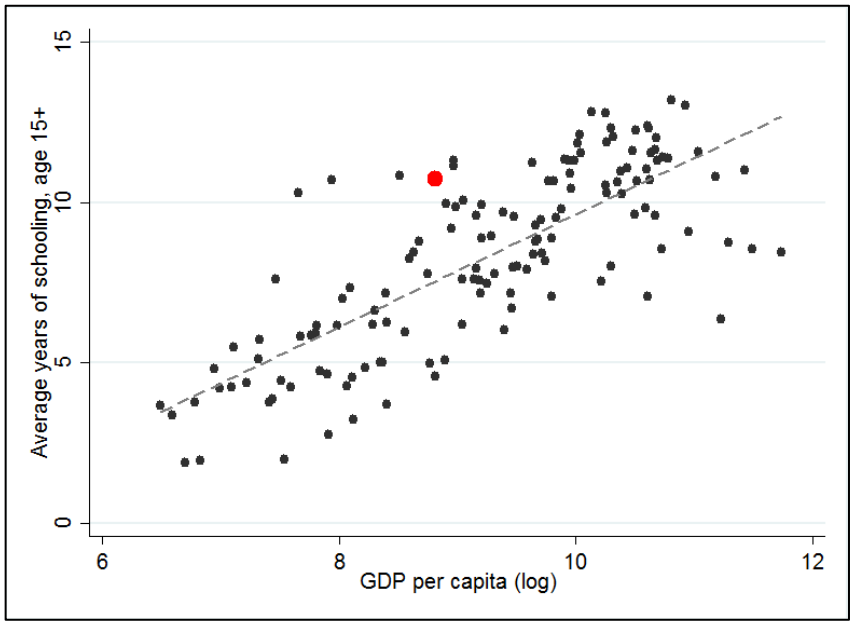


Source: WB *World Development Indicators,* 2016.

7.3 Schooling, Enrollment, and Educational Attainment

Despite the low level of spending on education, Armenia's education attainment—as measured by average years of schooling—is impressive. Figure 7.3 below demonstrates well just how much of an anomaly Armenia is in this regard, with students receiving roughly four years more of education than would be expected based purely on the country's GDP per capita. This is not an uncommon result in many post-Soviet countries. However, Armenia has built on the legacy of the Soviet Union, with the average years of education in Armenia have continued to gradually increase from 10.40 years in 1990 to 10.73 years in 2010.[113]

Figure 7.3. Average years of schooling and GDP per capita



Source: Barro-Lee, 2010, and WB *World Development Indicators*.

[113] Barro-Lee Educational Attainment Dataset, June 2018. http://www.barrolee.com/

7.4 Quality of Education

Given the low level of spending on education but relatively high average years of schooling, a natural concern is whether the quality of education achieved is lacking. Here again, Armenia outperforms. As measured by the Trends in International Mathematics and Science Study, eighth grade students in Armenia have consistently scored above comparators in both science and math evaluations (Table 7.1). Although these middle-school results do not relate directly to employability and workplace-relevant skills, they suggest that the quality of the general education system is not wholly lacking.

Table 7.1. TIMSS Scores for Armenia and Comparators, Eighth Grade

	Science		**Math**	
Country / Year	2007	2011	2007	2011
Albania	—	—	—	—
Armenia	**488**	**437**	**499**	**467**
Bosnia and Herzegovina	466	—	456	—
Georgia	421	420	410	431
Macedonia, Rep. of	—	407	—	426
Moldova, Rep. of	—	—	—	—
Serbia	470	—	486	—

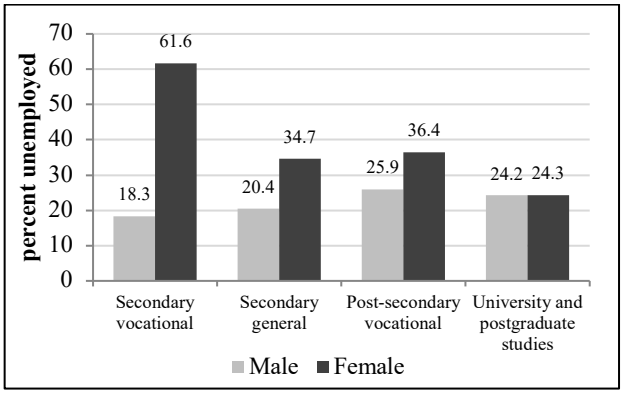
Source: U.S. Department of Education, National Center for Education Statistics, International Data Explorer.

Despite these positive general education results, there are widespread concerns about the quality and relevance of both tertiary education and technical and vocational education and training (TVET) for entering the workforce in Armenia. TVET in Armenia suffers from a (seemingly deserved) bad reputation and is seen as an option of last resort for young people from poor households. [114] TVET in particular does not appear to be training students well for the workplace (Figure 7.4). In a 2018 youth survey, 53.8 percent of employed TVET graduates said that the theoretical knowledge gained in their education was "absolutely or mostly useless." Even more alarming, 59.6 percent said that the hard skills learned fell in the same category. 37.2 percent of respondents said that the soft skills taught were absolutely or mostly useless. Instead, TVET graduates tend to find informal training more suitable for their jobs than formal TVET educational institutions—84 percent of TVET graduates who pursued additional informal training indicated that it was more suitable to employers' requirements. Employed youth who studied at higher education institutions indicated that the skills gained in their education aligned somewhat better with their workplace responsibilities: 35.4 percent said that their theoretical knowledge was absolutely or mostly useless for their work, along with 37.4 percent for hard skills, and 24.4 for

[114] Campbell, Duncan, Susanna Karapetyan, and Per Ronnas, "The Armenian Labor Market: Considerations for the next National Employment Strategy." 2018. 75.

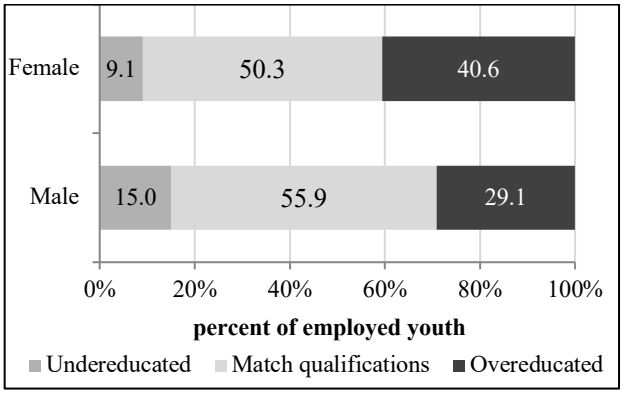
soft skills.[115] This skill relevance aligns with their somewhat lower unemployment rate relative to post-secondary vocational students, particularly for females (Figure 7.4).

Figure 7.4. Youth unemployment by education qualification match



Source: *School-to-work transition survey,* 2014, via ILO *Work4Youth Brief,* 2016, Table 10.

Figure 7.5. Employed youth by qualification match



Source: *Youth-focused and Gender-sensitive Labour Market Research in Armenia*, 2018, pp. 60 and 74.

Overeducation is common due to the mismatch between the relatively high education level of Armenian graduates and the jobs available on the labor market (Figure 7.5). Overeducation was most common in sectors such as tourism, micro level services, and wholesale and retail. Undereducation was most often found in transportation and vehicles and electricity, gas, and water supply. There is a surplus of labor with qualified professional skills (e.g. doctor, economist) and administrative skills, while there are shortages of managerial skills, technical skills (e.g. machinery), special manual skills (e.g. craftsmen), and simple manual skills.[116] These results align with a 2012 study, which identified that technicians and managers were typically undereducated, while clerical support workers and service and sales workers were overeducated.[117]

7.5 Economic Returns to Education

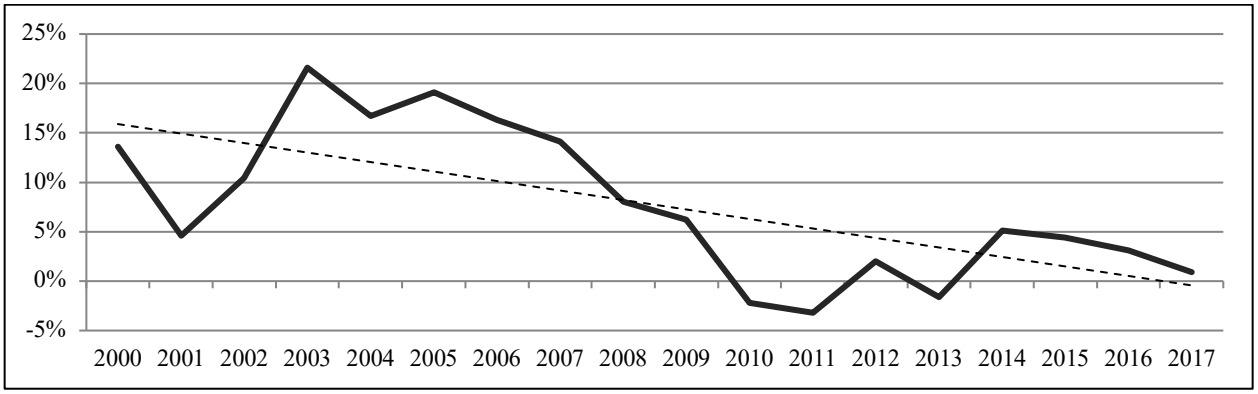
If human capital is a constraint, then the shadow price of the constraint should be high (HRV Test #1). A typical way to evaluate this is by looking at the financial returns (i.e. increased wages) to education. If there is a limited supply of human capital, those individuals with a higher level of human capital should be able to command a high wage premium. In other words, if there is a skills shortage, businesses should be willing to pay significantly higher wages to employees with more education, provided that that education is relevant to the business's needs. The primary method to estimate returns to education is a so-called "Mincer regression," which utilizes household survey data to estimate the average wage increase from an additional year of education. Hakobyan & Joulafian (2016) carry out such a test using the Armenian Household Integrated Living Conditions

[115] Media-Model LLC and Save the Children, "Youth-Focused and Gender-Sensitive Labour Market Research in Armenia." 2018, 78-79.
[116] Ibid., 75-76.
[117] Serrière, Nicolas, "Labour market transitions of young women and men in Armenia." International Labour Office, Work4Youth Publication Series No. 21, October 2014. 33.

Survey, and find that wages rise about 3 percent for each year of additional schooling, much less than the 10 percent return typically observed in similar studies of other countries.[118] Returns are much higher in comparator countries as well, with the latest estimates of the returns to education at 8.1 percent in Albania (2012), 12.1 percent in Georgia (2006), 9.1 percent in Moldova (2003), and 10.1 percent in Serbia (2013).[119] The 2014 constraints analysis of Armenia conducted by EV Consulting also found relatively low returns to education.[120]

Another possibility is to evaluate overall wage growth. If there is an inadequate supply of labor—a very real possibility in a country with a shrinking population and thus a smaller labor force—heightened overall wage growth would be expected. However, the opposite trend is seen in Armenia, with real wage growth following a decreasing trend (Figure 7.6).[121] Similarly, a recent survey of Armenian youth found that the second most-cited reason for failing to find a job is that employers proposed a very small salary.[122] Together with the Mincer regression and EV Consulting analysis, this evidence implies that the shadow price of human capital is not high in Armenia, indicating that it is not a binding constraint.

Figure 7.6. Growth rate of real wages



Source: Statistical Committee of the Republic of Armenia, *Labour market in the Republic of Armenia,* 2018, pp. 255-256.

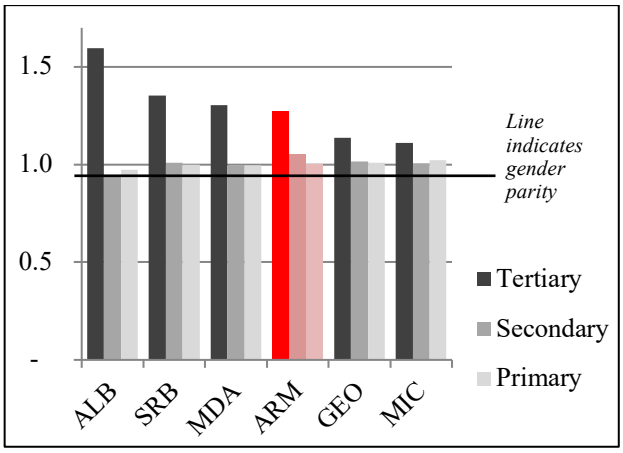
7.6 Gender Dynamics

Gender equality in Armenia is excellent in terms of educational enrollment and achievement, with females having on average more education than males and relatively more women enrolled in tertiary education than men. This equality is common in many former communist countries and

[118] Hakobyan, Shushanik and David Joulfaian, "The Return to Education in Armenia." Armenian Journal of Economics, Vol 2 (2016), 70-81.
[119] Psacharopoulos, George and Harry Antony Patrinos, "Returns to Investment in Education: A Decennia Review of the Global Literature." Education Economics, 2018. http://datatopics.worldbank.org/education/files/GlobalAchievement/ReturnsEdAnnex2.xlsx
[120] EV Consulting Research Center, National Competitiveness Report of Armenia 2013-2014: Growth Imperative and Constraints. 30-32.
[121] Statistical Committee of the Republic of Armenia, Labour market in the Republic of Armenia (2018), pp. 255-256
[122] Media-Model LLC and Save the Children, "Youth-Focused and Gender-Sensitive Labour Market Research in Armenia." 2018. 62.

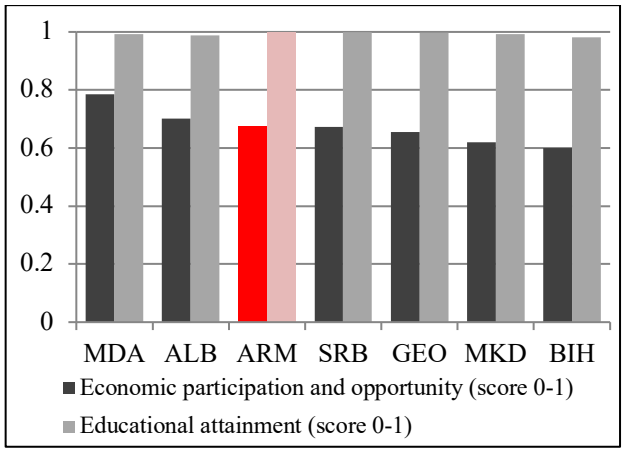
does not differ significantly from comparator countries (Figure 7.7). However, despite this excellent educational outcome, labor market outcomes for Armenian women are a very different story (Figure 7.8). Armenian women have lower labor force participation, higher unemployment, lower returns to education, and lower wages than men. Policies that bring more females into the workforce could help counterbalance demographic pressure on economic growth as the population size declines, especially considering the better educational and health indicators for women relative to men.[123]

Figure 7.7. School enrollment, gender parity index



Source: UNESCO Institute for Statistics.

Figure 7.8. Female education and economic participation



Source: WEF *Global Gender Gap Report,* 2018.

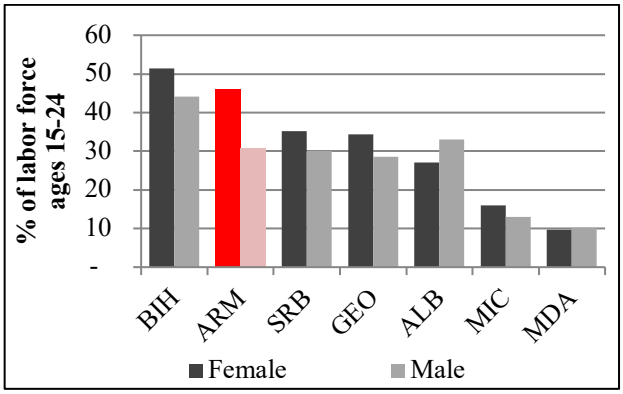
For example, Hakobyan and Joulafian (2016) disaggregated the returns to education by gender. Their results on gender differences were striking: while the returns to education for men were largely driven by their pursuit of higher education, the return to pursuing higher education is close to zero for women (on average).[124] This low return is at least partially due to the fact that many women, including those with high levels of education, stay out of the labor force due to family responsibilities. Among economically inactive youth (ages 18-30), 47.5 percent of females are engaged in home duties (including child care) while just 3.7 percent of inactive males have such responsibilities.[125] A recent econometric analysis by the IMF found that being married has a negative and significant association with female labor force participation, as do childcare responsibilities (particularly for women with children under the age of 3, or 4-5 in rural areas and secondary cities).[126]

The level of female labor force participation in Armenia is consistent with Armenia's middle-income status. In low income countries, many women have to work out of necessity. In middle income countries, activity shifts away from agriculture, but many home-based responsibilities

[123] International Monetary Fund, "Republic of Armenia—Selected Issues," June 2019. 20.
[124] Hakobyan and Joulafian, 2016. 71.
[125] Media-Model LLC and Save the Children, "Youth-Focused and Gender-Sensitive Labour Market Research in Armenia." 2018, 56.
[126] International Monetary Fund, "Republic of Armenia—Selected Issues," June 2019. 24.

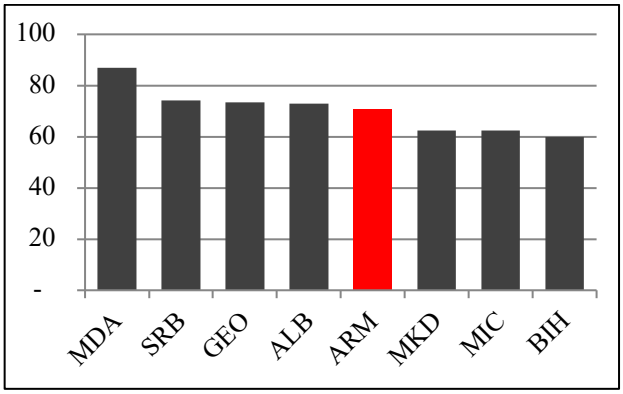
remain. In more advanced economies, female labor force participation picks up again. However, Armenia's female labor force participation actually declined from 2014 to 2017.[127] Despite this decline, Figure 7.10 demonstrates that Armenia has a higher ratio of female to male labor force participation than middle income countries on average and falls roughly in the middle of comparator countries. If this participation gap were fully closed, the IMF estimates that Armenia's GDP level would be 4-6 percent higher.[128]

Figure 7.9. Youth unemployment rate, 2018



Source: WB *World Development Indicators.*

Figure 7.10. Ratio of female to male labor force participation rate, 2018



Source: WB *World Development Indicators* and ILO modeled estimates.

