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Industrial Development in the South Caucasus—A Comparative Perspective

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Abstract

Against the background of amplified industrial policy initiatives, the paper reviews the development of industries in the Southern Caucasus from a comparative perspective. The analysis is organized based on four objectives in industrial policy: increasing economic performance, expanding exports, strengthening economic resilience and creating jobs. The paper explores Armenia's export-oriented development model, which lacks translation into relevant domestic value capture and job creation, Azerbaijan's failed liberation from oil-based industries and Georgia's decreased industrial development. Nevertheless, Georgia shows comparatively high domestic value capture and positive employment effects.

Introduction

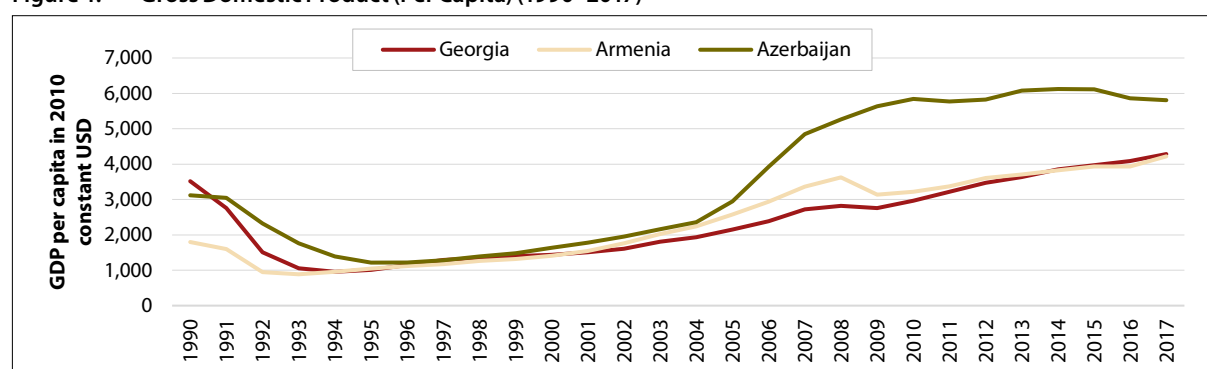
The objectives a government may strive to achieve by deploying industrial policy (IP) can differ fundamentally. Common to the countries of the Southern Caucasus are the desires to accomplish the following goals: (1) increase productive activities and domestic value capture as well as shape the structural composition of the economy. Considering the small size of domestic markets, it has been a high priority for policy-makers to (2) expand exports and benefit from deepening global market integration. Furthermore, they want to (3) build economic resilience to external shocks as well as (4) generate productive employment, which have been to a varying degree top priorities. Energy efficiency and reducing environmental pollution are increasingly important objectives of IP but will be disregarded here. It is beyond the scope of the paper to study the impact of specific industrial policies. Rather, the abovementioned four objectives will provide guidance for this brief review of industrial development in the Southern Caucasus.

Regarding industrial development in the region, four relevant periods can be distinguished: (1) the 1990s were characterized by substantial de-industrialization. They were followed by (2) a period of rapidly catching-up growth rates from the beginning of 2000s until the global financial crisis in 2008 with practically no distinct IP. (3) Between 2008 and 2014, we observe increasing policy efforts as answers to the crisis, which can be implicitly or are explicitly labelled industrial policy. (4) The devaluation of local currencies and the fall of oil and gas prices in 2014 mark another turning point leading to massive economic setbacks and partial intensifications and adjustments of IP in the region lasting until today.

Increasing Productive Activities

It took the countries of the Southern Caucasus until the mid-2000s to economically recover and reach the pre-independence GDP per capita level (see Figure 1 below). Azerbaijan's economic performance has been very dependent on global prices of oil and gas leading to impressive growth between 2005 and 2010 but also to stagnation and decline

Figure 1: Gross Domestic Product (Per Capita) (1990–2017)