More troubling is the fact that women are paid much less than men at every level of education.[129] According to the International Labor Organization (ILO) estimates, Armenia's raw gender gap is 20.3 percent, indicating that women are paid 20 percent less than men with an equivalent level of education.[130] While many of the comparator countries are not in the most recent ILO wage report, this gap exceeds both lower-middle income and upper-middle income averages.[131] According to the WEF *Global Gender Gap Report*, Armenia's lowest scoring sub-factor of five in the economic participation and opportunity indicator was for average earned income.[132] This is despite women having relatively more education and higher test scores than men.[133]

7.7 Migration and the Labor Market

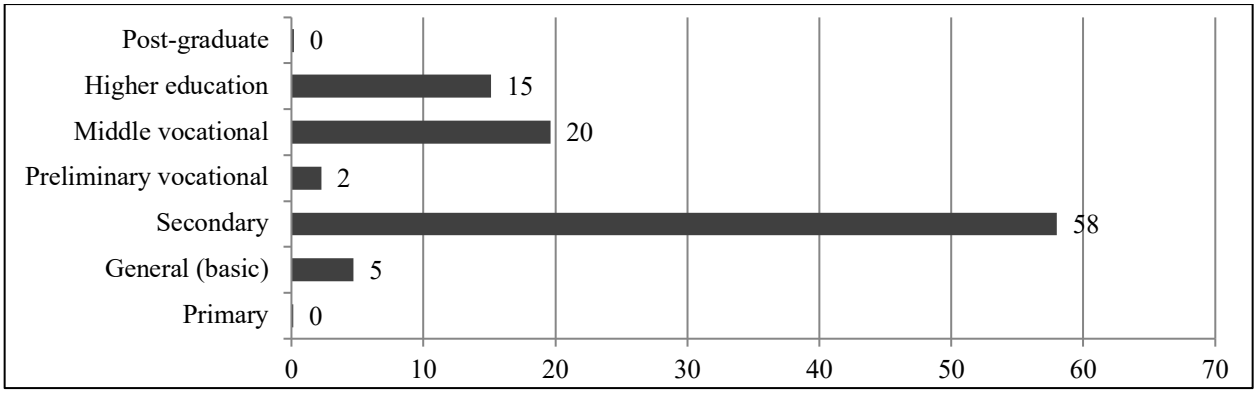
Outward migration patterns are useful indicators of the human capital situation in a given economy. A recent study of the Armenian labor market put it best: "When there are demand-side constraints, then emigration is one solution."[134] In Armenia, net out-migration stands at nearly

[127] Ibid., 21.
[128] Ibid., 27.
[129] Hakobyan and Joulafian, 2016. 71.
[130] A "factor-weighted" gap is higher at 26.3 percent.
[131] International Labour Organization, Global Wage Report 2018/19.
[132] World Economic Forum, "The Global Gender Gap Report." 2018. 9.
[133] International Monetary Fund, "Republic of Armenia—Selected Issues," June 2019. 20.
[134] Campbell, Duncan, Susanna Karapetyan, and Per Ronnas, "The Armenian Labor Market: Considerations for the next National Employment Strategy." 2018. 66.

25,000 per year—nearly one percent of the population.[135] While much of this migration is transitory, this out-migration implies considerable slack in the domestic labor market on the demand side.

The 2016 *Integrated Living Conditions Survey*[136] confirms several well-known facts about present Armenian migration patterns. International migrants are primarily male (85 percent) and migrating to Russia (80 percent) for work (73 percent). They generally hold a secondary level of education, which in practice is usually the lowest level of education held in Armenia. Fully 84.7 percent of migrants have a primary, general/basic, secondary, preliminary vocational, or middle vocational (e.g. technical college) level of education, while just 15.3 percent have completed higher education or post-graduate degrees (Figure 7.11). Construction work dominates, with 31.5 percent involved in the construction of buildings, 29.7 percent in civil engineering, and 18.6 percent in specialized construction activities.[137]

Figure 7.11. Education level of migrants (%)



Source: *Integrated Living Conditions Survey,* 2016.

7.8 ICT Sector

ICT is a vibrant sector of the Armenian economy. The Armenian economy's strength in this area dates back to technical foundations from the Soviet era. In 2018, revenues generated by software, ICT services, and internet service providers increased to 7.4 percent of GDP. This follows a number of years of robust growth—the sector's average annual growth rate was 25.6 percent from 2010 through 2018.[138] Despite this robust growth, a 2018 survey of ICT company leadership indicated that their top challenge was the shortage of a highly qualified workforce. Further, the general opinion is that the current student account is insufficient to meet industry demand, and that

[135] Ibid., 6. & United Nations Population Division, World Population Prospects: 2017 Revision, via World Development Indicators.
[136] Integrated Living Conditions Survey, National Statistical Service of the Republic of Armenia and The World Bank Group. 2016. https://microdata.worldbank.org/index.php/catalog/2966
[137] All percentages are unweighted.
[138] Enterprise Incubator Foundation, "Armenian ICT Sector 2018—State of the Industry Report: Information and Telecommunication Technologies Sector in Armenia." December 2018. 2 & 33.

student proficiency levels necessitate further training in some cases.[139] This aligns with the IGD team's discussions with ICT firms.

In the growth diagnostics framework, agents less intensive in a binding constraint should be more likely to survive and thrive, and vice versa (HRV Test #4). By all accounts, the Armenian ICT sector is thriving, as measured by size, growth, and wages. It is also intensive in highly skilled human capital. While a sectoral growth diagnostic for ICT may have identified human capital as a binding constraint (given firm perceptions of the workforce, a limited pipeline of students, and the preponderance of in-house training), the sector's robust performance provides some evidence that skilled human capital is not a constraint on growth across the economy. Regardless, the limited supply of the highly skilled human capital required by the sector indicates that it may be the factor holding the sector back from even stronger growth.

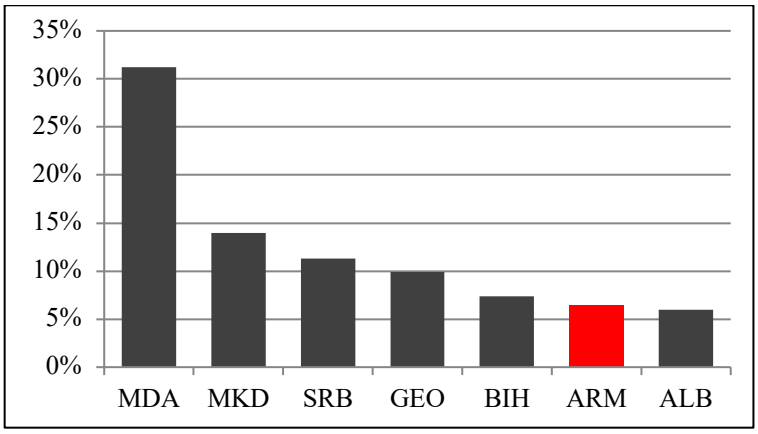
7.9 Stakeholder Perceptions

While it is difficult to directly evaluate whether improvements in human capital produce significant improvements in economic growth (HRV Test #2), one way to partially evaluate this is by examining firms' perceptions of inadequate education as a constraint to their own growth. Three sources are leveraged to evaluate this: the 2013 *Enterprise Survey*, two surveys carried out by EV Consulting in 2011 and 2013, and the 2013 Skills Toward Employment and Productivity (STEP) Skills Measurement Employer Survey.

According to the 2013 *Enterprise Survey* of 360 Armenian firms, only 6.4 percent indicated that an inadequately educated workforce was a major constraint to growth.[140] Among comparator countries, only in Albania was the workforce deemed by firms to be less of a constraint (Figure 7.12). In the *Enterprise Survey*, tax rates were identified as the most severe obstacle to current operations, followed by access to finance and tax administration. Out of 16 issues, the skills and education of workers was ranked tenth and labor regulations 14th. Only 16 percent of firms indicated that workers' skills were a moderate, major, or very severe obstacle to doing business.[141]

[139] Ibid., 17 & 26.
[140] By sector, 8.4 percent of manufacturing firms cited an inadequately educated workforce as a major constraint, followed by 6.9 percent of services firms and 3.1 percent of retail firms.
[141] The World Bank Group, BEEPS At-A-Glance 2013: Armenia. December 2014. 3 & 20.

Figure 7.12. Percent of firms identifying an inadequately educated workforce as a major constraint



Source: WB *Enterprise Survey,* 2013.

However, a second constraints analysis carried out by EV Consulting in 2014 tells a different story. This study cites a 2011 survey of Armenian employers in which 90 percent of private sector executives agreed that the current state of the professional workforce may hinder economic expansion, though no ranking among other possible growth constraints was provided. A second survey of 48 Armenian companies on growth constraints in 2013 found that the "lack of a highly qualified labor force" is the second-most important constraint for expansion, following the limited market size inherent in the syndrome described for this growth diagnostic.[142]

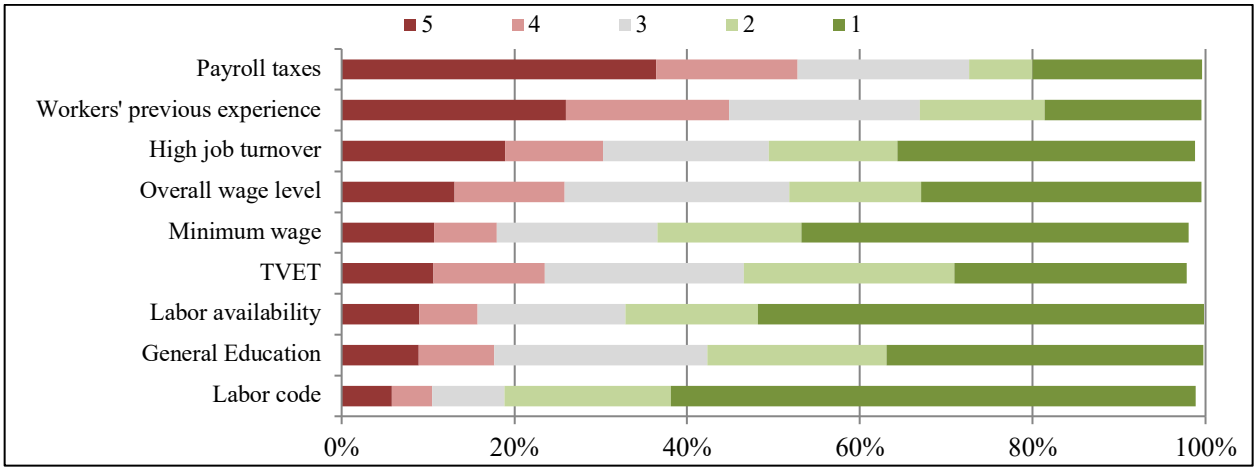
The STEP Survey was carried out by the Caucasus Research Resource Center for Armenia on behalf of the World Bank. The responses of the 384 firms participating in the survey were then assigned weights by a World Bank team responsible for ensuring consistency across sampling methodologies.[143] While the 2013 STEP Skills Measurement Employer Survey focuses in on specific questions of skills, there are several general questions on growth constraints that have significant overlap with the 2013 *Enterprise Survey* in Armenia but identify very different constraints. Based on the two figures below (Figure 7.13 and Figure 7.14), the STEP survey identified labor issues as effectively second only to tax rates and administration as a constraint to doing business (Figure 7.13).[144]

While these results may seem contradictory, the nuance provided by the STEP survey provides greater clarity. Among the labor issues cited as a major constraint for operation and growth of businesses, TVET and general education do not rise very high on the list, while workers' previous experience does (Figure 7.13). This connects the disagreement between the "lack of a qualified

[142] EV Consulting Research Center, National Competitiveness Report of Armenia 2013-2014: Growth Imperative and Constraints. 33.
[143] The World Bank Group, Armenia - STEP (Skills Toward Employment and Productivity) Measurement Program, Employer Survey 2013. Microdata documentation, 3-7.
[144] The World Bank Group, Armenia - STEP (Skills Toward Employment and Productivity) Measurement Program, Employer Survey 2013. Weights assigned using W_Finwt and strata separated using stratum_code.

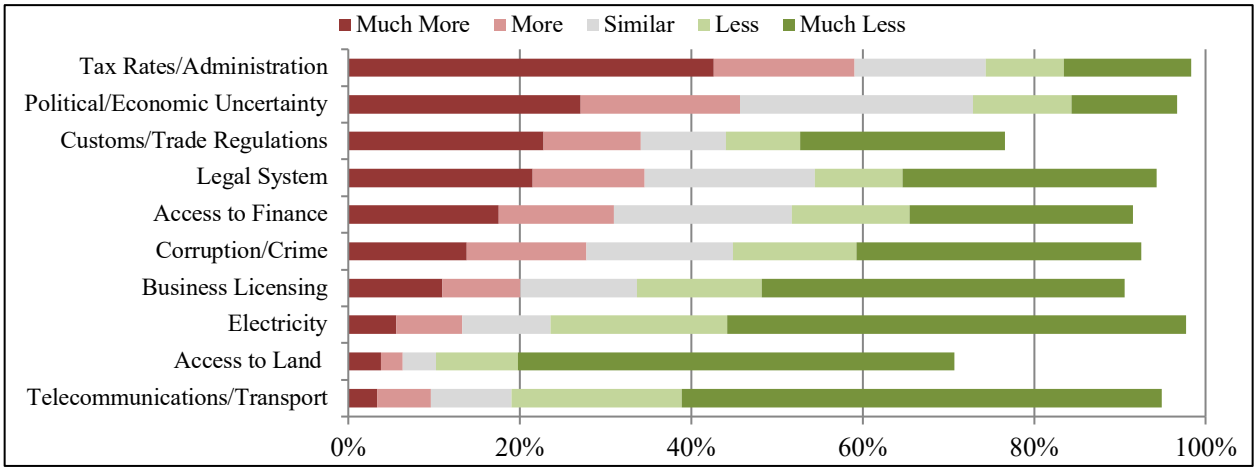
labor force" constraint cited in the 2013 EV Consulting survey and the low priority assigned to an "inadequately educated workforce" in the *Enterprise Survey*: on average across the Armenian economy, education is not the issue, workplace-learned practical skills and qualifications are. As such, this evidence implies that firms generally do not perceive inadequate education in the workforce as a binding constraint on growth.

Figure 7.13. Can you please indicate how problematic each of the following labor factors is for the operation and growth of your business?
(Scale of 1 to 5, where 1 means "no problem"' and 5 means "severe problem")



Note: Values do not add to 100 percent due to interviewer errors, N/As, or "don't know" responses.
Source: WB STEP Skills Measurement Employer Survey 2013. Questions m5_q06_1 to m5_q06_9.

Figure 7.14. Compared to these labor issues, are the following much more, more, similar, less or much less constraint to doing business?



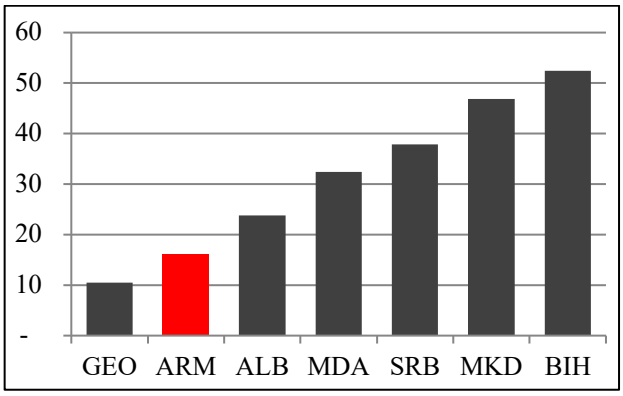
Note: Values do not add to 100 percent due to interviewer errors, N/As, or "don't know" responses.
Source: WB STEP Skills Measurement Employer Survey 2013. Questions m5_q07_1 to m5_q07_10.

7.10 Staff Training and Skills

If human capital is a binding constraint, individuals and businesses should be attempting to overcome or bypass it (HRV Test #3). One way to bypass an education constraint is to train staff.

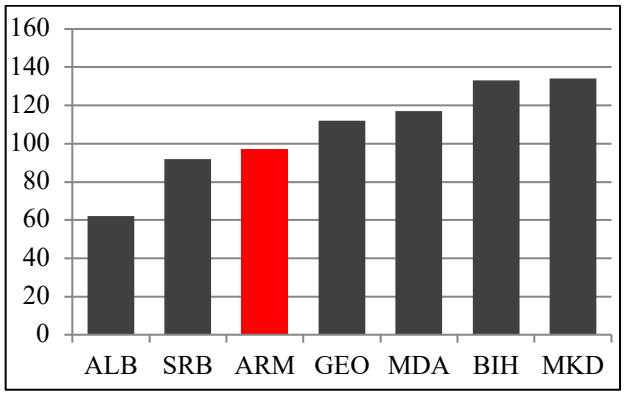
In the IGD team's interviews, nearly all businesses said that they provided training for their employees once hired due to a lack of fully qualified applicants. However, this anecdotal evidence does not align with the data. As of 2013, only 16.2 percent of firms offered formal training,[145] the second-lowest rate among comparator countries (Figure 7.15).[146] This differs somewhat from World Economic Forum *Global Competitiveness Index* 2018 survey data. For the WEF *GCI*, respondents were asked "In your country, to what extent do companies invest in training and employee development [1 = not at all; 7 = to a great extent]." This generated a mean value of 3.6 for Armenia, placing it as third-most dedicated to staff training among comparators, but 97th out of 140 countries in the world (Figure 7.16).[147] This value of 3.6 is unchanged from the 2013 WEF *GCI*, indicating that the 2013 data in Figure 7.15 is not overly dated.[148] Taken together, this information cannot support a strong argument that human capital is either binding or not binding; the HRV bypass test result is inconclusive.

Figure 7.15. Firms offering formal training (%)



Source: WB *Enterprise Survey,* 2013.

Figure 7.16. Extent of staff training (Rank/140)



Source: WEF *Global Competitiveness Index,* 2018.

Further, according to the WEF *GCI*, skills in Armenia are not disproportionately lower than in comparator countries, nor is the difficulty of finding skilled employees much greater. Armenia ranks 55th out of 140 countries in terms of overall skills and third in the comparator group. The ranking for the skillset of graduates (i.e. youth) is much lower, at 89th out of 140, but it is still third best among comparators (Figure 7.17). Armenia ranks 90th out of 140, and third out of comparators, in terms of ease of finding skilled employees. While this is substantially different

[145] 19.8 percent of services firms offer formal training, followed by 17.6 percent of retail firms and 9.7 percent of manufacturing firms. While manufacturing firms were the most likely to cite an educated workforce as being a constraint (Section 7.9), they were least likely to offer formal training, indicating that they are not attempting to bypass the constraint.

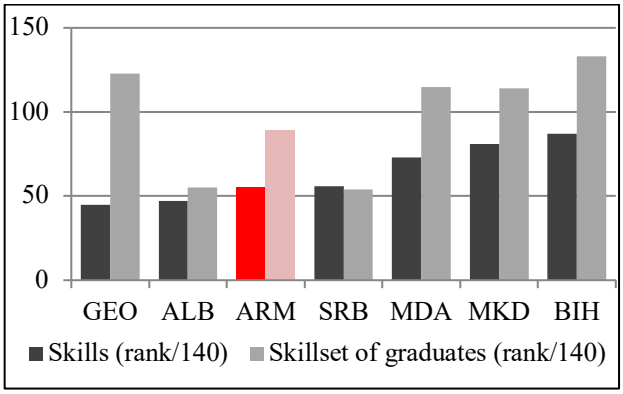
[146] The percentage of firms offering formal training in Armenia has been on the decline, from 38.1 percent in 2005, to 30.3 percent in 2009, to 16.2 percent in 2013. This decline could be attributable to a variety of potential factors. For example, while this decline may be due to a decreased need for formal training within firms, it could also be the result of slower economic growth since 2009, and thus fewer resources available for staff training.

[147] World Economic Forum, The Global Competitiveness Report 2018 (Insight Report).

[148] World Economic Forum, The Global Competitiveness Report 2013-2014, Full Data Edition (Insight Report).

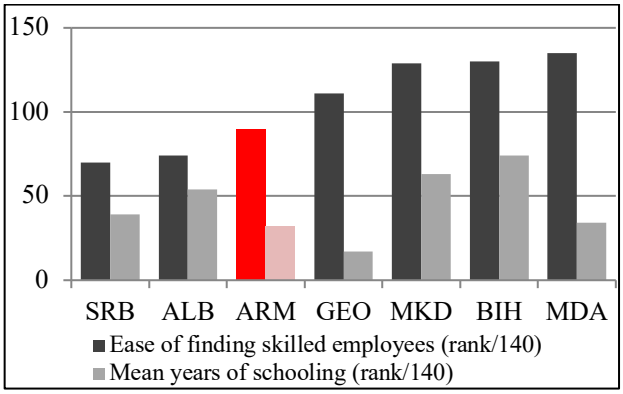
from its 32nd-place ranking on mean years of schooling (second out of comparators), the gaps for Georgia and Moldova between these two rankings are even more striking (Figure 7.18).

Figure 7.17. Overall skills (Rank/140)



Source: WEF *Global Competitiveness Index,* 2018.

Figure 7.18. Education for the workplace (Rank/140)



Source: WEF *Global Competitiveness Index,* 2018.

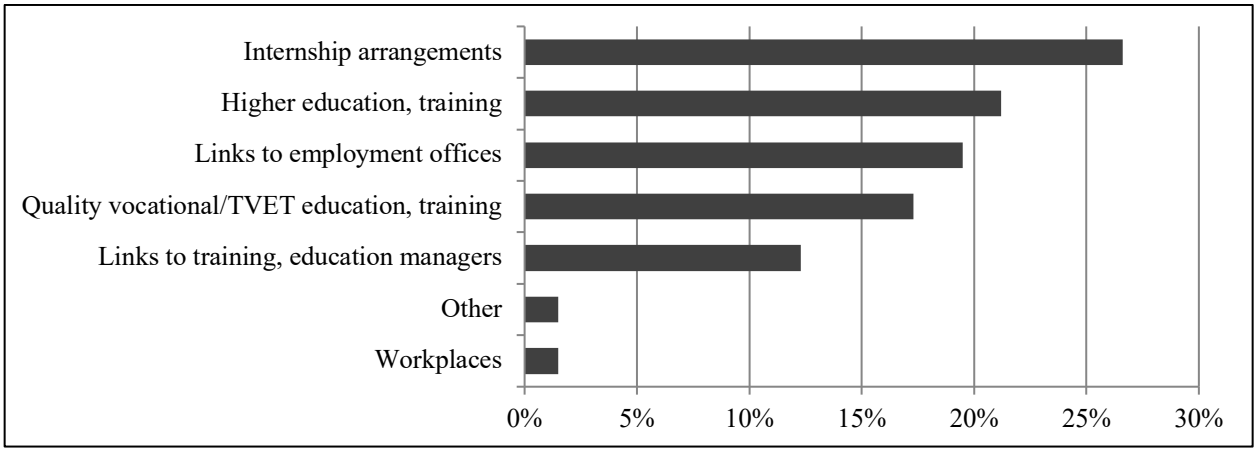
7.11 Youth Employment and Workforce Experience

Figure 7.13 in Section 7.9 indicated that workers' previous experience is the primary skill-related pain point for Armenian employers.[149] This coincides with a recent survey of 846 youth aged 18-30 across Armenia conducted by Media-Model LLC for a European Union-funded study implemented by Save the Children.[150] This survey produced a number of rich findings, with one of particular relevance here: internship arrangements were identified by youth themselves as the number one need to improve their labor opportunities (Figure 7.19). Similarly, youth's most-cited reason for failing to find a job is that employers would not hire them without work experience.[151]

Employers are similarly interested in internships. Although practical work is technically mandatory for all students enrolled in formal education, it is often administered merely as a symbolic activity with no real-time experience of how companies in relevant sectors are actually operating. As a result, many employers have no alternative but to provide on-the-job training, which they are eager to replace with professional internships organized through the educational system.[152]

[149] World Bank, STEP Skills Measurement Employer Survey 2013.
[150] Media-Model LLC and Save the Children, "Youth-Focused and Gender-Sensitive Labour Market Research in Armenia." 2018. 12, 80.
[151] Ibid., 62.
[152] Ibid., 19.

Figure 7.19. Needs to improve labor opportunities for youth (% of respondents)



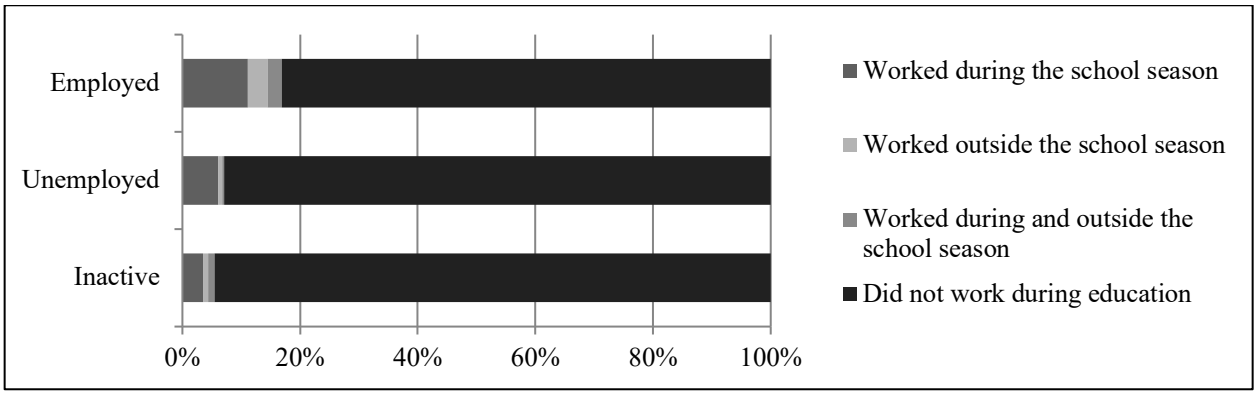
Source: *Youth-focused and Gender-sensitive Labour Market Research in Armenia,* 2018, p. 80.

Internships and/or work experience are crucial differentiators in any labor market. While Armenia is no different in this regard, mixing work with education is strikingly rare. Overall, 88.5 percent of students with completed education did not work at all during their education. Those that found work after their education were more likely to have worked during their education: 16.9 percent of employed young graduates worked at some point during their period of education, compared to 7.1 percent of unemployed graduates and 5.5 percent of inactive graduates (Figure 7.20).[153] While causation cannot be proven and there are other factors at play (e.g. motivation or need to work), one potential implication of this is that work experience gained during education may increase post-graduation employability through practical skill development. A complementary piece of evidence for this conclusion relates to returning migrant workers: upon their return, these workers are more competitive in the domestic labor market because of their improved skills and knowledge learned on-the-job.[154]

While this evidence is compelling, the youth employment-workforce experience nexus in Armenia is in worse condition than some comparators and better than others. Similar ILO school-to-work transition surveys (i.e. the survey used to generate Figure 7.20) were carried out in Armenia and Macedonia in 2014 and Moldova and Serbia in 2012. Using unweighted counts, the workforce experience gap between employed and unemployed youth in Armenia was 17 percent in 2014—employed youth were 17 percent more likely to have worked during their education. Serbia was similar, with a gap of 14 percent. However, in Moldova, the gap was only 2 percent (i.e. implying that working during school had little relationship with employment outcomes after graduating) and in Macedonia, it was 29 percent (implying that the experience factor may be more important there than Armenia, all else equal).[155]

[153] Serrière, Nicolas, "Labour market transitions of young women and men in Armenia." International Labour Office, Work4Youth Publication Series No. 21, October 2014. 16-17.
[154] Campbell, Duncan, Susanna Karapetyan, and Per Ronnas, "The Armenian Labor Market: Considerations for the next National Employment Strategy." 2018. 11.
[155] ILO, School-to-work transition surveys: Armenia 2014, Macedonia 2014, Moldova 2015, Serbia 2015.

Figure 7.20. Youth with completed education who combined work and education by employment status



Source: National Statistical Service of the Republic of Armenia, *School-to-work transition survey,* 2012, via ILO 2014, p. 17.

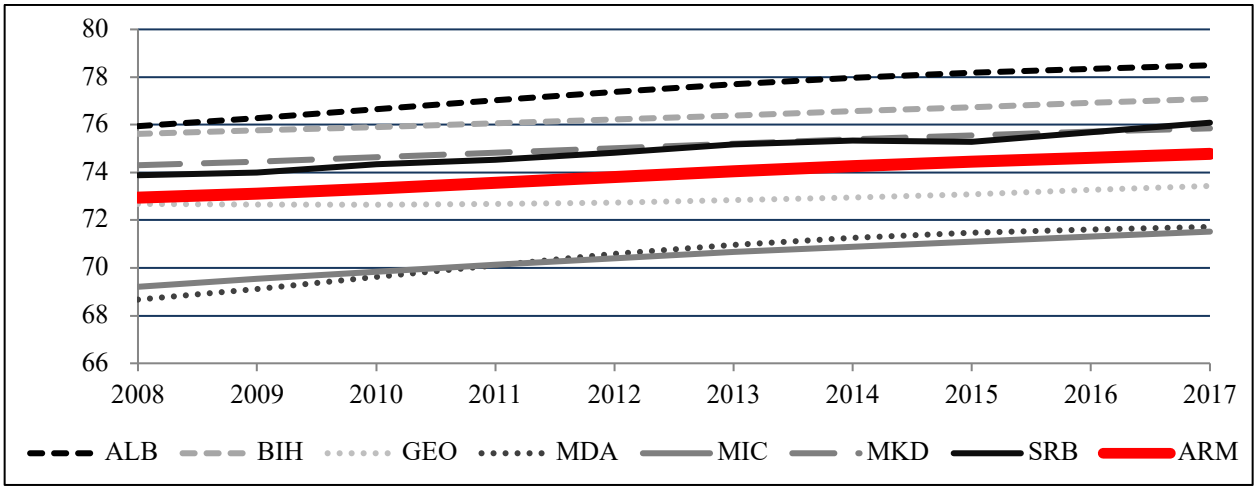
Furthermore, examining the 2012 Armenia ILO data more closely, of the 390 respondents who indicated that they worked while studying, it is easy to see that gaining experience was not the primary motivation for the majority: 159 stated that their main motivation was earning money and 218 stated it was to help their families. Only 117 cited the desire to gain experience as the primary factor and 40 were mainly interested in making connections. Additionally, among the 960 overall respondents (employed and unemployed), not having enough work experience was only the fourth-most cited obstacle to finding a job, noted by 8.4 percent of respondents. Ahead of it were no obstacle (34 percent), not enough jobs available (19 percent), and low wages (17 percent). The second and third responses indicate clearly that the labor market suffers primarily from demand-side issues.[156]

7.12 Demographics

The Armenian population is shrinking and aging, though the demographic situation is not yet acute.[157] The population is projected to decline from 3 million in 2018 to 2.7 million by 2050. At the same time, the percentage of people 65 or older is expected to increase from 12 percent in 2018 to 23 percent in 2050.[158] Average life expectancy has climbed from 73 years in 2008 to nearly 75 years in 2017, tracking similar rises across comparator countries (Figure 7.21). Meanwhile, fertility rates are dropping, with births per woman falling by 0.1 since 2008 to 1.6—a decrease of 6 percent (Figure 7.22). A population decline is the inevitable conclusion of these trends combined with the continued net out-migration of younger, working-age Armenians.

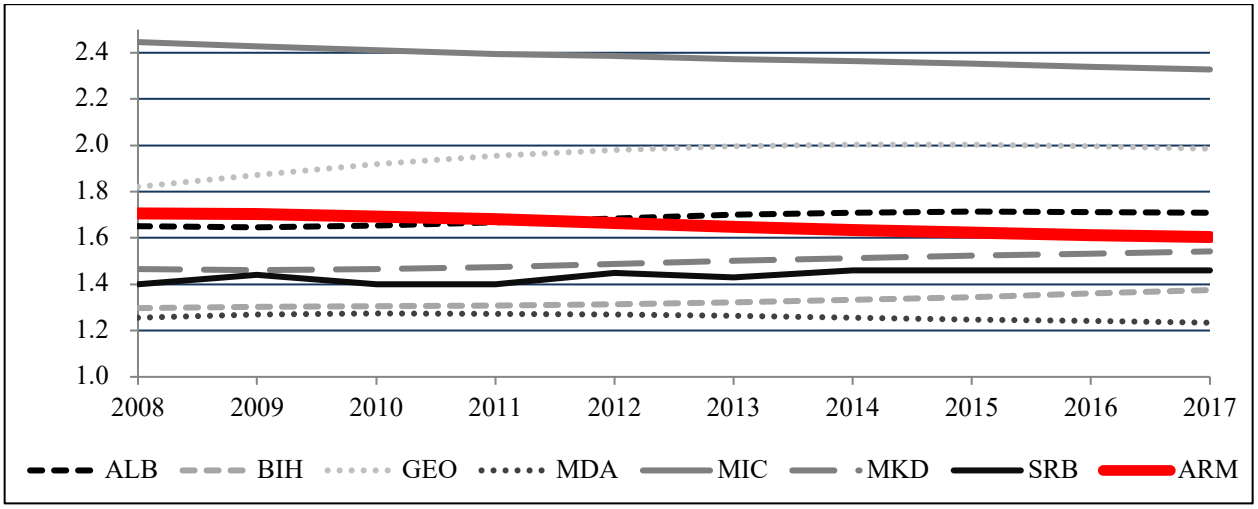
[156] ILO, School-to-work transition survey: Armenia 2012.
[157] Ibid., 40.
[158] International Monetary Fund, "Republic of Armenia—Selected Issues," June 2019. 20.

Figure 7.21. Life expectancy at birth, years



Source: UN Population Division.

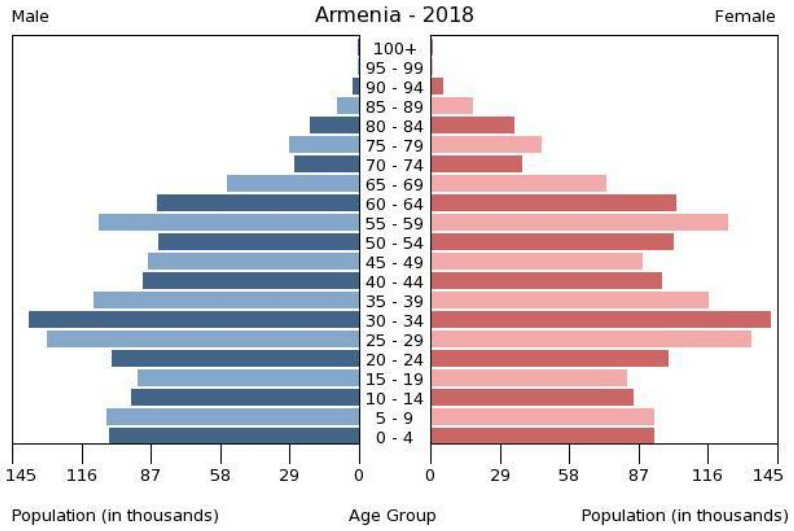
Figure 7.22. Fertility rate, births per woman



Source: UN Population Division.

A holistic way to understand Armenia's demographic challenges is through a so-called population pyramid (Figure 7.23). These figures disaggregate the population by age and gender. As the name implies, a population with a stable population, constant birth and death rates, and no migration would look roughly like a pyramid—widest at the bottom and narrowing relatively smoothly to higher age groups. However, Armenia's demographic breakdown looks much different, given the trends described above and other historical factors. While there are bulges of population aged 25-39 and 55-64, the population under 25 is relatively small and skews male. Unfortunately, poor workplace-relevant practical skills mean that the country is currently missing an opportunity to fully capture the demographic dividend resulting from a rather large working-age population. Further, the dependency ratio will increase moving forward, with a smaller labor force supporting a relatively larger retired or inactive older population.

Figure 7.23. Population Pyramid



Source: CIA World Factbook.

7.13 Conclusion

This chapter provides evidence that human capital is not a current constraint to economic growth but may become one as the economy continues to develop. While the HRV tests were either negative or inconclusive, implying that human capital is not a binding constraint, there is sufficient supplementary evidence to indicate that human capital poses some challenges for growth. The low level of spending on education in Armenia indicates that there is significant scope for further investment in human capital. If improvements in the tertiary and TVET educational and workforce training system are not made, skills gaps may widen. While the lack of a highly educated workforce does not appear to be an economy-wide binding constraint, the ICT sector in particular struggles with a limited supply of highly skilled human capital. Inclusivity is a particular concern, as youth in particular struggle due to their limited opportunities to gain practical experience, reducing the chances of a successful school to work transition. Moderate and declining female labor force participation combined with a shrinking population (due to decreased birth rates and net out-migration) imply that the economy will need to change in the future to adjust to a smaller active labor force.

8 INFRASTRUCTURE

Key Messages

- Export-oriented transport infrastructure is presently a binding constraint to economic growth in Armenia.
- Armenia's terrain and geo-political situation create high transportation costs, particularly for firms reliant on imported inputs or exported commodities. The domestic transport infrastructure is a challenge, particularly roads. There is overall low road density and many local roads are of poor quality. Though the evidence that this is a binding constraint on private sector growth is somewhat mixed, with many "transport" challenges also related to the long distance to most markets and to customs and logistics concerns discussed in the Microeconomic Risks chapter. Nonetheless, three out of four HRV tests indicate that transport infrastructure is a binding constraint, particularly for exporters.
- The water sector, while not a binding constraint to business development, suffers high and unsustainable losses. While the availability of water is currently not an issue on average, future climate pressures will exacerbate the pressure on water resources in Armenia.
- However, there are regional and spatial disparities that disproportionately affect rural areas in energy, water, and roads. Measures to address these disparities could lead to critical regional development.

8.1 Introduction

This chapter provides an overview of the strengths and weaknesses related to Armenia's infrastructure, including its transportation networks, electricity, water, and ICT. Below, evidence is provided to examine whether any of those sectors seem particularly problematic. After performing diagnostic tests on each one of these topics, only transport infrastructure presented conclusive evidence as a current binding constraint to growth.

While the evidence is somewhat mixed, clear issues with the domestic road network identified it as a binding constraint. Though high transportation costs could be reflective of exogenous constraints imposed by geo-political barriers, limited external trade routes, and long and unpredictable transits to major markets, there are clear quality concerns about the roads, particularly among exporters. These infrastructure weaknesses are compounded by the delays and costs associated with burdensome requirements of customs and trade regulations and inefficient logistics (discussed in Chapter 4: Microeconomic Risks)—in other words, not only due to the

physical transportation infrastructure itself. As such, both the infrastructure and microeconomic risk nodes are identified as containing binding constraints.

As for the other infrastructure sectors, Armenia's electricity sector is burdened by aging generation and transmission assets but has been improving in its service quality indicators over time and is generally considered to be quite efficient. The water sector is poorly performing and losing a significant amount of money on its below cost-recovery tariff, preventing investment in much needed improvements to water infrastructure; however, businesses are not constrained by water access or reliability. ICT infrastructure is a bright spot, with relatively high internet and mobile phone usage.

Infrastructure promotes broad-based economic growth through the creation and management of public services that are beneficial to all segments of society. Roads, for example, provide a key conduit for goods and services that help reduce costs for businesses and consumers who have wider access to international markets. Infrastructure also has a direct impact on poverty reduction, as it provides increased opportunities for income generation, improved access to public services, and improved linkages between rural and urban markets.

In countries with particular geographic constraints such as complex terrain, as is the case in Armenia, low quality of infrastructure hinders development of certain regions, by limiting the integration of regional populations in economic and trade activities as well as social life. Insufficient development of infrastructure in the regions negatively affects development of agriculture in underdeveloped regions. This in turn hinders regional population's access to markets. Low level of infrastructure development has also had a negative impact on tourism development in Armenia. Poor infrastructure also has a social dimension by hindering access to health and education facilities for rural populations. Consequently, poor infrastructure exacerbates the disparities between the urban and rural areas in the country.

This chapter discusses each major infrastructure sector. During the in-depth interviews in June 2019, transportation was frequently discussed with stakeholders and sufficient quantitative data confirmed that transportation is problematic. In this sector, all four diagnostic tests were performed to further examine whether this was a binding constraint—three indicated that it was. For the other three sectors (water, energy, and ICT), comparative evidence is also provided to establish that these are not binding constraints.

8.2 Transport (Roads, Rail, & Airports)

8.2.1 Sector Overview

During the key stakeholder interviews in June 2019, high transportation costs were often mentioned as a serious problem for businesses. This sub-chapter explores to what extent those problems relate to transportation infrastructure inside Armenia or rather if those perceived costs

were primarily caused by microeconomic constraints like customs and non-tariff barriers, or external costs beyond Armenia's borders.