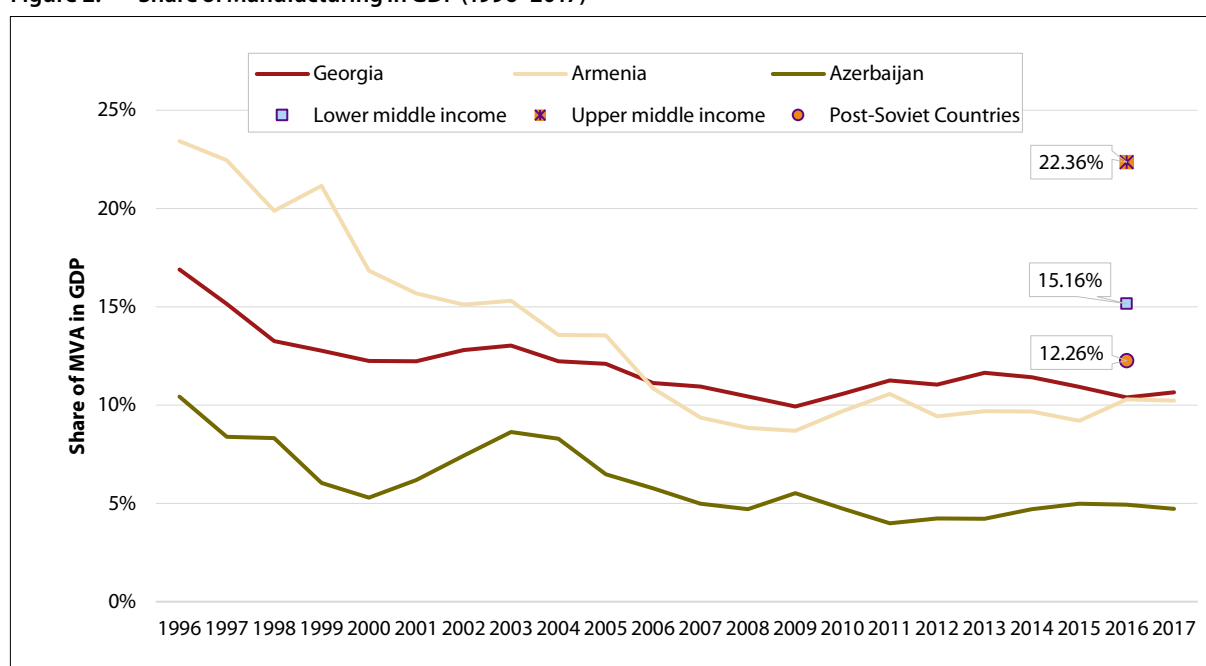
Source: World Development Indicators, own calculation

after 2014. The 2008 crisis hit Armenia marginally more than Georgia, but the two countries show generally similar growth paths. The impact of the 2014 crisis on industrial development will be addressed in the section below on subsector development. To varying extents, all three countries were exposed to the abovementioned external shocks translating into new policy initiatives.

Structural Changes

There were significant disparities regarding industrial bases by the end of the Soviet Union. Manufacturing accounted for approximately 30% of GDP in Armenia and only 17% in Azerbaijan (1990). Data from Georgia for that time are lacking, but given the country's massive de-industrialization in the early 1990s, we can assume Georgia's former share of manufacturing in GDP was close to that of Armenia.

Figure 2: Share of Manufacturing in GDP (1996–2017)



Source: World Development Indicators, own calculation

Figure 2 shows the share of manufacturing in GDP between 1996 and 2017 and illustrates, first, the structural transformation along with a decreasing role of industry in the economies down to 8% in Armenia, 5% in Azerbaijan and 10% in Georgia. Second, the reached equilibriums on the mentioned levels illustrate that IP over the past 10 years could not reverse this process of structural change. At best, it helped the manufacturing sector grow as fast as the overall economy. Third, the chart reveals that the degree of industrialization is below the average of the post-Soviet region (12.26%) and below the respective income-country groups: for Armenia and Georgia as lower-middle-income countries and for Azerbaijan as an upper-middle-income country.

Drivers of Development—Subsector Development

The composition of industries has significantly changed over time. Armenia and Georgia were strong in light industries, especially in textiles, a sector that has almost fully forfeited its relevance. To understand which main subsectors are currently contributing to manufacturing, we examine the four most important subsectors in each country over the abovementioned three periods beginning in 2003. In general, subsectors have been highly unstable in their development in all three countries, reflected in very volatile growth rates across periods (for details see Annex 1 on p. 29–30).¹

¹ This section is based on data from UNIDO INDSTAT 2 (Revision 3). The subsector data on Armenia is mostly based on estimates. Therefore, we used alternatively national data from the Statistical Yearbooks on outputs as proxies to calculate subsectoral growth rates and shares in total manufacturing. For a detailed overview on subsector development of both data sets, see Annex 1 on p. 29–30.

The most dominating subsector can be found in Azerbaijan, whose annual industrial growth rate of 29% between 2003 and 2008 was mainly boosted by refined petroleum. Petroleum grew by 48% annually—increasing its share from 29% to 58% in MVA within this period.² After 2008 there has been no significant growth of petroleum; instead—following the 2014 crisis and the sharp fall in oil prices—a rapid annual decline of 33% set in.

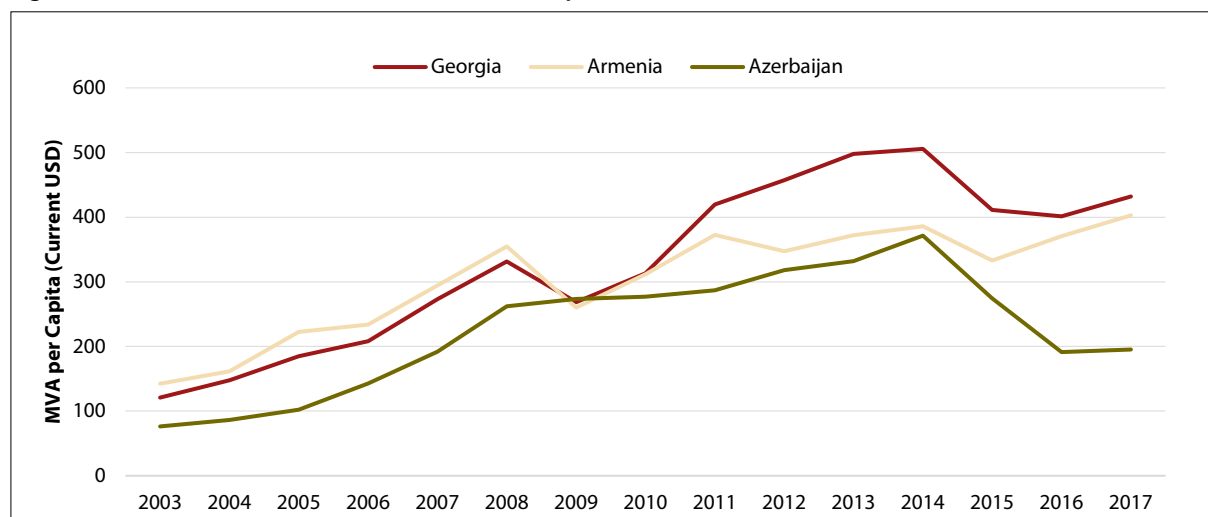
The food and beverage subsector is dominant in all three economies. In Georgia and Armenia, it accounts for up to 50% of MVA, and in Azerbaijan it has stabilized at approximately 25% of MVA. We see significant growth rates for this subsector in Georgia between 2003 and 2014 and in Azerbaijan between 2008 and 2014. For Armenia, given the poor data, we can only assume significant growth rates between 2003 and 2008. In the following period, subsector growth was only moderate. After 2014, this subsector declined in all three countries.

Another subsector, which is present among the top four subsectors in all the countries, is non-metallic mineral production, which is mostly cement and related products for domestic construction. In Armenia and Azerbaijan, it remains at 4% and 6%, respectively, but in Georgia it reached 11% of MVA (2016). Georgia managed to develop export capacities in this subsector reaching 6.6% of manufactured exports in 2008 (UNCOMTRADE, own calculation). The government recognized the potential and started supporting export-oriented companies in this subsector (see contribution on Georgia in this issue).

Armenia and Georgia have also been relatively strong in basic metals. UNIDO estimates basic metals' share in Armenia at 13% of MVA. Our calculation suggests a share of basic metals (mainly copper products) of approximately 20% of MVA in 2014. In Georgia, basic metals (mainly iron and steel products) has been one of the fastest-growing sectors—even significantly after 2014—increasing its share from 2003–2016 from 5% to 15% of MVA.