Armenia's unique geo-political situation and mountainous topography present challenges for the efficient movement of goods and services. Armenia, being landlocked, does not have sea access and additionally, has closed borders with two of its four neighbors (Turkey and Azerbaijan) and limited trade with Iran due to recently re-imposed sanctions, as well as unpredictable variations in the time to initiate transit and comply with formalities, truck availability, and restricted traceability in Iran.[159]

Therefore, trade is especially dependent on transit routes through Georgia, which imposes high transit costs[160] and where trade often experiences higher costs due to delays and unpredictability in the ports or at the Russia border. There are three main bottlenecks outside of Armenia causing high transportation costs: (1) Armenia's exports to Russia, its main trading partner, are mostly sent by land. The inland transportation route from Yerevan to Moscow crosses the Upper Lars customs point in Georgia, where 80 percent of Armenian cargo transits.[161] Its service is unpredictable and is often closed for several months in the winter or when political disputes arise between Georgia and Russia. In the summer months, this border crossing is already stretched beyond its daily capacity – often leading to long delays to cross.[162] Additionally, (2) the Georgian roads after the check-points with Armenia need improvement, which should improve after a nearly $500 million investment expected in the next five years[163]; and (3) limited capacity at the main deep sea port in Poti, Georgia, and challenging weather increases costs for Armenian exports, according to members of the Armenian government.[164]

Roads: Around 88 percent of passenger traffic and 67 percent of freight transport is carried by road. Armenia has 7,575 km of roads.[165] This includes 1,803 km of interstate roads, 1,966 km of republican roads, and 3,806 km of provincial roads. The majority of these roads were built in the 1960s and 1970s and just about half are in fair condition as of 2011.[166] Rural roads in particular need upgrading.[167] The Government has initiated several important infrastructure projects, the largest of which is the North-South Road Transport Corridor project, a strategic 556 km-long

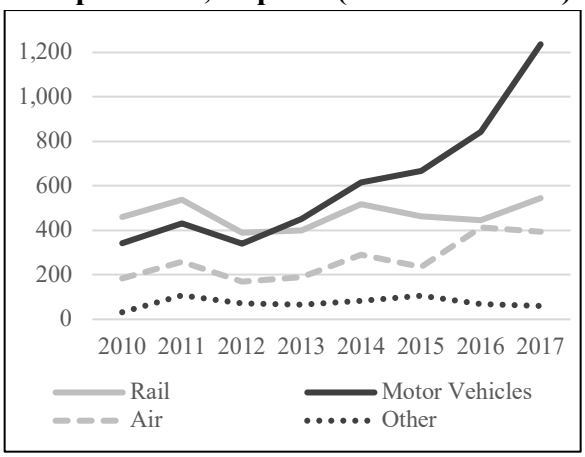
[159] World Bank (2017), SCD, pg. 17.
[160] Kuchins, A., Mankoff, J., Backes, O. (2016). Armenia in a Reconnecting Eurasia: Foreign, Economic and Security Issues. Center for Strategic and International Studies (CSIS).
[161] EV Consulting (2018). Upper Lars: Armenia's Lifeline. Source: https://www.evnreport.com/economy/upper-lars-armenia-s-lifeline
[162] EV Consulting (2018).
[163] Interviews with the Government of Armenia in June 2019.
[164] Interviews in June 2019.
[165] This does not include roads for "non-general purpose" defined as roads only for road transport vehicles and the transportation of employees of the given organization by road transport (intra-economic and official transport). Source: Government of Armenia, Statistical Yearbook of Armenia 2018.
[166] ADB (2011). Armenia's Transport Outlook - Transport Sector Master Plan.
[167] IMF (January 2019). Technical Assistance Report—Public Investment Management Assessment. IMF Country Report No. 19/33.

highway linking the southern and northern borders. During interviews in June 2019, members of the new government confirmed their roads strategy prioritizes road improvement investments for roads that have export potential first, followed by roads the improve the general connectivity in the country.[168]

Armenia has the lowest low road density in the comparator group, with just 25.5 km of roads per 100 square km of land area, which could imply that road infrastructure is inadequate.[169] It is similar to Moldova (28 km) and Georgia (29 km).[170] Bosnia and Herzegovina (44.2 km)[171], Serbia (49.5 km)[172], Macedonia (53.8 km), and Albania (65.7 km)[173] represent a higher tier of road density.[174] Improvements to the road transportation network absorbs the largest share of financial and technical support provided by international donors and international finance institutions.[175]

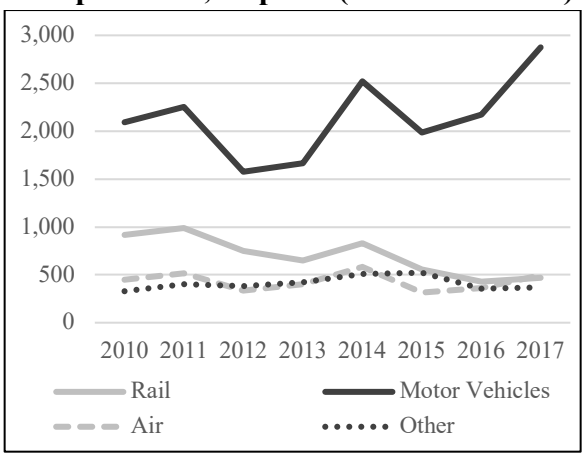
Road transport has expanded its participation in trade at the expense of railways since 2010 and currently represents 64 percent of total trade in value (see Figure 8.1 and Figure 8.2).[176]

Figure 8.1. Foreign trade by means of transportation, Exports (USD in millions)



Source: Customs Service of the Republic of Armenia.

Figure 8.2. Foreign trade by means of transportation, Imports (USD in millions)



Source: Customs Service of the Republic of Armenia.

Railways: Armenia has 702 km of railway in operation for general purpose, roughly half of which is operational (about 370 km).[177] The rail network was built during the Soviet era and much of the network is dated or damaged, including sections damaged during the 1988-1994 conflict with Azerbaijan and the 1988 earthquake. In 2011, the railways had seen a 10-fold decrease in

[168] Interviews in June 2019 with the Government of Armenia.
[169] Statistical Yearbooks in Armenia (2018) for general purpose roads.
[170] CIA Factbook.
[171] EC, Statistical Pocketbook 2009; WB.
[172] European Union Road Federation, data as of 2013.
[173] Word Bank (2007), Kosovo Quarterly Economic Briefing.
[174] CIA Factbook, except where noted otherwise.
[175] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[176] Customs Revenue of the Republic of Armenia, 2017.
[177] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.

operations since independence, primarily due to the closing of the borders with Turkey and Azerbaijan in the 1990s following the Nagorno-Karabakh War between Georgia and Azerbaijan.[178] A monopoly of the railway infrastructure adds costs to firms operating in Armenia with this mode of transport.[179] Armenia's rail network is only internationally connected to Georgia at the moment, which has not been connected to Russia since the Georgian–Abkhaz war in 1993. Rail and ferry services to and across the Black Sea through Georgia do not yet constitute a meaningful alternative for Armenia exports, except for bulk cargos and Armenia's mining resources (78 percent of all rail shipments)[180].

Airways: Air connectivity at Armenia's three airports used to be highly restrictive but was largely liberalized in 2013.[181] This liberalization led to lower airfares and a 30 percent increase in passenger traffic in 2014.[182] Key obstacles remain, such as high service rates at the main international airport[183] and unusual flight times, that keep costs relatively high and flights inconvenient for international passengers (as discussed during key stakeholder interviews in June 2019). The government is working with the European Union to attract low-cost carriers to increase tourism and hospitality revenues, although it is unclear if there is a good business case for these connections.[184] Air cargo remains marginal, with only high-value and low-weight commodities exported by air and no dedicated cargo airlines currently serving Armenia. Nearly 18 percent of commodities are exported via air (by value), which has included diamonds, jewelry, and fresh fruit in the past.[185]

Perceptions of Transportation

Although interviews in June 2019 certainly highlighted concerns with transportation costs overall, data does not indicate that businesses in Armenia perceive transportation infrastructure as particularly problematic, especially when benchmarked against business perceptions in comparator countries. In 2017, executives ranked "inadequate infrastructure" as their eighth most problematic concern to doing business in Armenia.[186] In the 2013 *Enterprise Survey* in Armenia, 8.2 percent of firms ranked transportation as one of their biggest obstacles (and only 0.4 percent of firms ranked it as their top obstacle), which is an average percentage in the comparator group (see Figure 8.3).[187]

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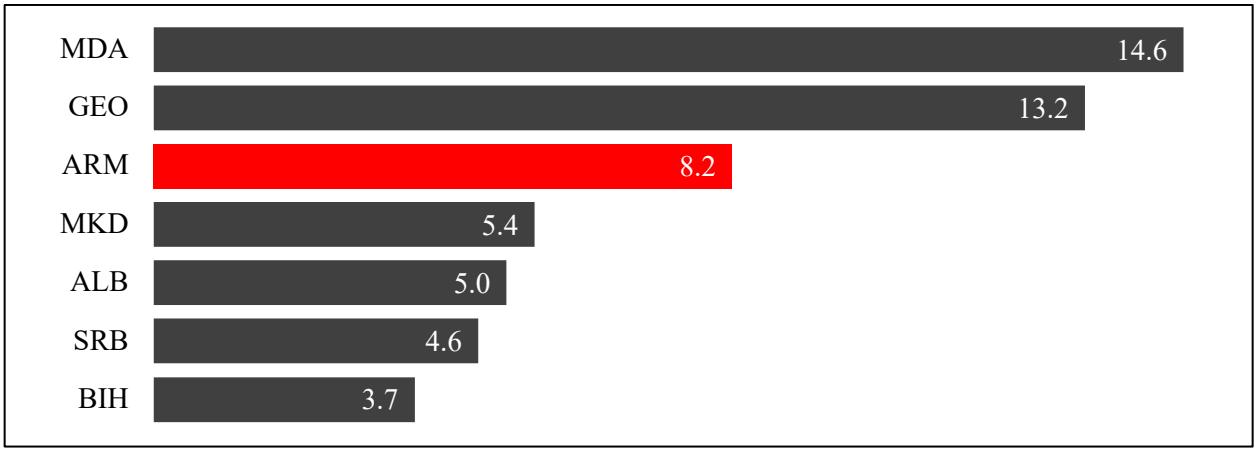
[178] ADB (2011). Armenia's Transport Outlook - Transport Sector Master Plan.
[179] World Bank (2017). Future Armenia: Connect, Compete, Prosper – A Systematic Country Diagnostic.
[180] Government of Armenia, Statistical Yearbook of Armenia 2018.
[181] World Bank (2017). Future Armenia: Connect, Compete, Prosper – A Systematic Country Diagnostic.
[182] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[183] Ibid.
[184] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[185] World Bank (2013)
[186] WEF, *Executive Opinion Surveys*.
[187] World Bank *Enterprise Surveys*, 2013. Source: http://www.enterprisesurveys.org/data/exploreTopics/Infrastructure%23%E2%80%931#--13

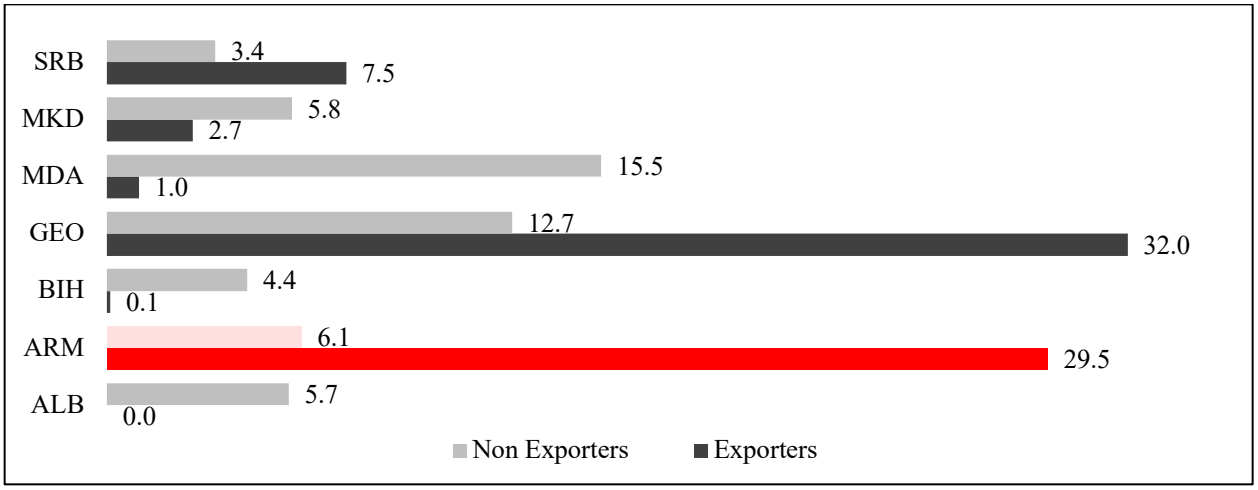
Figure 8.3. Percentage of firms identifying transportation as major constraint, 2013



Source: WB *Enterprise Survey,* 2013.

These percentages roughly fall within the middle of the comparator countries, indicating that domestic transport infrastructure is likely not a binding constraint overall. It becomes clear that there is a large discrepancy between the perceptions of exporting firms and non-exporting firms in Armenia (see Figure 8.4). While not conclusive, this provides some evidence that firms who are only operating on domestic transportation infrastructure are significantly less likely to see transportation as an issue as compared to exporters, who also face the significant constraints beyond the border. Armenia ranks third among comparators for lowest percentage of non-exporting firms identifying transportation as a major constraint. It should be noted that exporters are more likely to rely on transportation infrastructure than non-exporters, and therefore their relatively high ranking of transportation as a major constraint (second highest among comparators) is certainly a sign that transportation is problematic.[188]

Figure 8.4. Firms identifying transportation as a major constraint (%)



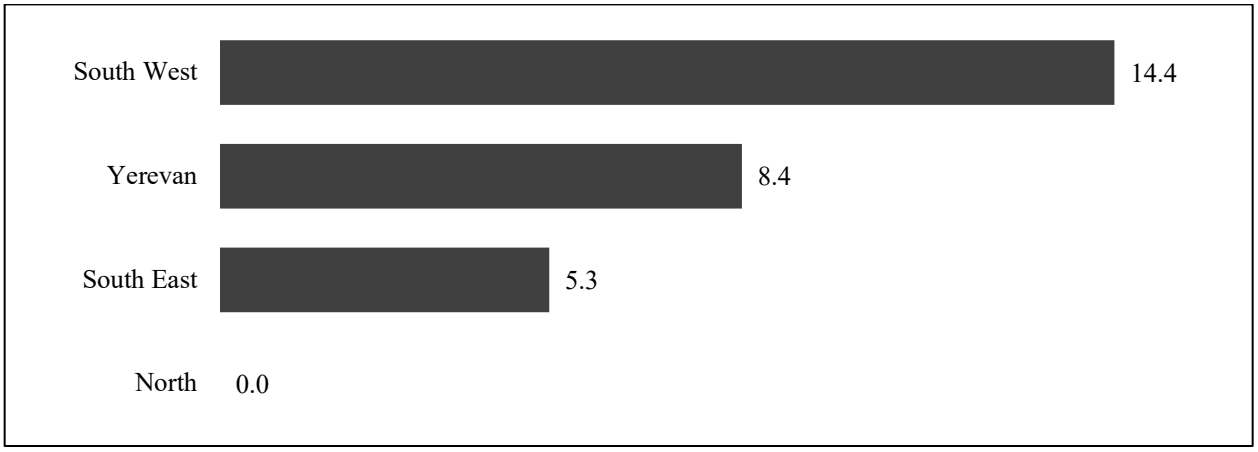
Source: WB *Enterprise Survey*, 2013.

[188] The question is phrased to firms as: "*To what degree is Transport an obstacle to the current operations of this establishment?*" which does not specify domestic or international transportation.

There also appears to be geographic disparities in perceptions of the transportation infrastructure; particularly in the south-east (see Figure 8.5). In-depth interviews in June 2019 confirmed that the road quality to the south is inferior to the major roads in the north (particularly the major roads). This could be a sign of regional disparities in access to quality infrastructure.

Due to the topography and the geo-political position Armenia finds itself in, transportation infrastructure is naturally limiting and non-conducive to economic growth. Limited border options and mountainous terrain will render higher transport costs particularly for traded goods, all else equal. In the most recent World Bank Systematic Country Diagnostic (2017), transportation was also not identified as a singular binding constraint, though high trade costs and hard (and soft – see Micro chapter) connectivity infrastructure were noted as constraints to external sector performance. Diagnostic tests result in a mixed picture on whether this is a binding constraint, which is likely confounded by factors beyond Armenia's economic control and beyond its borders; see next section.

Figure 8.5. Firms identifying transportation as a major constraint by region (%), 2013



Source: WB *Enterprise Survey*, 2013.

8.2.2 Shadow Price of Transport Test

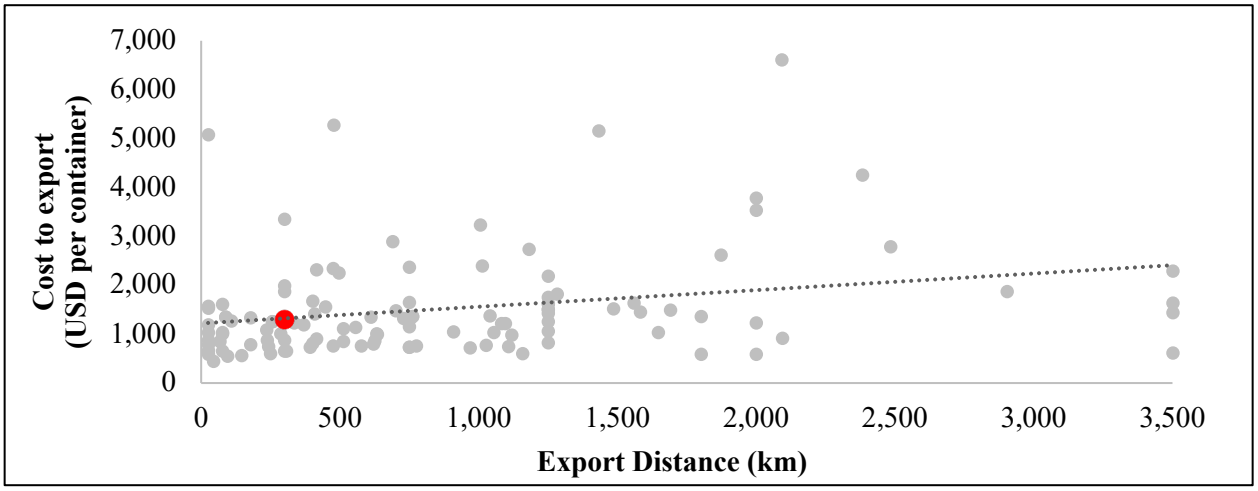
Where possible, we try to determine whether the quantity supplied and consumed of an infrastructure good (transportation, energy, water, or ICT) is low relative to some meaningful benchmark such as regional or income-group peers. In cases where consumption appears to be low, we try to determine whether the market price or shadow price is high, relative to a relevant benchmark. A low quantity consumed and a high market or shadow price would indicate a binding constraint. In this section, we rely primarily on perceptions of costs along the road.

The total costs to transportation in Armenia do appear to be high. However, on average, exporting from Armenia does not appear to be marginally higher than global average, falling just above the trendline for costs per kilometer exported (see Figure 8.6).[189] The figure below estimates the total

[189] This also includes other costs such as border compliance and documentary costs that are not related to physical infrastructure.

cost to export the average good from Armenia to a regional trading partner including all time and costs associated with domestic transportation, documentary compliance, and border compliance (excluding tariffs). Armenia's average result may be driven by several outliers with particularly high export costs; when removing five countries with particularly expensive export costs, Armenia does appear to be marginally more expensive than the global average for total export costs.