Some surprising developments can be found. In Armenia, the tobacco industry grew from 3% to 15% of total manufacturing between 2003 and 2016. The annual growth rate was 31% between 2008 and 2014 and 37% between 2014 and 2016 when other sectors had significant negative growth. Notably, the tobacco industry was not an addressee of any state IP. In Azerbaijan, it is the machinery sector that was steadily growing, up to 40% annually between 2008 and 2014, far exceeding the overall manufacturing growth of 7.5%. Machinery in Azerbaijan refers almost exclusively to ship repair and maintenance. The shipping industry is one of the priority sectors of the government—developed almost from scratch—and accounting for nearly 13% of MVA in 2016. In Georgia, it has been the chemical sector, which showed stable growth rates of up to 46% annually between 2003 and 2008. In particular, fertilizer as an important linkage to the growing agricultural business and pharmaceuticals were the driving product groups. Figure 3 summarizes and clearly illustrates the above-outlined trends of the overall manufacturing sector in the three

Figure 3: Manufactured Value Added (MVA) Per Capita (2003–2017)*



* The MVA per capita is presented here in current USD as the subsector data from UNIDO is also in current USD.

Source: World Development Indicators, own calculation

countries across the mentioned periods; the respective subsector growth rates can be found in Annex 1 on p. 29–30.

2 All growth rates are annual growth rates calculated as Compound Annual Growth Rates (CAGR).

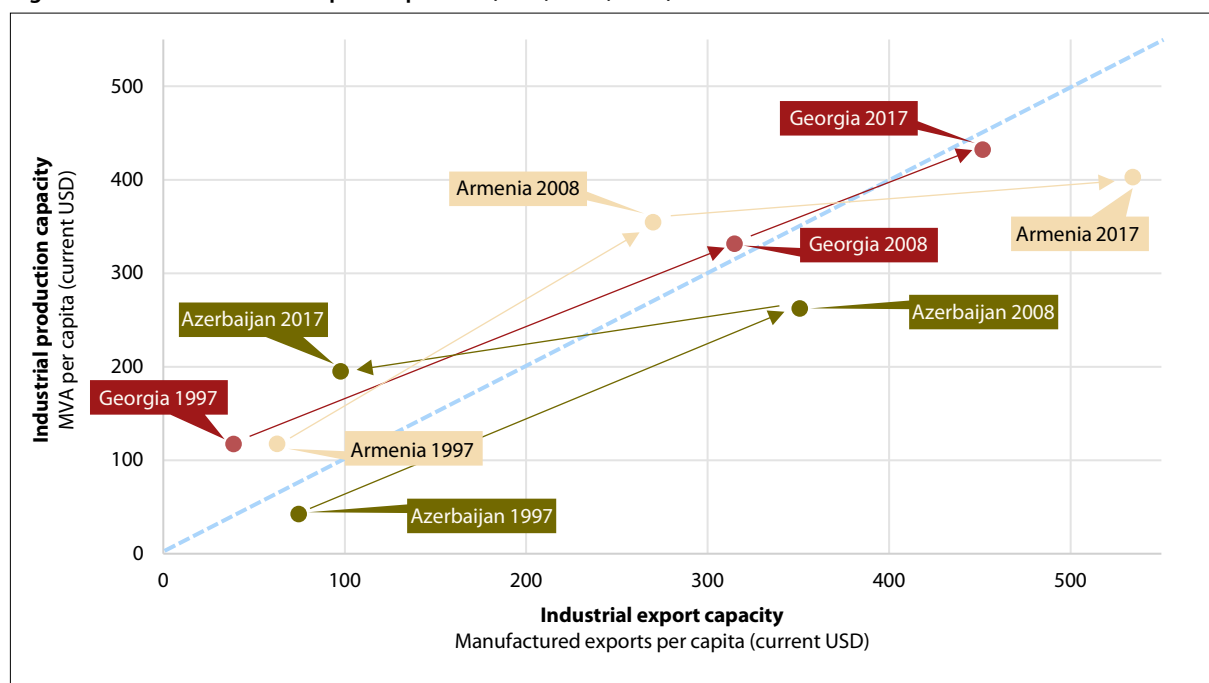
Exports and Deepening Global Market Integration

For countries with small domestic markets, tapping into export demand can be very conducive to reaping economies of scale and spurring productivity growth. Export promotion has been, hence, an important objective for regional policy-makers.

Production and Export Capacities

To assess industrial production and exports in a meaningful framework and control for the different sizes of economies, Figure 4 combines the capacity of a country to produce manufactured goods (measured as MVA per capita) with its capacity to export them (measured as manufactured exports per capita). The applied time span is broader, covering the development from 1997–2008 as the period of industrial recovery and 2008–2017 as the period of crises and corresponding IP.

Figure 4: Production and Export Capacities (1997, 2008, 2017)



Source: World Development Indicators, UNCOMTRADE, own calculation

We note that the graph compares, first, domestically captured value added (outputs minus inputs) that remains as wages, taxes and profits in the country with, second, exports as outputs of the production sold abroad containing all inputs needed for the production of exports. Also important, higher exports do not automatically imply higher value addition. If a country imports most of its inputs for production, it may boost export values massively but will have little effect on domestic value addition. Therefore, countries strive to domestically generate more production inputs and import fewer. Nevertheless, developing export capacities is crucial because it allows, first, growing production capacities beyond domestic demand and, second, developing economies of scale. Both production and export capacities are important interlinked components of IP.

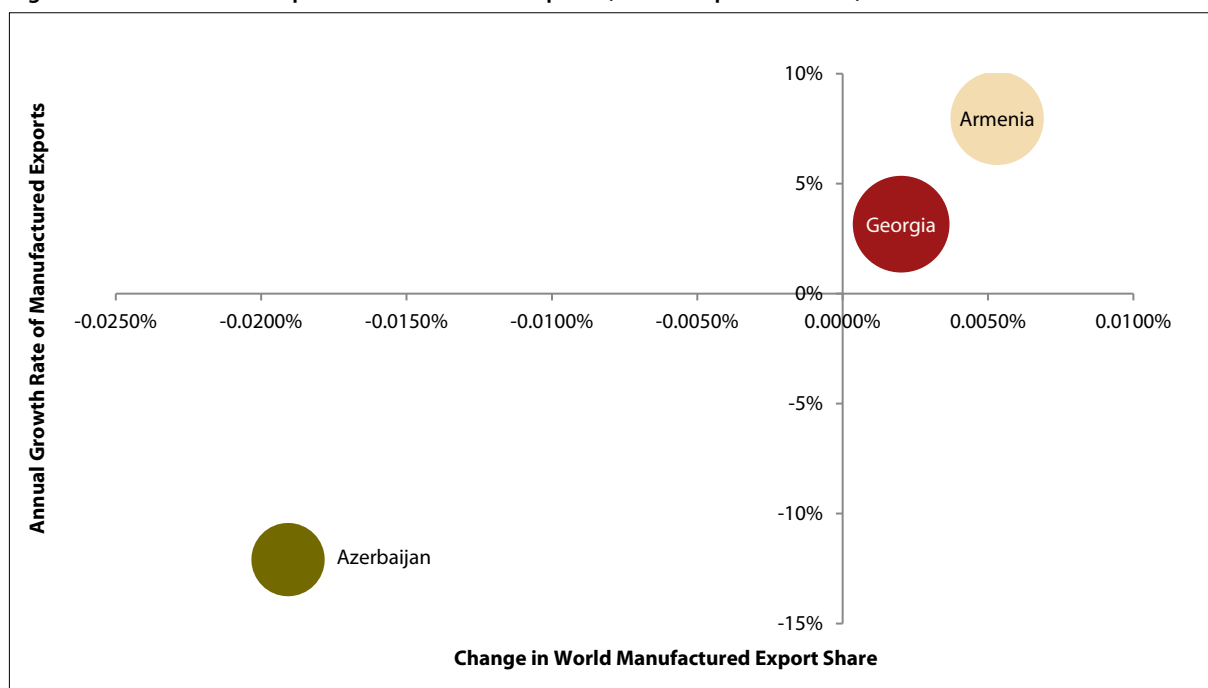
Georgia shows straightforward development over both observation periods, constantly increasing its production and slightly more its export capacities towards a relatively balanced relationship between the two. Armenia also managed to improve in both dimensions until 2008 but was still not fully exploiting its export potential. This changed in the following decade. Armenia improved its industrial production capacity very little but made huge steps towards expanding exports. If export capacity far exceeds production capacity, this could, as mentioned above, signal increased imported inputs for production or engagement in assembly activities for foreign companies whereby most of the products' value is generated abroad. This illustrates that expanding exports does not automatically translate into domestic value addition, which is crucial for prosperity. Azerbaijan's development trajectory differs fundamentally. It also developed quickly in the first decade while exports always exceeded pro-

duction capacity. Between 2008 and 2017, Azerbaijan experienced a slight loss in production capacity but a dramatic loss in export capacity.