Figure 8.6. Export distances and costs, 2015



Source: WB *Logistics Performance Index* and *Doing Business Indicators*, 2015. Comparator data only for Armenia.

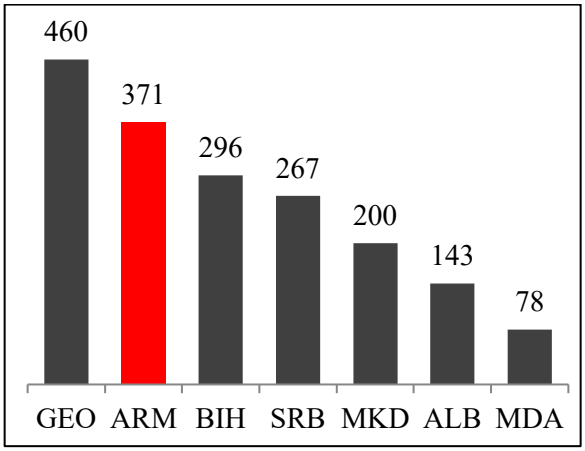
Statistics specifically on Armenia's domestic transport corridors may provide a better measurement of the time burden and costs for transporting goods caused by Armenia's physical infrastructure. In measuring costs of exporting and importing, Armenia ranks second among the comparator group for exporting and importing shipping containers (see Figure 8.7 and Figure 8.8). These expenses capture the geography and topography, road capacity and congestion, quality of the general infrastructure, proximity to the nearest port or border, and the location of warehouses where the traded goods are stored, as well as costs for loading or unloading at the warehouse or border.

It is important to try to identify if these high costs are due to poor infrastructure, natural or exogenous limitations in Armenia such as its mountainous topography, or government policy and performance issues around trade. When looking at the WEF *GCI* data, Armenia ranks second worst in the group of comparators for its roads and road quality, which is a measure of the average speed and straightness of a driving itinerary connecting the largest cities in a country.[190] This could be due to poor road quality, which was confirmed in key stakeholder interviews in June 2019 especially on major roads to the south of Yerevan as well as on secondary and tertiary roads, and it could also be due to the geographic terrain in Armenia. Interviews with freight forwarders

[190] World Economic Forum, GCI 2016.

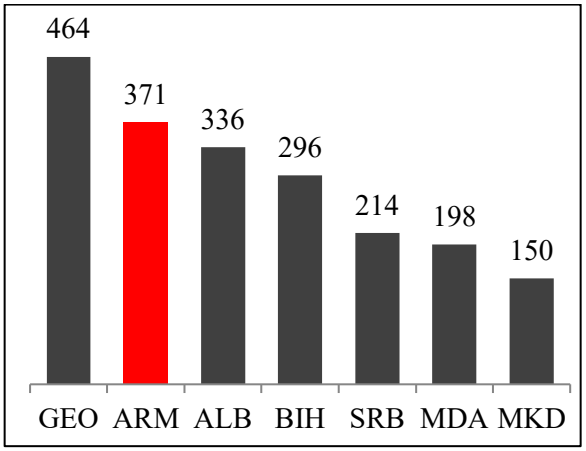
suggested that the straightness of the road was the main reason for slow transit through Armenia, rather than the quality of the roads, particularly in the north.[191]

Figure 8.7. Cost to Export in Comparator Group (USD per container)



Source: WB *Doing Business Indicators*, 2016.

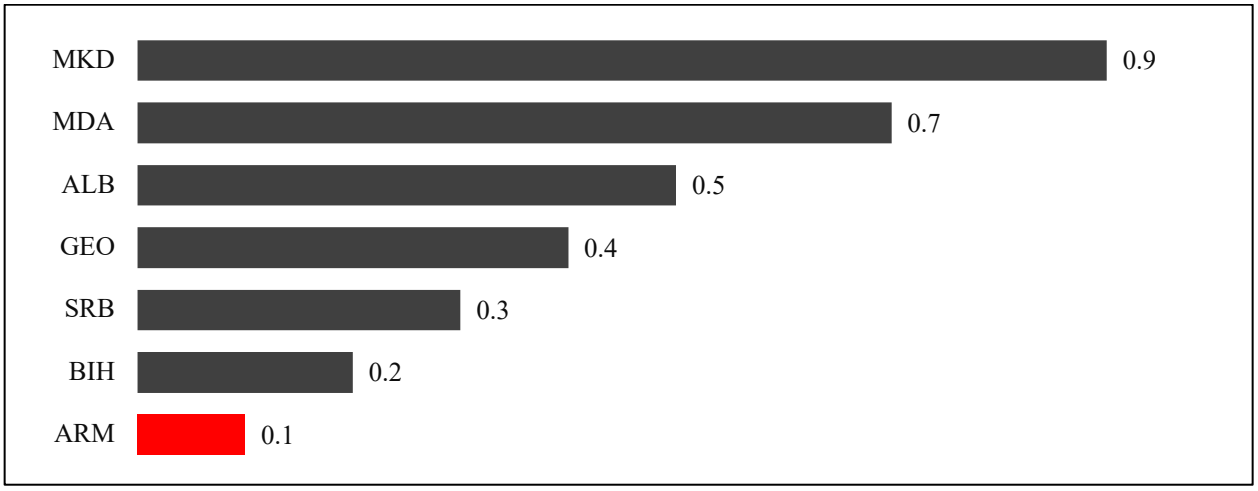
Figure 8.8. Cost to import in comparator group (USD per container)



Source: WB *Doing Business Indicators*, 2016.

Another test is needed to examine the quality of the domestic transport infrastructure. An indirect measurement of the shadow price of road and rail as it relates to the quality of the road can be estimated by the proportion of products lost during transportation. In the latest available *Enterprise Survey* in 2013, Armenian manufacturers had the lowest proportion of product loss due to breakage or spoilage (0.1 percent) for all middle-income countries (and one of the lowest rates in the entire world). Armenian losses are significantly lower than its comparators (see Figure 8.9).

Figure 8.9. Proportion of products lost to breakage or spoilage (%)



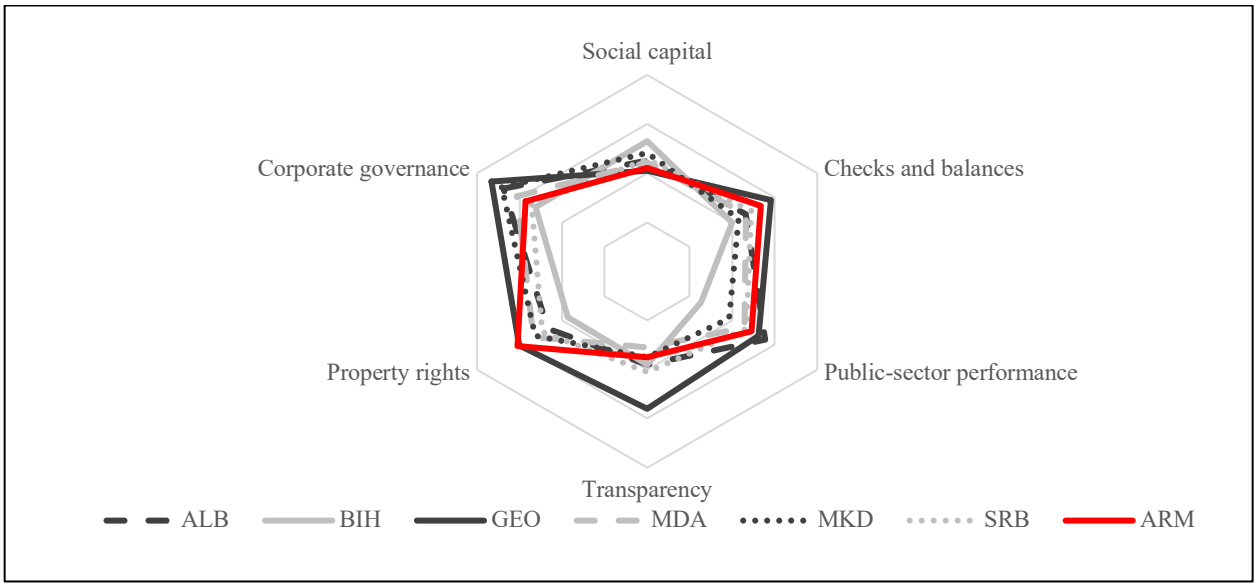
Source: WB *Enterprise Survey*, 2013.

International rankings also provide an indirect measurement of the time and costs associated with a country's transport infrastructure, from the perspective of business executives who rely on this

[191] Interviews in June 2019.

physical capital. The radar figure below from the World Economic Forum scores the quality of various transportation infrastructure, which is a measure of the extensiveness and condition of each type of infrastructure. As can be seen in the figure below, executive opinions about the quality of transport infrastructure is the second highest in the comparator countries, second only to perceptions in Georgia. When the sub-components are benchmarked against the comparator countries, Armenian scores for the quality of their air infrastructure ranks first in this comparison group, the quality of the railroads rank second, and finally, when asked specifically about the quality of their roads, executive opinions in Armenia benchmarked against the comparators place Armenia as third best in the comparators for its road quality in 2017.[192]

Figure 8.10. WEF Transport Infrastructure Scores, 1-7

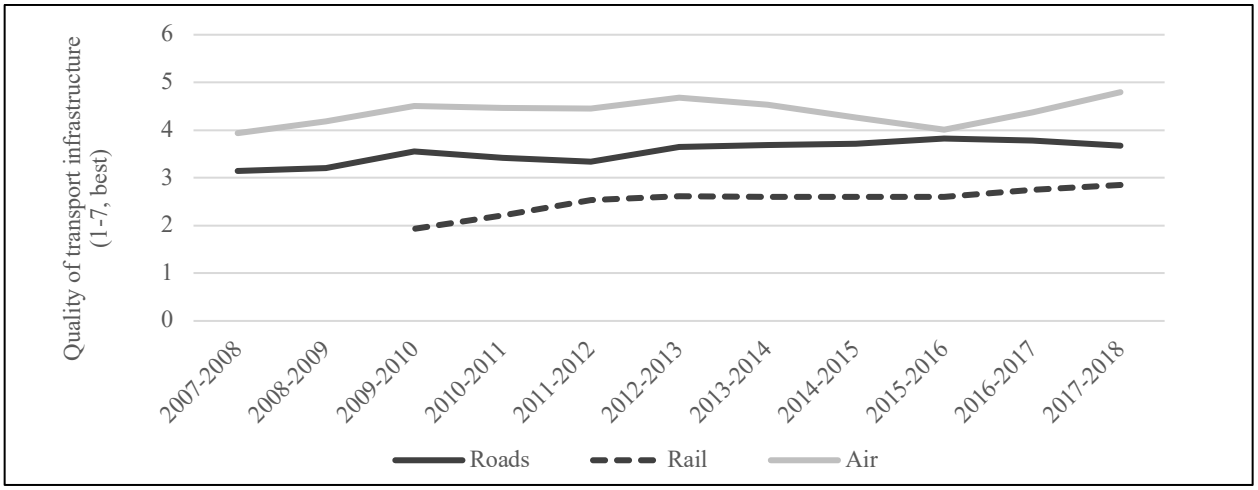


Source: WEF *Global Competitiveness Index*, 2017. No data available for North Macedonia this year.

In Armenia, these quality ratings have also been increasing somewhat overtime, with little change on roads in the past few years (see Figure 8.11).

[192] When asked, "In your country, how is the quality (extensiveness and condition) of road infrastructure." Source: World Economic Forum, *Executive Opinion Survey*.

Figure 8.11. WEF Transport Infrastructure Scores in Armenia over time



Source: WEF *Global Competitiveness Index.*

The 2018 *Logistics Performance Index (LPI) Infrastructure Sub-index,* which is a global survey of global freight forwarders and express carriers, ranked Armenia as second best in the comparator countries*,* which is a measure of trade and transport related infrastructure including roads, ports, railroads, and ICT. Similarly, Armenia had a relatively average ranking (88 out of 140) in the 2017-18 WEF *Global Competitiveness Index* for transportation infrastructure, which is the second highest rank in the group of comparators.[193]

There is evidence that there are significant costs associated with transportation, but it is not clear if that is related to the quality of the road and other transportation infrastructure, or other factors. Other non-infrastructure costs to transportation, such as logistics and customs, are discussed further in the Microeconomic Risks chapter.

8.2.3 Impulse Response of Transport Infrastructure Test

Improvements in the transport infrastructure often lead to reduced costs. For example, the World Bank reported that travel time was reduced by 58.5 percent after they rehabilitated 442 km of lifeline roads, which is a significant cost savings.[194] The question, however, is if cost savings such as these lead to significant economic growth and improved connectivity. There has only been one known recent assessment to consider the direct relationship between transport infrastructure and growth in Armenia: Badalyan et al. (2014) investigated the relationship and the direction of causality between transport infrastructure, infrastructure investment and economic growth, in Armenia, Turkey and Georgia using data between years 1982 and 2010. Their results show that gross capital formation and road/rail goods transported had a positive and statistically significant impact on economic growth in the short run, and show the existence of bidirectional causality

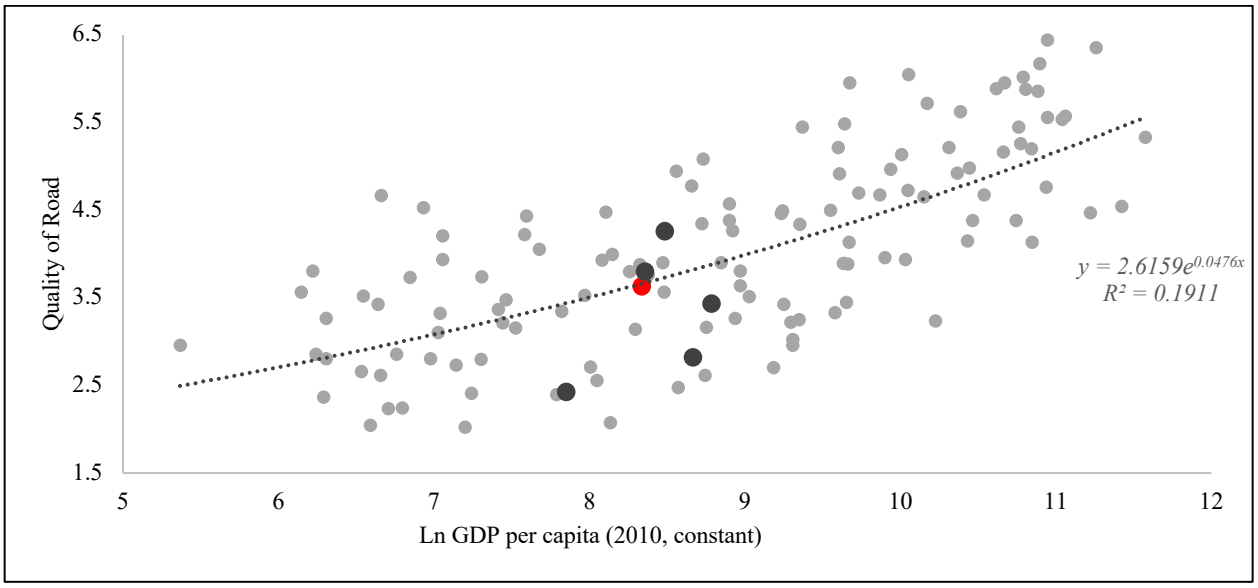
[193] World Economic Forum, GCI 2017-2018.
[194] World Bank (2014). Transport: Sector Results Profile. Site: https://www.worldbank.org/en/results/2013/04/14/transport-results-profile

between economic growth and infrastructure investment, and between road and rail passengers carried and infrastructure investment in both the short and long run.[195]

Figure 8.12 also compares the quality of a country's road network to its level of wealth, showing the quality of the Armenian road network (in red), as measured by an opinion survey from logistics professionals, is roughly at the expected level for a country with its income level, and closer to the expectation than all other comparators (in black).[196]

More recent data would be required to validate this test; however, there does appear to be evidence that in the past, investments in roads have led to a statistically significant increase in economic growth.

Figure 8.12. Road Quality and GDP



Source: WB *World Development Indicators,* 2017, and *Logistics Performance Index,* 2018. No data for North Macedonia this year.

8.2.4 Test of Circumvention

If transportation were a binding constraint to economic growth, one might expect firms to incur costs in order to bypass the constraint. More data is needed to validate this test; however, several anecdotes were discussed during interviews in June 2019 around circumvention behavior of firms. The majority of the discussions focused on ways to circumvent the Lars border by using the ports in the black sea, hoping for reduced costs in air freight, or opening of other borders into Russia (e.g. implementing a long-stalled 2011 treaty to allow trade through Abkhazia and South Ossetia).

[195] Badalyan, G., Herzfeld, T., & Rajcaniova, M. (2014). Transport infrastructure and economic growth: Panel data approach for Armenia, Georgia and Turkey. 142nd Seminar, May 29-30, 2014, Budapest, Hungary. Review of Agricultural and Applied Economics, 17(02), 22.

[196] This metric of quality of road is a subjective one, based on the opinions of executives in each country.

One freight forwarder did mention that air cargo capacity in Armenia was inconvenient with limited capacity, so they usually preferred to import air cargo to Georgia and ship the cargo via trucks the remainder of the distance to Armenia.[197]

Free economic zones (FEZs), which are often one way to strengthen value chains, establish clusters and bypass constraints in the local economy. Roads and other forms of transportation were not mentioned as one of the primary motivations for creating FEZs. In Armenia, there are currently three FEZs and a fourth, high-tech FEZ planned in the next couple of years. Two of the current FEZs operate in Yerevan, and one (Meghri) operates 2 km from the Iranian border, which opened in 2017 with the explicit purpose of increasing trade with Armenia's southern neighbor. Given that most trade crosses the northern border, the lack of FEZs near this border could imply that Armenia does not see domestic transportation to the north as particularly problematic but the southern routes as less adequate. There are thus mixed findings regarding the circumvention of transport infrastructure by economic actors.

8.2.5 Firm Survival and Performance Test

If transport were a significant constraint to economic growth in Armenia, firms that rely on access to efficient transport (whether for imported inputs and intermediate goods or for export of products) would be relatively less prevalent than firms that do not rely on transport as heavily for their inputs and outputs.

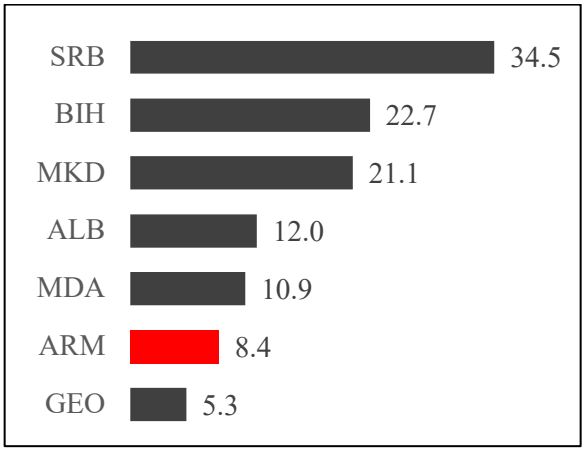
Data from the World Bank *Enterprise Surveys* shows this not to necessarily be the case: Armenia has second smallest percentage of firms who export directly or indirectly (see Figure 8.13 and Figure 8.14), second to Georgia where exporters only represent 5.3 percent of the survey sample. On the other hand, Armenia is the most heavily reliant of all comparators on imported inputs. These differences could easily be attributed to other factors: relatively small domestic economies in limit the availability of domestically produced imports, and the presence of large export and re-export markets in close geographic proximity to the countries with a large percentage of exporters.