Impact in World Markets

Figure 5 below sheds some light on exports in the period after 2008 when all countries were increasingly active in intervening in their economies. The Y-axis shows the annual growth rates of manufactured exports and the bubble size the manufacture export values in 2017. The X-axis shows the change in a country's share of global manufactured exports (impact). In 2017, Georgia had the highest manufactured export value, which since 2008 has grown annually by 3%. This moderate growth rate was sufficient to change its share of global manufactured exports by 0.002 percentage points. Armenia's 2017 manufactured export value is only slightly lower but has been growing by 8% annually. This helped expand Armenia's share of global manufactured exports by 0.005 percentage points. Azerbaijan had the lowest manufactured export value, which is also a result of the negative annual growth rate of 12% since 2008. Additionally, Azerbaijan lost a significant 0.019 percentage points in global manufactured exports.

Figure 5: Growth and Impact of Manufactured Exports (2008 compared to 2017)



Source: UNCOMTRADE, own calculation

To gain world export market share, it is necessary for a country's manufactured exports to grow faster than the world average. To improve export competitiveness, it is not enough to expand exports rapidly; instead, the country must expand its exports faster than the rest. Despite the difficult international environment after the 2008 global financial crisis, Georgia and Armenia performed well in expanding their shares of global manufacture exports. However, without a correspondingly increasing domestic value addition (see Armenia), increased exports remain essentially useless.

Building Resilience to External Shocks

There are various policy measures and, correspondingly, indicators to measure the potentially increased resilience of an economy to external shocks. Here, we will focus on, first, the share of medium- and high-tech in production/ exports and, second, export market and export product diversification.

Shift to Medium- and High-Tech in Production and Exports

Shifting production and exports from resource-based and low-tech to medium- and high-tech (MHT) activities can help grow the prosperity of a society but also decrease its vulnerability by making the economy more independent

from changing global commodity prices. Table 1 below shows the shares of MHT in production and exports between 1997 and 2014/2016.

Table 1: Share of Medium- and High-Tech in Production and Exports*

		1997	2003	2008	2014	2016
Armenia	Production	18,21%	7,55%	7,44%	3,66%	
	Exports	21.17%	17.08%	27.67%	10.18%	13,11%
Azerbaijan	Production	10,34%	19,82%	13,17%	17,54%	
	Exports	12.04%	15.49%	11.18%	12.67%	28,26%
Georgia	Production	14,44%	17,12%	15,39%	15,11%	
	Exports	36.58%	28.35%	48.92%	42.84%	29,06%

* Given the absence of UNIDO data on the 4-digit level on production for Armenia, we relied on data from the World Bank. Please note that these production data also include construction.

Source: World Development Indicators, UNCOMTRADE, own calculation

Regardless of its success in exporting high-tech services in the IT sector (see contribution on Armenia in this issue), Armenia shows by far the lowest shares of MHT in manufacturing production and exports in the region. Both shares have continuously dropped, reaching 3.66% in production and 10.18% in exports. Armenia's growth in production and exports was, hence, accompanied by a decrease in the technological complexity of its economy by mainly focusing on low-tech activities. Azerbaijan and Georgia possess similar shares of MHT in production and kept them relatively stable over time. Regarding exports, Georgia managed to upgrade and increase the technological complexity of the country's export basket to almost 50% MHT but was losing shares again until 2016.

Export Market and Export Product Diversification

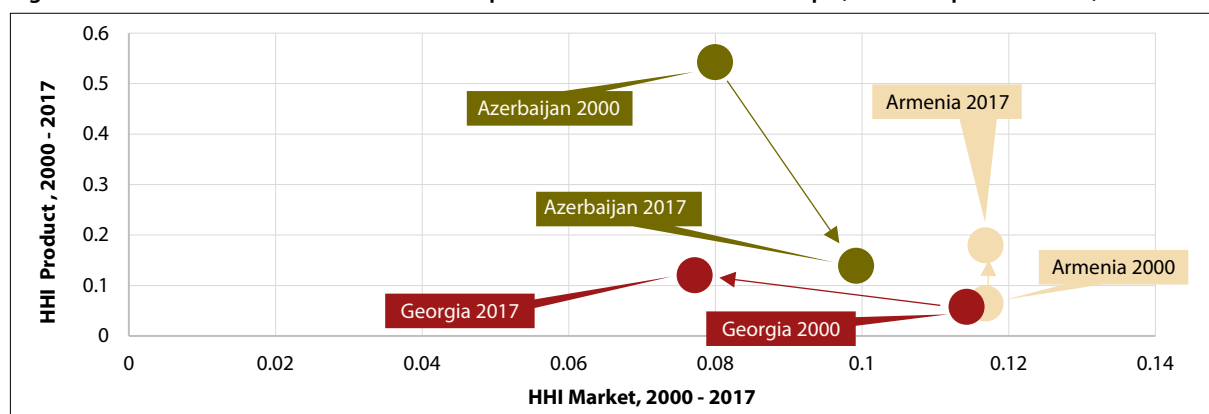
Depending predominantly on one or a few export products and/or export markets constitutes a serious risk for the economic resilience of a country. The Hirschman-Herfindahl index (HHI) is a measure of concentration and is here applied to assess the degree of diversification of export markets and export product groups (SITC 3-digit level). An HHI of 1 would mean the highest concentration (1 country or 1 product group) and an HHI of 0 an equal distribution of exports among trade partners or respective export product groups (see Table 2 and Figure 6 below).

Table 2: Hirschman-Herfindahl Index of Export Markets and Product Groups (2000 Compared to 2017)

	Market div. 2000	Market div. 2017	Diversif.	Product div. 2000	Product div. 2017	Diversif.
Armenia	0.116825726	0.141652578	down	0.064420956	0.179646106	down
Azerbaijan	0.079939462	0.099174692	down	0.542597529	0.139103071	up
Georgia	0.114242569	0.077159415	up	0.057799476	0.120435841	down

Source: UNCOMTRADE, own calculation

Figure 6: Hirschman-Herfindahl Index of Export Markets and Product Groups (2000 Compared to 2017)



Source: UNCOMTRADE, own calculation

Armenia lost both market diversification and, significantly, product diversification between 2000 and 2017. Azerbaijan had a very diversified export market structure and experienced a slight loss in diversification. In contrast, the product market was highly concentrated in 2000, and due to the fall in refined petroleum exports, it increased its HHI score significantly towards increased diversification. Georgia managed to diversify its export markets but became more concentrated in export products (groups).

What are the implications for the objective of strengthening economic resilience? In Armenia we find a significant low level of MHT and decreased product and market diversification. Given the increased importance of exports, Armenia increased its vulnerability to external shocks. Azerbaijan's economy is still very much exposed to external shocks due to its dependency on global oil prices. The setback in manufactured exports, growth of which might have helped decrease this dependency, outweighs the higher share of MHT and product diversification. Georgia's mixed record of higher but decreased MHT and increased market but decreased product diversification suggests an unchanged level of resilience.

Employment Effects of Industrial Development

Generating employment is often one of the central objectives of IP directly affecting people's lives. Wages, inclusiveness, working conditions and gender balance are closely related issues. Table 3 below summarizes the employment effects of the respective main important subsectors and total manufacturing between 2003 and 2016 in absolute employment numbers (L) and annual growth rates. It also shows the employment elasticity, which indicates how much employment in percentage is generated or abolished when the (sub-)sector grows or declines by 1% in VA (for sub-period calculations, see Annex 2 on p. 31).

The results are striking (Table 3). Armenia lost more than half of its employment in manufacturing, and in Azerbaijan the employment effects were very limited; only Georgia managed to significantly increase employment numbers. Across all the Armenian subsectors, we see significant negative employment elasticity. The national statistical data con-

Table 3: Employment Elasticity (2003–2016)

	L 2003	L 2016	CAGR of L 2003–16	CAGR of VA 2003–16	Employment Elasticity 2003–16
Armenia					
15 Food and beverages	41,423	22,044	-4.74%	4.11%	-1.15
16 Tobacco products	4650	2,950	-3.44%	11.88%	-0.29
27 Basic metals	9363	4,340	-5.74%	4.11%	-1.40
26 Non-metallic mineral products	12,423	4,736	-7.15%	4.11%	-1.74
D Total manufacturing	110,100	53,181	-5.44%	4.11%	-1.32
Azerbaijan					
23 Coke, refined petroleum products, nuclear fuel	6,430	4,309	-3.03%	10.68%	-0.28
15 Food and beverages	12,308	25,083	5.63%	4.68%	1.20
26 Non-metallic mineral products	5,317	13,214	7.25%	12.94%	0.56
29 Machinery and equipment n.e.c.	11,151	11,947	0.53%	18.91%	0.03
D Total manufacturing	95,297	100,681	0.42%	8.22%	0.05
Georgia					
15 Food and beverages	17,570	33,880	5.18%	17.42%	0.30
27 Basic metals	5,802	11,016	5.06%	26.16%	0.19
24 Chemicals and chemical products	4,362	6,590	3.22%	22.98%	0.14
26 Non-metallic mineral products	3,688	9,373	7.44%	17.40%	0.43
D Total manufacturing	51,619	87,544	4.15%	16.04%	0.26