There does appear to be evidence that firms less dependent on transportation are outperforming more transportation-dependent firms in Armenia. The industrial and agricultural sectors most likely rely more heavily on transportation infrastructure than the services sector (e.g. tourism, high-tech, and ICT). For more than a decade, Armenia has been moving towards more services and away from agriculture and industry. Over half of GDP was in the services sector in 2018, which is nearly a 7-percentage point increase over the past seven years.[198] Meanwhile, the share of industry and agriculture shrank by over four and two percentage points, respectively, in terms of its GDP share over the same period. Manufacturing has grown by 1.2 percentage points in this period. The growth of the service industries, which are less reliant on transportation infrastructure, is one sign

[197] Interviews June 2019.
[198] World Bank WDI.

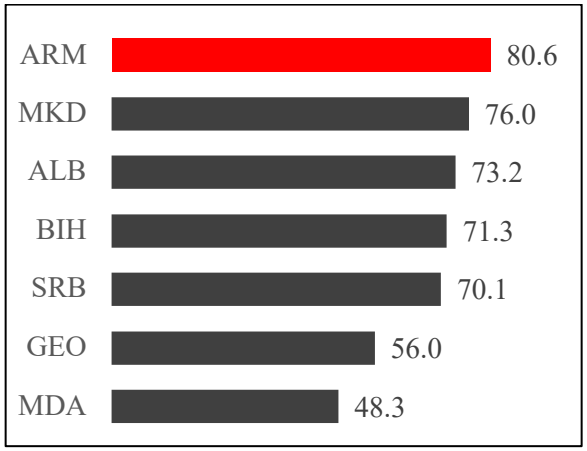
that lower reliance on transportation infrastructure is an advantage in the Armenian economy (see the infrastructure section on the growth of the ICT sector).

Figure 8.13. Proportion of firms exporting (%)



Source: WB *Enterprise Survey,* 2013.

Figure 8.14. Percentage of firms using imported materials (%)



Source: WB *Enterprise Survey,* 2013.

However, this evidence is not conclusive as a transition away from agriculture and into services is part of a broader structural transformation and also indicative of the low productivity, self-employed segment that is common in many countries' agricultural sector, and certainly also that of Armenia's. Furthermore, Armenia's shift towards services, particularly IT services, also benefits from highly skilled human capital and favorable government policies aimed at encouraging this sector (e.g. recent privileges for IT start-ups that include a zero percent profit tax rate)[199] that is unrelated to transportation infrastructure. While the services sector in Armenia has grown faster than all comparator countries in the past seven years, the sector is now roughly the same size as all comparators and the middle income country average, measured by value-added as a percentage of GDP, suggesting that this may not be evidence that the ICT sector growth in reaction to transportation infrastructure but rather following a common trend among comparators.

8.3 Electricity

8.3.1 Sector Overview and Summary of Findings

Armenia has successfully implemented energy sector reforms since 2016, and the energy sector is considered to be the most efficient sector in the region, according to an ADB report.[200] It is transitioning towards liberalization of the sector and aims to introduce contemporary trading rules, further improve the tariff structure, and promote cross-border trade.[201] As a result of large-scale gasification, more than 617 settlements use natural gas today and Armenia is one of the leaders in the world with 94.6 percent gasification rate. Armenia has virtually universal access to electricity

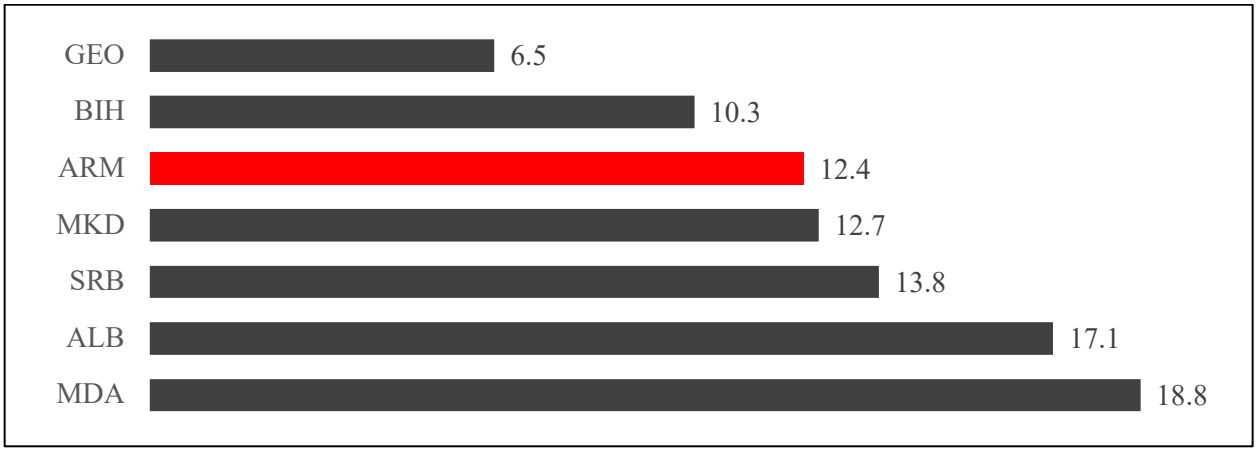
[199] Enterprise Incubator Foundation (2018).
[200] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[201] World Bank (2017), SCD.

in both urban and rural areas (100 percent of the population in 2017), which is the same as all country comparators and above the middle-income average of 92 percent.[202]

Armenia has limited energy resources and only provides about 32 percent of the total primary energy supply in 2016[203], making it heavily reliant on imported energy resources including all of its oil and gas. With gas accounting for 57 percent of Armenia's total final consumption in 2016,[204] the country is dependent on gas imports - 83.4 percent of which come from Russia and 16.6 percent comes from Iran.[205] Armenia's electricity generation system has 3.3 gigawatts (GW) of installed capacity as of 2017 and is a net exporter of electricity.[206] Domestic electricity generation comes from nuclear generation using nuclear fuel from Russia (33.7 percent), thermal generation using imported natural gas and/or mazut (37 percent), and hydropower plants (29.3 percent).[207] Armenia has been trying to diversify its electricity generation into large-scale solar power generation, 110 MW planned.[208]

Armenia ranks 3rd in the group of comparators and 69th in the world for its electricity infrastructure according to the WEF's *Global Competitiveness Index*.[209] This ranking is driven by its relatively low electric power transmission and distribution losses (see Figure 8.15).

Figure 8.15. Electric power losses across comparator group (% of total output)



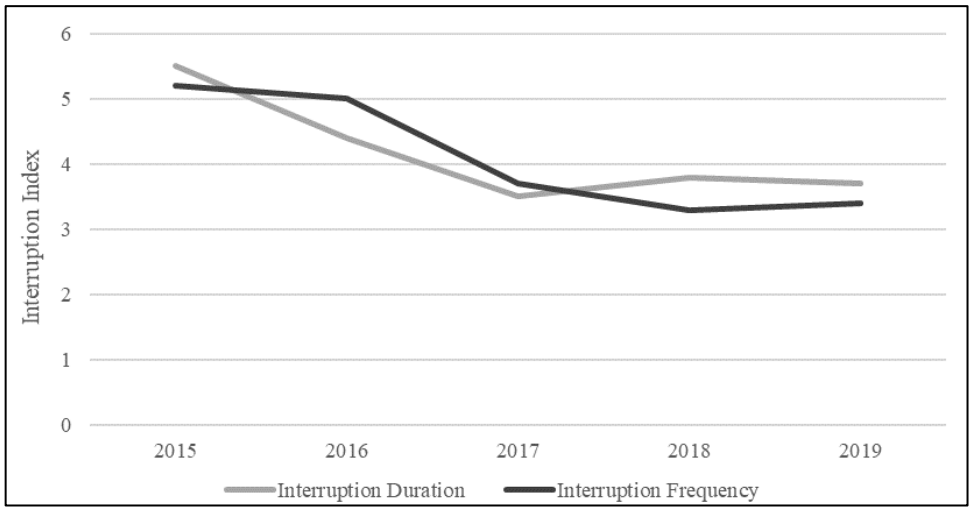
Source: WEF *Global Competitiveness Index,* 2018.

Energy infrastructure assets remain in poor condition: the average age of substations is around 35 years and most of the substations have not undergone any major rehabilitation or upgrade.[210] The

[202] World Bank World Development Indicators.
[203] International Energy Agency (IEA) Online Statistics, 2016.
[204] Ibid.
[205] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[206] International Energy Charter (2017). In-Depth Review of the Energy Efficiency Policy of Armenia. Energy Charter Secretariat, 2015
[207] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[208] Bellini, Emiliano. Armenia to Tender Five More Large Scale Energy Projects, PV Magazine, 6 August 2019.
[209] World Economic Forum, *Global Competitiveness Index* 2018.
[210] World Bank (2017), SCD.

government is focusing on this issue and plans a 10-year, $700 million investment in the distribution network to reduce technical and commercial losses.[211] Perhaps due to recent investments and improvements in the financial viability of the sector, the quality of electricity service, as evidenced by the service quality indicators, has been improving. The country-wide System Average Interruption Duration Index (SAIDI) has been decreasing over time: it decreased from 5.5 in 2015 to 3.7 in 2019.[212] Similarly, the country-wide System Average Interruption Frequency Index (SAIFI) decreased from 5.2 in 2015 to 3.4 in 2019 (see Figure 8.16). This indicates improving supply reliability.

Figure 8.16. Energy interruption duration and frequency indices in Armenia over time



Source: WB *Doing Business Indicators*.

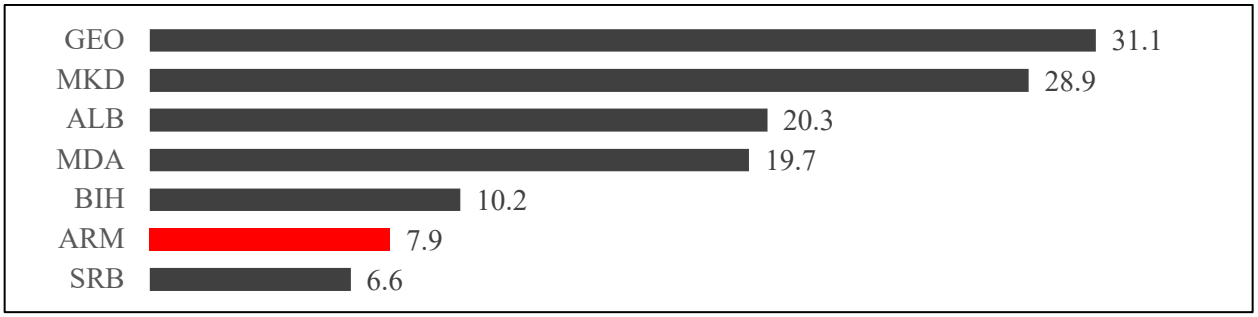
Even before these improvements in the electrical infrastructure, energy was generally not identified as a major constraint to firms. In 2013, only 7.9 percent of firms identified electricity as a major constraint, which is one of the lowest percentages in the comparator group (see Figure 8.17).

Similarly, in the 2019 *Doing Business Indicators*, Armenia ranked first in the comparator group for Getting Electricity, and 17th in the world. This high ranking is driven by a relatively low number of days and procedures it takes to gain electricity, as well as the measures of reliability discussed above, and a number of other measures of monitoring, management, and regulation in the sector.

Costs associated with accessing electricity for businesses are the lowest in the comparator countries. The *Doing Business* indicators measure the costs and fees associated with completing all procedures to connect a warehouse to electricity. In Armenia, the costs are 70 percent of income per capita in 2018, followed by Georgia (157 percent), and North Macedonia (196 percent).[213]

[211] Interviews with the Government of Armenia in June 2019.
[212] World Bank *Doing Business* indicators. Measurements taken in Yerevan.
[213] World Bank *Doing Business* indicators, 2018.

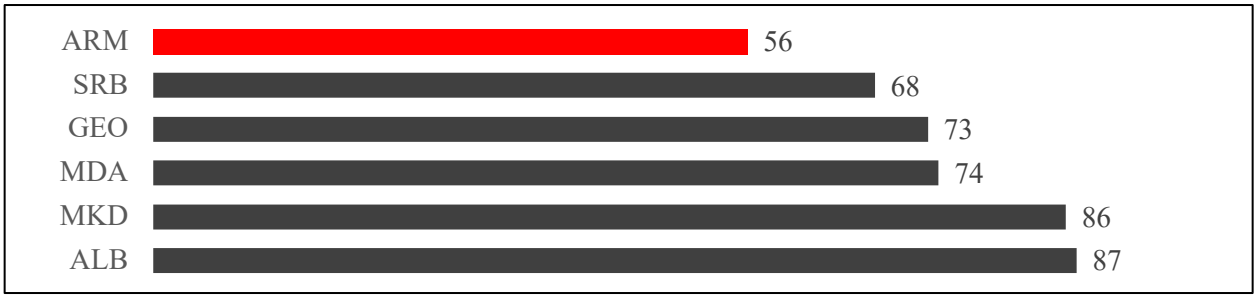
Figure 8.17. Firms identifying energy as a major constraint to business (%)



Source: WB *Enterprise Survey,* 2013.

However, while it seems that energy is not a constraint to businesses or private investment, affordability remains a concern in the energy sector. Armenia has some of the highest tariffs in the region[214] and this disproportionately affects the poor and those in rural areas. According to the World Bank, energy expenditures account for 12.4 percent of overall household expenditures and electricity accounts for 6 percent. About 11.2 and 52.5 percent of the households in Armenia are estimated to be "electricity and energy poor", respectively.[215] As a result, manure and firewood are still widely used as fuel in rural areas of Armenia. To mitigate these affordability issues, the government provides lower tariffs to vulnerable groups.[216] These efforts likely contribute to Armenia's high ranking in the World Energy Council's *Trilemma Index* for energy equity among comparators (see Figure 8.18).

Figure 8.18. Energy equity rankings, 2018



Source: World Energy Council, 2018. Data not available for BIH.

Energy access, reliability, and affordability were never mentioned during key stakeholder interviews in June 2019 as a problem. While there seem to be inclusion issues related to energy affordability within Armenia, it is not a constraint to businesses or private investment.

[214] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[215] World Bank (2017), SCD.
[216] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.

8.4 Water

8.4.1 Sector Overview and Summary of Findings

In Armenia, nearly 80 percent of the country's crops are irrigated, hydropower accounts for 40 percent of total electricity production, and groundwater is the source of 96 percent of drinking water.[217] Taking all water resources into account, Armenia is generally not considered to be water short, though water availability does fluctuate throughout the season and in different regions.[218] For example, in 2018, the average weighted water supply duration was 23.6 hours in Yerevan, 18.1 hours in other urban areas, and 16.8 hours in rural areas.[219] Seventy-three percent of the country is serviced by Veolia Jur, which has been contracted to operate Armenia's centralized water systems following a new contract with them in 2017. The remainder of the population is serviced with off-grid water solutions, which the government aims to address with a specialized (licensed) water supply and sanitation service provider in the coming years.[220]

According to the World Bank, legislative and institutional reforms since 2002 have established the principles and mechanisms needed to implement integrated water resources management, serving as a strong foundation for planning and management;[221] however, oversight bodies need to improve the management and operations of the sector and rationalize water tariffs. The water system suffers from high technical and commercial losses, resulting in a sector that is performing well below cost-recovery and requires significant government subsidies even to cover routine operations and maintenance, as well as needed investments in the sector to increase its water efficiency. During in-depth interviews in June 2019, the Government of Armenia estimated that commercial losses could be as high as 80 percent resulting in a heavily indebted sector.

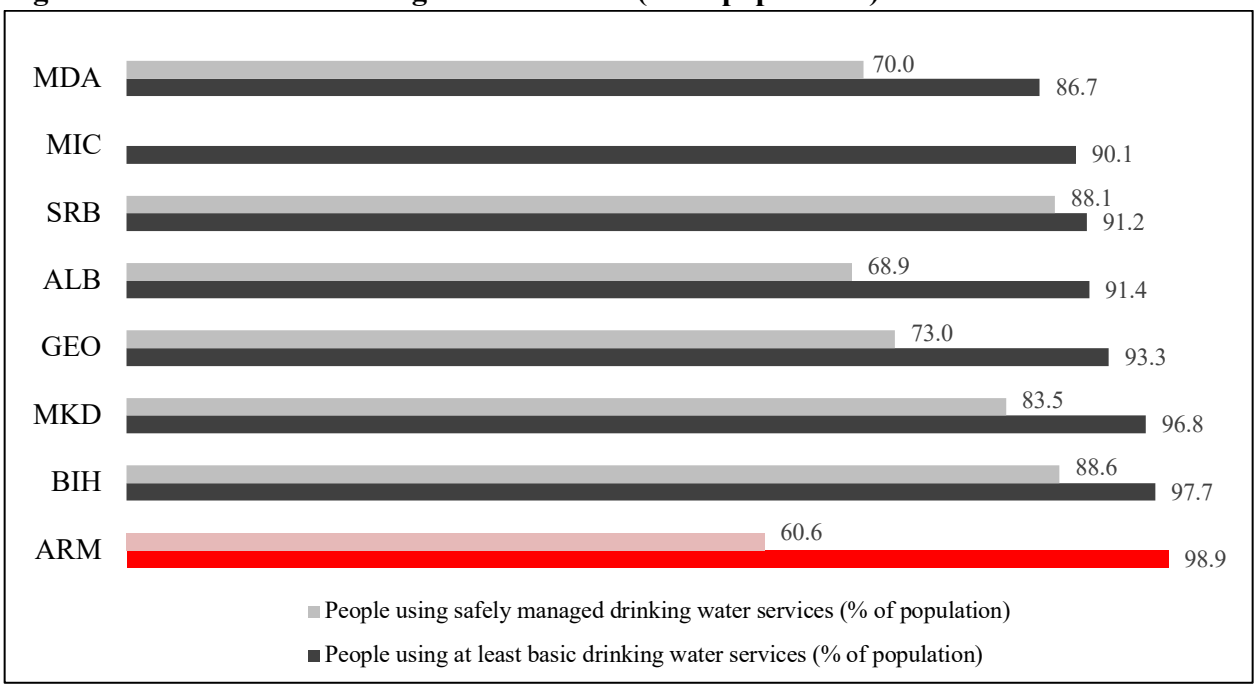
Irrigation water consumed the vast majority (84 percent) of water in Armenia in 2017 (as compared to industrial or drinking water needs).[222] The demand for irrigation water is expected to substantially increase by 2030 as climate change is projected to warm critical agricultural regions in the country, and in particular the Ararat Valley.[223] In recent years, public investment has focused on improving access to irrigation and measures to support water user group associations to improve the management of the irrigation system.[224] However, due to Armenia's limited adaptive capacity

[217] World Bank (2017), SCD.
[218] Yu, Winston, Rita E. Cestti, and Ju Young Lee (2015). Toward Integrated Water Resources Management in Armenia. Directions in Development. Washington, DC: World Bank. doi: 10.1596/978-1-4648-0335-2. License: Creative Commons Attribution CC BY 3.0 IGO.
[219] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[220] Ibid.
[221] Yu et al (2015), page 5.
[222] National Statistical Service of Armenia, 2018 Statistical Yearbook of Armenia.
[223] Yu et al (2015).
[224] World Bank (2017), SCD.

to climate change, the World Bank sees Armenia as particularly vulnerable to these climate changes without any mitigating investments in the next 10 years.[225]

The drinking water system has improved with a PPP in the past 15 years that has brought significant improvement in the quality and reliability of the water supply, especially in more urban areas.[226] However, about 450,000 people still have access to only intermittent drinking water, primarily in remote areas.[227] In the figure below, it is clear that Armenia has broadly provided access to basic drinking water sources (more than the rest of the comparator countries or the middle income region), but performs the worst among comparators for the population's access to safely managed drinking water. With that said, the WEF *Global Competitiveness Index* ranks Armenia as 40th in the world in 2018 for having a low percentage of the population exposed to unsafe drinking water; second in our group of comparators behind North Macedonia (ranked 33rd).[228]

Figure 8.19. Access to drinking water services (% of population)



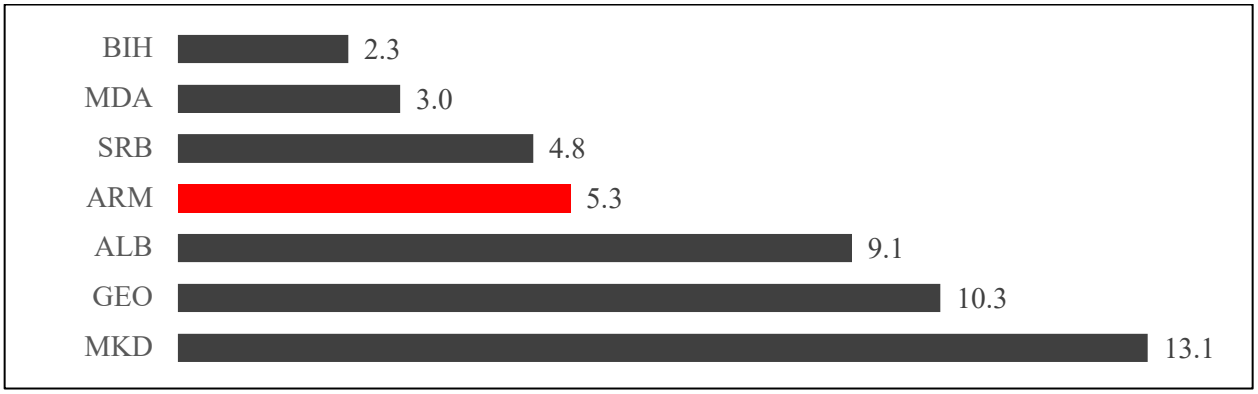
Source: WB *World Development Indicators,* 2015.

In the 2013 *Enterprise Survey*, 5.3 percent of Armenian manufacturing and services firms reported any problems with the water infrastructure. This falls in the middle of the comparator countries (see Figure 8.20). Additionally, the country was also fourth in the group of comparators for the number of water insufficiencies at 0.2 per month.

[225] Yu et al (2015).
[226] World Bank (2017), SCD.
[227] Ibid.
[228] WEF GCI (2018).

It is important to note that the *Enterprise Surveys* do not collect data from agricultural firms, who likely depend more heavily on irrigated water infrastructure. The World Economic Forum *Executive Opinion Survey* does include executives from the agricultural sector, and a similar pictures emerges: when asked about the reliability of the water supply in their country on a scale of 1 – 7, Armenian firms across many sectors rated it 4.94 which is third in the group of comparators (behind Serbia with 5.21 and Georgia with 5.05).

Figure 8.20. Firms experiencing water insufficiencies (%)



Source: WB *Enterprise Survey,* 2013.

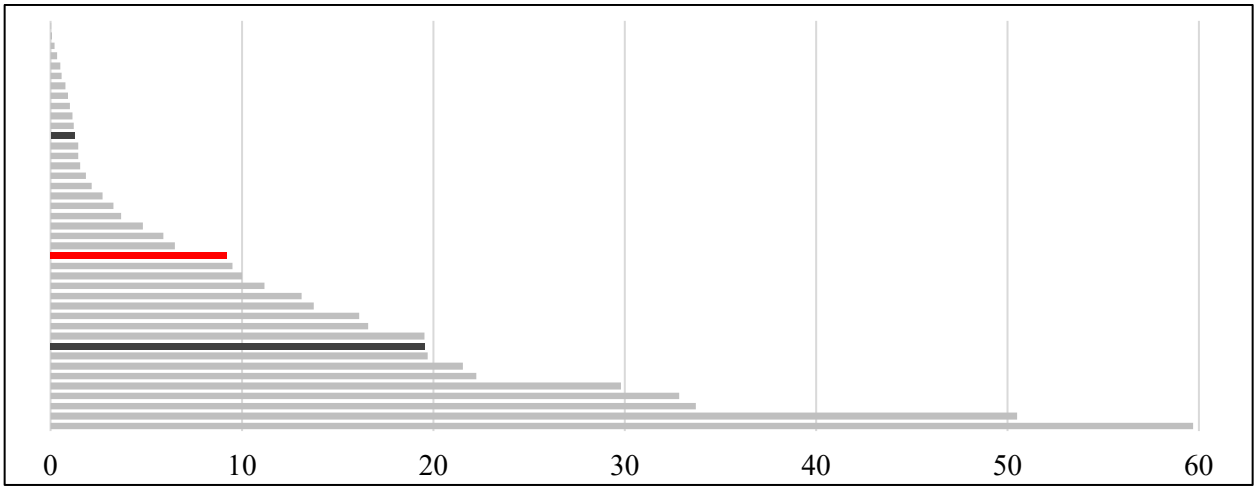
To better capture whether agricultural firms have the water infrastructure they need, the portion of the country's irrigated agricultural land can be used as a measure of whether the country's agricultural production is severely constrained by water infrastructure. The figure below compares Armenia (in red) to all other reporting economies, as well as the two comparator countries with recent data (in black). In 2016, Armenia ranked 18th out of 41 reporting countries with 9.23 percent of its agricultural land irrigated. This figure falls between Albania (19.5 percent) and Serbia (1.25 percent), the only comparator countries reporting on this indicator. This does not suggest that Armenia is particularly constrained by its physical water infrastructure.

As with energy and roads, there is evidence that water infrastructure disproportionately affects remote areas as compared to urban. According to the World Bank, 46 percent of rural households and 40 percent of secondary city households have water supply for less than the full 24 hours desired.[229]

It is clear that the water sector is not properly managed at the moment and needs considerable attention to reduce the need for government support and increase investments that could reduce technical and commercial losses. With that said, water at this point does not itself create a binding constraint to businesses, though this could change in the next decade if the changing climate puts pressure on the water resources in Armenia as expected, and the government fails to properly invest in mitigating investments.

[229] World Bank (2017), SCD.

Figure 8.21. Irrigated land (% of total agricultural land)



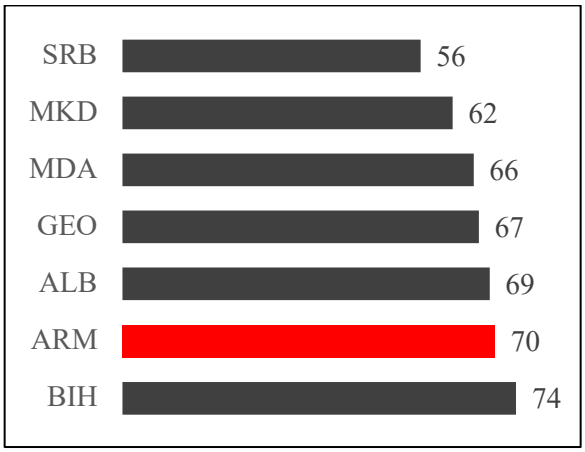
Source: WB *World Development Indicators,* 2016. Comparator data for Serbia, Armenia, and Albania.

8.5 Information and Communications Technology (ICT)

8.5.1 Sector Overview and Summary of Findings

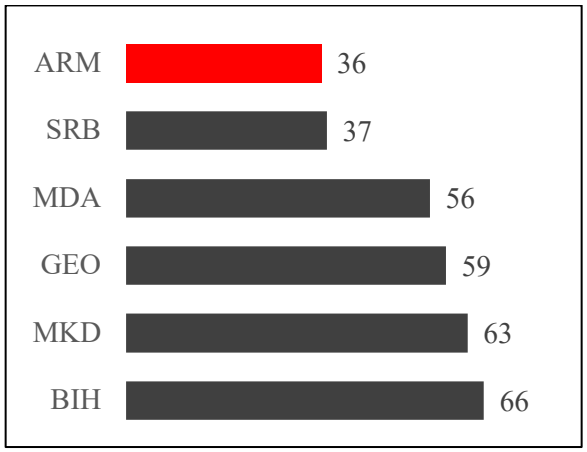
Armenia ranks 56th in the world, and third in the comparator group in the 2017-2018 WEF *Global Competitiveness Index* for ICT adoption, behind Georgia (ranked 45) and Moldova (ranked 46). Similarly, the *Global Innovation Index* in 2019 ranked Armenia as 70th in the world for ICT use, which is only 6th in the group of comparators. However, this index also ranks Armenia quite high (36th) in the world for ICT access, which is first in the group of comparators just ahead of Serbia (37th) and well ahead of the rest of the comparator group (see Figure 8.22 and Figure 8.23).

Figure 8.22. Global Innovation Index rankings, ICT Use



Source: WEF *Global Innovation Index,* 2019.

Figure 8.23. Global Innovation Index rankings, ICT Access



Source: WEF *Global Innovation Index,* 2019.

The average Armenian has benefited from a growing and responsive ICT infrastructure: since 2009, the percentage of individuals using the internet increased from just 15.3 percent to nearly 70

percent[230] and internet bandwidth has likewise increased dramatically over the same period. According to the International Telecommunication Union (ITU), 64.6 percent of households own a computer and 64.7 percent of households have internet access at home.[231]

As evidence that the physical ICT infrastructure is not constraining, Armenia's ICT sector is rapidly expanding and competing globally. This sector remains one of the Government's priority sectors for development before and after the revolution. According to a 2018 Enterprise Incubator Foundation (EIF) report, total revenue for firms reliant on the ICT infrastructure in 2018 – including software, services, and internet service provision - reached $922.3 million, a 20.5 percent increase over 2017.[232] This represents 7.4 percent of Armenia's GDP.

There are 800 active ICT companies in Armenia, which has increased by 25 percent since 2017 (see Figure 8.24).[233] These companies are growing in Yerevan but also in other parts of Armenia, such as in the Shirak and Lori regions in the north. This remarkable increase last year is possibly also related to a corporate income tax exemption that came into effect in in April 2017, exempting newly registered IT companies with up to 30 employees from corporate income taxes for a period of 5 years.[234] However, this trend has been ongoing for over a decade: between 2008 through 2018, an estimated average of 53.8 ICT companies was created each year. Over 19,500 people are currently working in the ICT sector, with customized software and web design and development as the most dominant specialization. Armenia has also made significant gains in semiconductor design, which are registered as intellectual property.[235]

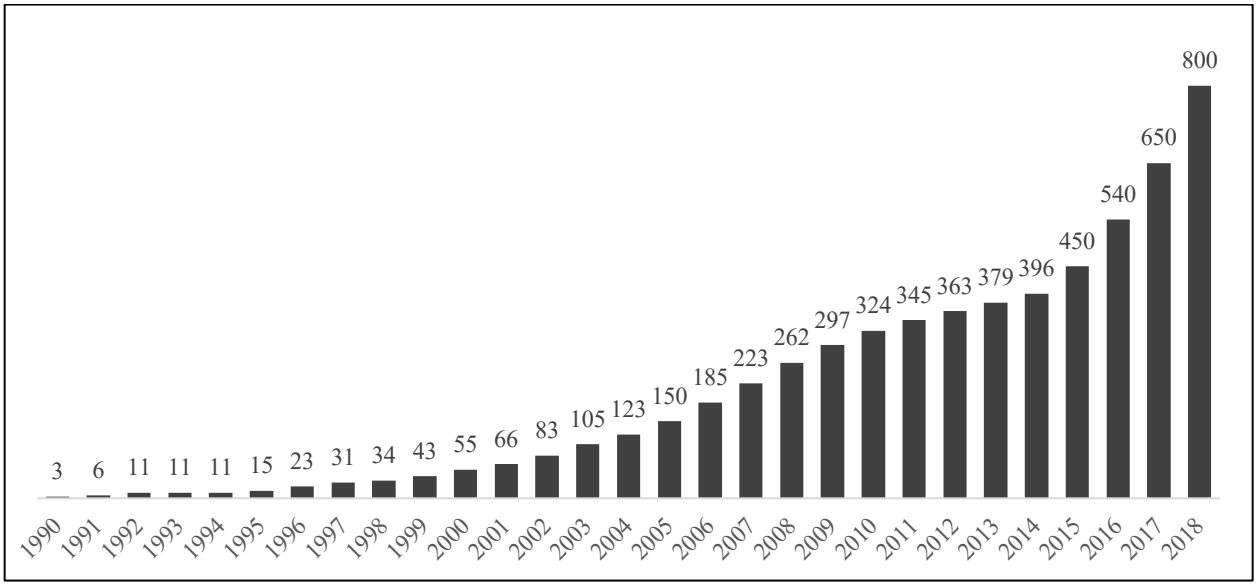
In 2018, local companies account for about 55 percent of total revenue generation in the sector, and nearly 69 percent of the ICT companies operating in Armenia – more than a 24 percent increase since 2017.[236] Much of this growth in 2018 can be attributed to enforcing a legal package related to state support for the ICT sector, which defined tax incentives for start-up companies.[237]

Armenian is able to both attract foreign investors in this sector and export its products globally. There are 243 foreign owned companies operating in Armenia in 2018 (over half of which are American companies), representing over 30 percent of all ICT companies.[238] Armenia's information technology (IT) export volume is roughly $364 million in 2018, a 7 percent increase over 2017. In 2017, Armenian exports represented about 16 percent of total exports; Armenia was ranked 15th in the world in 2019 for ICT service exports as a percentage of total exports by the

[230] International Telecommunication Union (ITU), World Telecommunication/ICT Indicators Database
[231] International Telecommunication Union (ITU), Country ICT Data (years 2016 and 2017).
[232] Enterprise Incubator Foundation (2018). Armenian ICT Sector 2018 – State of the Industry Report: Information and Telecommunication Technologies Sector in Armenia, December 2018.
[233] Enterprise Incubator Foundation (2018).
[234] IMF (January 2019). Republic of Armenia: Technical Assistance Report— Growth-Friendly Rebalancing of Taxes. IMF Country Report No. 19/31.
[235] ADB (2019), National Urban Assessment – Armenia (draft), unpublished.
[236] Enterprise Incubator Foundation (2018).
[237] Ibid.
[238] Ibid.

Global Innovation Index.[239] Foreign companies account for 65 percent of the export market share. About 70 percent of exports by value go to the US, Canada, and Europe – though this has been changing since Armenia entered the EAEU.

Figure 8.24. ICT Companies in Armenia over time



Source: Enterprise Incubator Foundation, 2018.

According to the EIF report, over 73 percent of ICT industry survey respondents see the main barriers to growth in the sector to be a shortage of a highly qualified workforce. The EIF attributes this primarily to a growing demand for the workforce in ICT and possibly also to the brain drain. This issue is discussed in more depth in the Human Capital Chapter. Other barriers identified by surveyed companies include: access to finance, lack of support from state authorities and non-governmental organizations, tax and customs procedures, problems gaining entry to world markets due to a lack of awareness about Armenia, and problems gaining trust from customers.[240]

While the sector does seem to have constraints that are affecting other sectors as well, the ICT sector itself is not considered a binding constraint to growth based on the sector's rapid improvements and Armenia's performance in global indicators. This sentiment was also echoed in the key stakeholder interviews in June 2019.

8.6 Conclusion

The overall evidence from this chapter suggests that transport infrastructure is a binding constraint to growth in Armenia. Exporters in particular cite transport infrastructure as a constraint. Local and national roads are of poor quality and overall road density is low, creating challenges for rural market access. There are also issues with a heavily indebted water sector. Additional disparities

[239] Global Innovation Index (2019).
[240] Enterprise Incubator Foundation (2018).

exist between urban and rural communities in access to reliable and affordable electricity and water. Despite this, these other infrastructure sectors are not seen to be a binding constraint to overall business development and private sector investment in Armenia. On the contrary, ICT infrastructure has led to a large and growing ICT sector.

9 NATURAL CAPITAL

Key Messages

- Natural capital is not a binding constraint to growth, although concerns about sustainability and environmental stewardship remain.
- Armenia is well-endowed with mineral resources, agricultural land, and water for hydropower generation.
- There are some long-term risks that will require adaptation and mitigation, particularly the relatively high rate of natural capital depletion and water shortages in the Ararat Valley agricultural region.
- However, the current constraints to water and resource depletion lie in government policy, such as high commercial water losses, below-cost tariff structures, and environmental protection in the mining sector.

9.1 Introduction

Armenia is well endowed with natural resources despite its small size and landlocked location. Minerals are the country's leading export, and waterways in geographically advantageous areas allow the country to be a major producer of hydropower. The country benefits from a large amount of agricultural land per capita, although the amount of arable agriculture land is relatively limited. There are some risks to long-term growth that should be considered in future planning. The rate of natural capital depletion is very high, and the Ararat Valley, the country's most productive agricultural region, is facing increasing water shortages. That being said, total natural capital rents from all sources are second highest among the comparator countries, which suggests that natural capital is an asset to build on rather than a risk to growth. The most urgent problems facing natural capital endowments result from mismanagement of those resources, such as extremely high technical and commercial losses in the water supply and below-cost tariff structures and are discussed in the Infrastructure chapter.

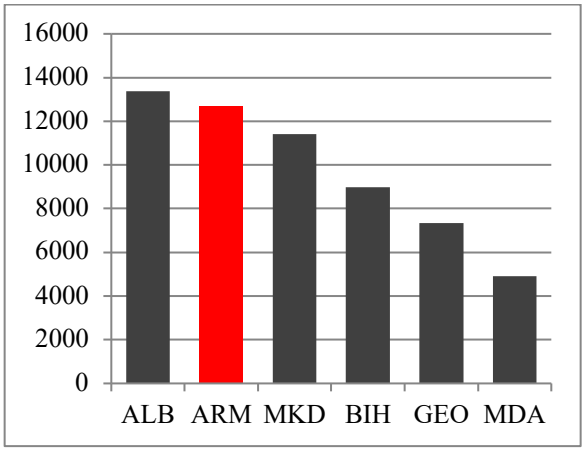
9.2 Mineral Resources

Armenia benefits economically from a wealth of natural resources, and the country offers the second highest total natural capital per capita[241] behind Albania (Figure 9.1). Armenia is particularly well resourced in minerals, which make up the majority of goods exports and remain one of the anchors of economic production. Copper ore, metals (primarily copper and aluminum), and precious metals (gold and diamonds) make up 59 percent of all goods exports ($1.45 billion

[241] Total natural capital includes the value of all fossil fuels, minerals, agricultural land, forests, and protected areas.

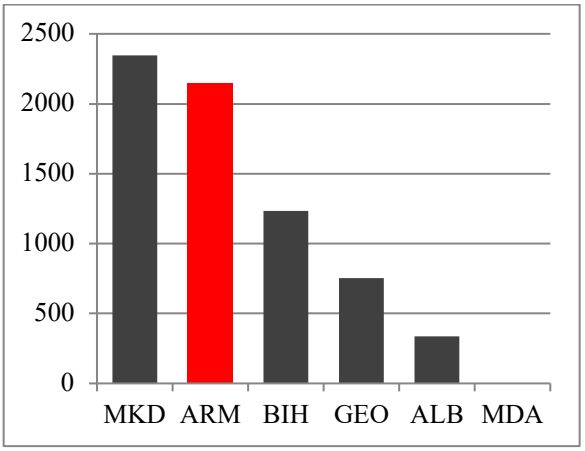
in 2017). Total natural capital is $12,702 per capita, of which $2,150 is from minerals. Although Armenia is rich in mineral resources, there are serious concerns about the environmental impacts of mining pollution and the damage it does to rivers and other irrigation sources.[242] Ultimately this harms production in the agriculture sector and speaks to the need for more balanced economic growth strategies that account for environmental losses.

Figure 9.1. Total natural capital per capita (constant 2014 USD)



Source: WB *Wealth Accounts,* 2014.

Figure 9.2. Total subsoil assets per capita (constant 2014 USD)



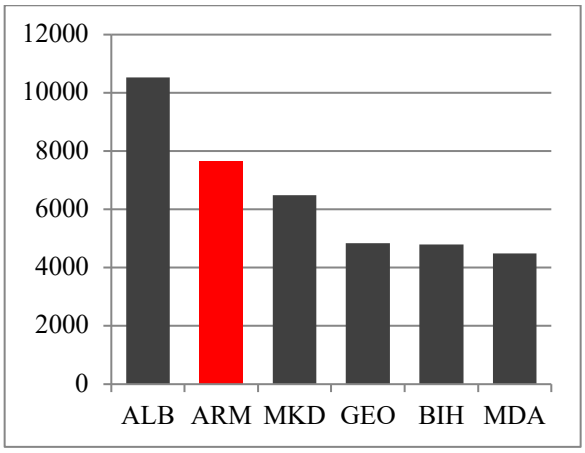
Source: WB *Wealth Accounts,* 2014.

9.3 Land Resources

Despite its mountainous terrain, Armenia ranks second among comparators in the value of agricultural land (which includes cropland and pastureland) at $7,654 in 2014 dollars (Figure 9.3). Although the amount of arable land is relatively low on a per capita basis (Figure 9.4), Armenia offers abundant pastureland and meadows, with pastureland making up most of the land value in the country. Fifty-seven percent of agricultural natural capital is from pastureland while cropland makes up the remaining 43 percent.

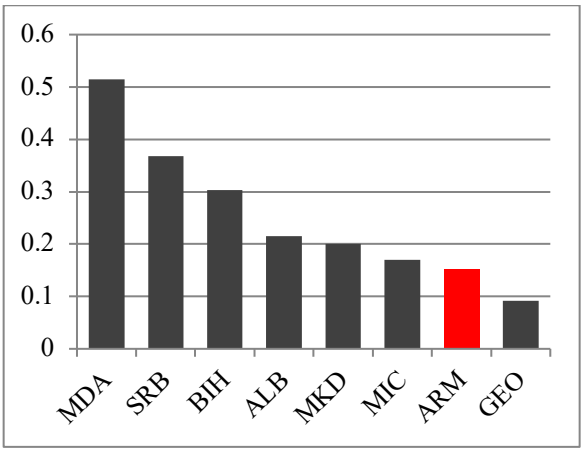
[242] USAID (2015). Clean Energy and Water Program: Draft Southern Basin Management Plan.

Figure 9.3. Agriculture land natural capital per capita (constant 2014 USD)



Source: WB *Wealth Accounts,* 2014.

Figure 9.4. Arable land (hectares per capita)



Source: WB *Wealth Accounts,* 2014.

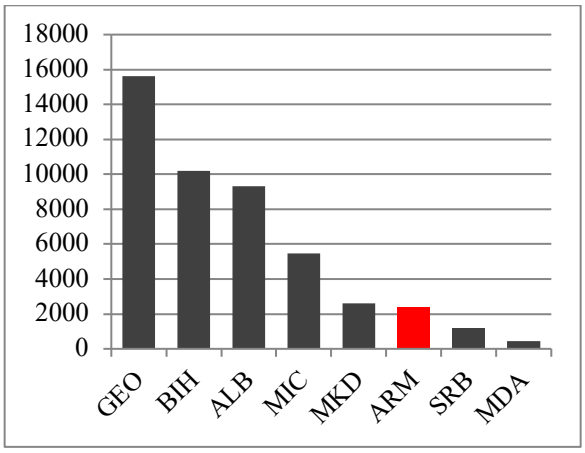
The country is challenged by a relatively low percentage of arable land, and regulatory issues have substantially limited the utilization rate of this resource. Food and Agriculture Organization (FAO) survey data shows that 38 percent of legal land holdings are abandoned.[243] This data point echoes a concern the IGD team heard frequently during stakeholder interviews. A confluence of historical and regulatory issues has divided the land into small plots and made land consolidation difficult. A high abandonment rate is further evidence that the constraint to growth lies more with policy and regulatory issues than the amount of natural capital endowments available in the country.

9.4 Water resources

As with land, Armenia is generally well endowed with water resources on a country-wide level, although certain issues are constraining investment in some areas. On the positive side, the amount of water in the country and geographic opportunities for dam building have provided Armenia with the resources it needs to become a large producer of hydropower (see the Infrastructure chapter for more details on energy production). While hydropower production is not near the level of Albania, which is the world's leader at 100 percent production, Armenia's production of 28 percent ranks 52 out of 120 countries with published data.[244]

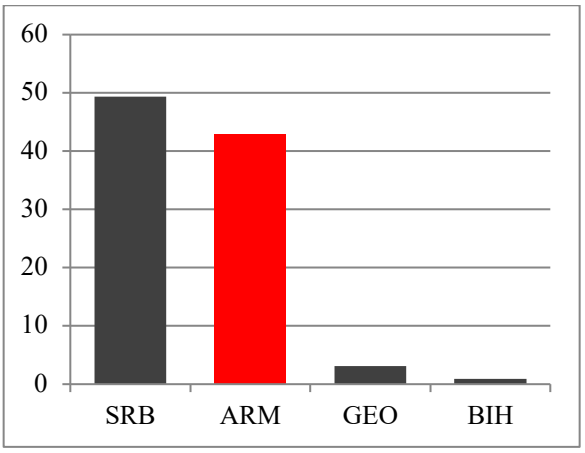
[243] FAO, Armenia at a Glance, http://www.fao.org/armenia/fao-in-armenia/armenia-at-a-glance/en/.
[244] IEA Statistics, as reported in the World Bank Databank

Figure 9.5. Renewable internal freshwater resources per capita (cubic meters)



Source: WB *Wealth Accounts,* 2014.

Figure 9.6. Annual freshwater withdrawals, total (% of internal revenue)



Source: WB *Wealth Accounts,* 2014.

That being said, there are many concerns with the management of freshwater for agricultural production. Armenia has limited renewable freshwater resources at just 2,355 cubic meters per capita, third lowest among comparators (Figure 9.5). Additionally, there is a high level of stress on the freshwater supply: annual freshwater withdrawals are 43 percent of total internal freshwater sources (Figure 9.6). The problem is particularly acute in the Ararat Valley, a region that contains 15 percent of all arable land in the country and produces 40 percent of total agricultural output.

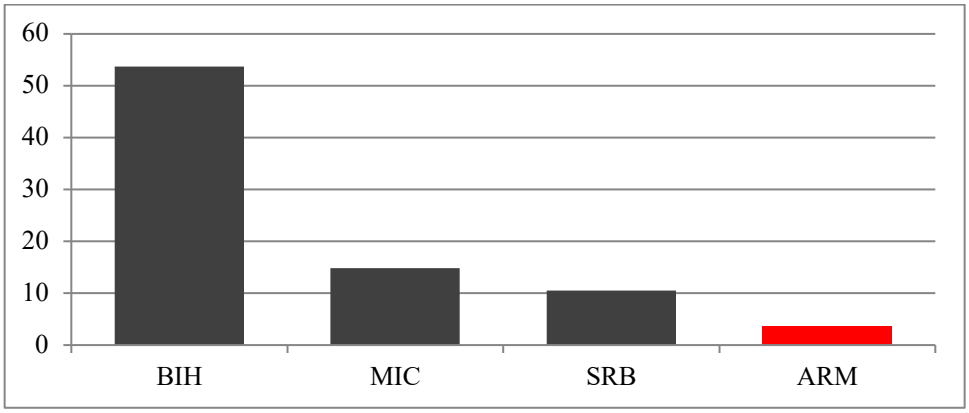
The decline in groundwater resources in the Ararat Valley over the past 20 years has been well documented, and declining water levels place considerable stress on the economic prospects of the region. The rise of fish farming in particular has been an issue, and a rapid increase in the number of wells, many of which are illegal, has exacerbated the problem. A USAID report finds that total groundwater use by all sectors in the Ararat Valley is 1.6 times the rate of sustainable groundwater abstraction.[245] In addition, nuclear power continues to be one of the major drivers of water loss in the valley.

However, the challenges with water appear to be mostly due to government mismanagement of the resource rather than the resource quantity. The U.S. Geological Survey and USAID report that there are numerous abandoned flowing wells that continuously spew water, flooding unused land nearby and depleting aquifers unnecessarily.[246] Stakeholder interviews in June 2019 also repeated these anecdotes. Additionally, as one fish farmer told the IGD team during an interview, the constraint to aquaculture development is not the availability of land but the availability of water. The farmer's constraint is with his inability to get a long-term water contract; current contract

[245] USAID ASPIRED Project. Groundwater use in the Ararat Valley: Existing and forthcoming situation, impacts on various water use sectors. Presentation by Lilith Harutyunyan. Nov. 9, 2016.
[246] Carter, et al. 2015. Building Science-Based Groundwater Tools and Capacity in Armenia for the Ararat Basin, https://pubs.usgs.gov/fs/2016/3033/fs20163033.pdf.

terms are too short to encourage the large capital investment needed to expand a profitable fish farm.

Figure 9.7. Water productivity, total (constant 2010 $, GDP per cubic meter of total freshwater withdrawal)



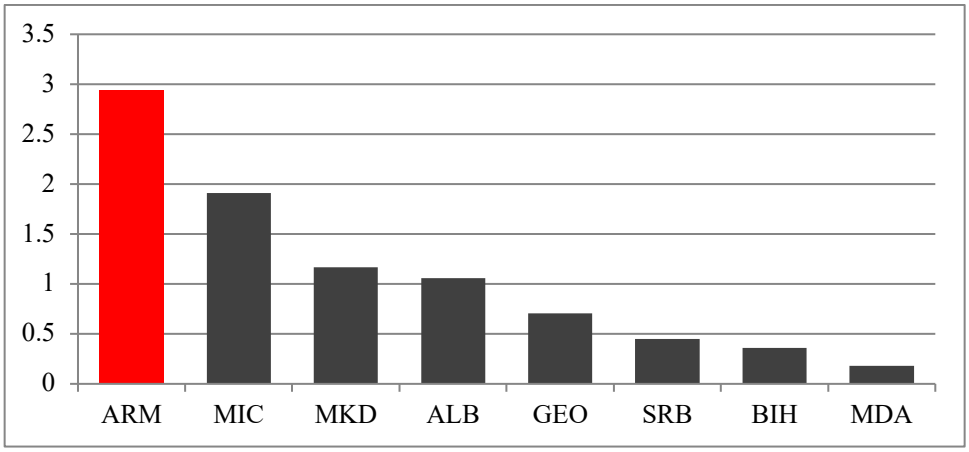
Source: WB *World Development Indicators*.

The combination of limited freshwater resources and wasteful management of those resources creates major economic inefficiencies. Water productivity, which is a measure of GDP produced per cubic meter of freshwater, is by far the lowest among the comparators with available data. Although there is a strong correlation between freshwater resources and water productivity, Serbia serves as a good comparator for efficiency. While Serbia has less than half of the freshwater resources per capita as Armenia (Figure 9.5), Serbia's water productivity of $10.5/m^3 of freshwater withdrawal is more than three times higher than Armenia ($3.5/m^3) (Figure 9.7).

9.5 Sustainability and Natural Resource Depletion

Looking forward, Armenia does face some long-term challenges in terms of sustaining economic growth from its natural resources. Natural resource depletion is the highest among all comparators (Figure 9.8). Armenia's depletion rate of 2.9 percent of GNI per year is more than 50 percent higher than the middle-income average (1.9 percent) and more than double the next country comparator, North Macedonia (1.2 percent). The high value indicates that the economic value of Armenia's natural resource stock is declining much faster than comparator countries, which poses greater risk to long-term economic growth. The total depletion rate is driven primarily by depletion of minerals (2.8 percent of GNI in 2017) but also forests, which are declining in value by 0.1 percent of GNI per year. A positive rate of forest depletion indicates that the harvest rate exceeds that rate of natural forest regeneration and is thus not sustainable in the long term.

Figure 9.8. Natural Resource Depletion (% GNI)



Source: WB *World Development Indicators*.

Another area of concern for environmental sustainability is the environmental impact of the mining sector. Many existing mines are causing environmental damage, such as runoff of pollutants into freshwater sources.[247] Concern over environmental damage is hindering new mining projects. For example, mining executives and environmental activists have been vigorously debating the decision to open the Amulsar gold mine near Jermuk. While the mine would be a valuable contributor to GDP and private sector growth, there are serious concerns about the proximity of the mine to freshwater sources like Lake Sevan and the risk of pollutants like cyanide entering the environment. The Amulsar case is a leading example of the need to balance private sector development with environmental considerations and human health.

9.6 Climate Risk

Armenia is moderately at risk to climate change relative to other countries in the world. While climate change is of course a leading risk to long-term growth for all countries of the world, Armenia is less immediately threatened than countries in more vulnerable regions of the world, such as the Sahel, the Horn of Africa, and the Pacific Islands. As shown in Figure 9.9 below, Armenia ranks near the median value among comparators and all countries (96 out of 181, where lower is better) in the Notre Dame GAIN rankings of climate risk vulnerability.[248] Armenia also ranks well in terms of readiness[249] for climate change (50 out of 181 countries). This is not to downplay to impact of climate change but only to highlight that Armenia's vulnerability is on par with the comparator countries and does not itself pose an unusual risk to private sector business

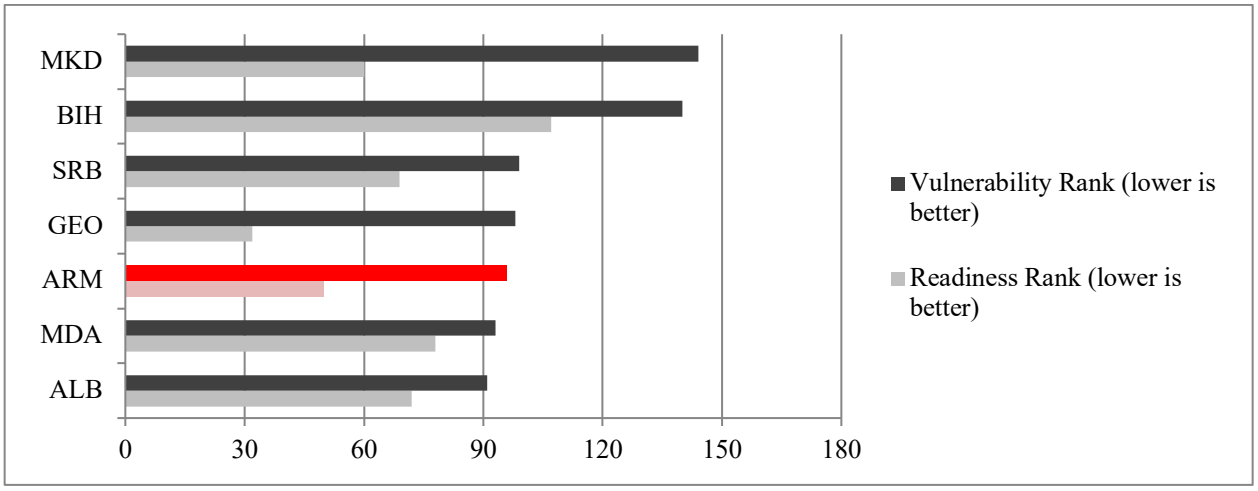
[247] USAID (2015). Clean Energy and Water Program: Draft Southern Basin Management Plan.

[248] Vulnerability "[m]easures a country's exposure, sensitivity and capacity to adapt to the negative effects of climate change. ND-GAIN measures overall vulnerability by considering six life-supporting sectors – food, water, health, ecosystem service, human habitat, and infrastructure." More information on methodology is available at https://gain.nd.edu/our-work/country-index/methodology/.

[249] Readiness "[m]easures a country's ability to leverage investments and convert them to adaptation actions. ND-GAIN measures overall readiness by considering three components – economic readiness, governance readiness and social readiness." More information on methodology is available at https://gain.nd.edu/our-work/country-index/methodology/.

and investment decisions. While this may be the case on average, there may be spatial considerations that will have disproportionate impacts: the demand for irrigation water is expected to substantially increase by 2030 as climate change is projected to warm critical agricultural regions in the country, which is expected to disproportionately affect the Ararat Valley.[250]

Figure 9.9. ND-GAIN Climate Change Vulnerability and Readiness



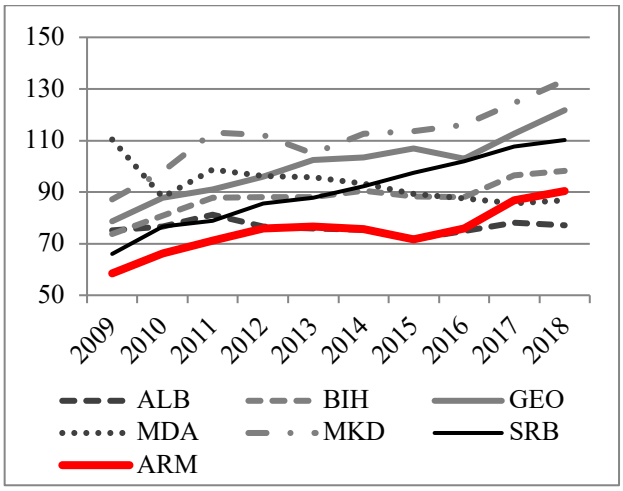
Source: ND-GAIN.

9.7 Access to Markets

Geographic barriers can increase the cost of international trade and limit trade-oriented growth, but trade statistics show that Armenia has benefitted from strong trade growth (both imports and exports) over the past 10 years. Trade as a percentage of GDP has climbed from 58 percent of GDP in 2009 to 90 percent of GDP in 2018 despite a flattening between 2012 and 2016 (Figure 9.10). The rate of change is on par with many of the comparators (Figure 9.11), which suggests that Armenia's geopolitical or geographic challenges have not prevented growth in trade value. However, the total percentage remains third lowest behind Moldova and Albania and suggests there is significantly more room for improvement in trade over time. There is no evidence of a catch-up effect with the comparators as a whole since the growth rate of trade is not any better than the comparators outside of Moldova and Albania, which have flat-lined or declined. The overall data suggests that Armenia may be structurally disadvantaged due to its landlocked nature and ongoing geopolitical conflicts with neighbors that have closed borders, but this has not prevented growth in trade.

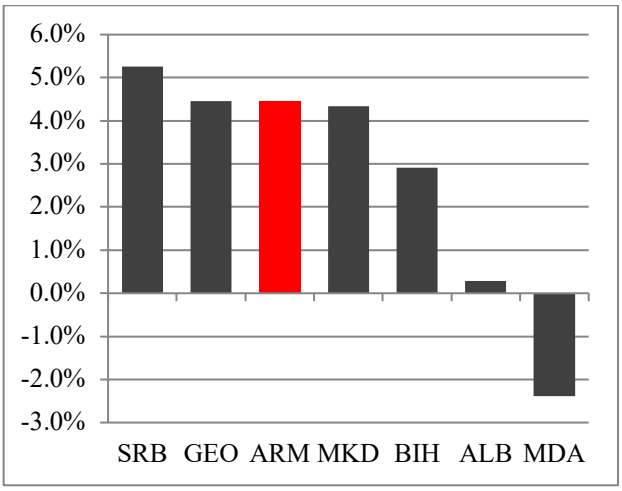
[250] Yu et al (2015).

Figure 9.10. Trade (% GDP)



Source: WB *World Development Indicators* and Authors' calculations.

Figure 9.11. Compound Annual Growth of Trade (% GDP), 2009-2018



Source: WB *World Development Indicators* and Authors' calculations.

9.8 Conclusion

The evidence presented in this chapter suggests that natural capital is currently one of the strengths of the Armenian economy, but long-term risks remain. Mineral extraction is one of the leading sectors of the economy, and agricultural land is a highly valuable resource even though the amount of arable land is low relative to comparators. The country's geography has allowed for the development of hydropower. Limited freshwater resources limit the potential of the agricultural sector, particularly in the Ararat Valley, but highly wasteful water management practices are a clear indication that the most immediate concern is better government oversight of existing water infrastructure to better protect the country's water supply. These concerns are addressed in the chapter on infrastructure.

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