Source: UNIDO INDSTAT 2, Revision 3, own calculation

firm this general trend. If the data are correct, then even the booming tobacco industry was losing employment between 2003 and 2016. In Azerbaijan, the growth of the petroleum sector was productivity-driven, leading to extensive job cuts (El. -0.24). The elasticity of 1.2 for the food and beverage sector, in contrast, implies that employment was growing faster than production and might indicate a specific political interest in job creation (in rural areas). The booming ship repair and maintenance industry grew only productivity-based without any employment effects. In Georgia, we see elasticity rates between 0.14 and 0.43, which means that (1) all subsectors contribute to job creation but (2) not at the expense of productivity growth. These elasticity rates illustrate a very healthy development that combines productivity growth with employment growth.

Conclusion

State industrial policy—as analysed in this issue—could not reverse the process of structural transformation towards a marginal role of industry in the economies of the Southern Caucasus. Nevertheless, some specifics of the industrial development, influenced to varying degrees by industrial policies, can be summarized as follows:

Armenia managed to increase its exports but failed in the last decade to translate this into corresponding domestic value capture. It is mostly engaged in primary economic activities, has the lowest share of MHT in the region and failed to diversify export markets and products. Industrial development went along with significant job cuts across all subsectors.

Azerbaijan failed to decrease its reliance on oil products. Along with the fall of oil prices, Azerbaijan's industrial production capacity dropped to 50% and its export capacity down to 25% of Georgia's capacities. The remaining industries might be well-positioned regarding share of MHT and diversification; however, their magnitude in ratio to the overall economy is negligible. Notable is the positive employment effect in the food and beverage subsector.

Georgia exhibits the most balanced development; even though growth has slowed since 2008, the country was more affected by the 2014 crisis and lost diversification in export products. Nevertheless, it managed to constantly increase its industrial production and export capacities, has the highest share of MHT products in its export basket, diversified its export market and shows significant positive employment effects while simultaneously increasing its productivity.

Some subsectors developed evidently due to state IP (ship repair and maintenance in Azerbaijan), some without any state support (tobacco in Armenia), and others failed to develop despite state support (textiles in Azerbaijan). In this study, we lack sufficient basis for assessing factors of success or failure of the policies discussed in the country cases. However, some general conclusions can be made. All three countries clearly see the need to intervene in their economies to grow, strengthen resilience or create jobs. However, the political commitment to go beyond the general improvement of the business climate and develop clear industrial sector development strategies is still largely lacking. Providing access to finance and promoting exports are common approaches, but more comprehensive sector development strategies (including linkage creation across sectors or close interlocking with other policy areas, such as education) are still not being pursued. Most important, all three countries lack the crucial prerequisite of modern industrial policy: a comprehensive and sophisticated monitoring and evaluation system. Instead of constantly revising strategies and action plans based on M&E intelligence, policy-makers tend to rely too much on blueprints from alleged best practices, pursue long time-horizons and forego steady monitoring of supposed effects. In doing so, they fail to timely adapt their instruments based on learning from experimentation as the core of contemporary industrial policy. This mixed record of industrial development of the Southern Caucasus illustrates that the potential of industries to contribute to overall development and prosperity has not yet been fully exploited.

About the Author

Christian Timm holds a postdoc position and is the team leader of the research group “Governance in Emerging Economies” run by the Private University Göttingen and the University of Groningen funded by Volkswagen Foundation. As a member of the department of Internal Economics of the Private University of Göttingen, he has worked over the past seven years on various research projects, such as the research network “Institutions and Institutional Change in Postsocialism” (KomPost). Apart from his research activities in Institutional Economics and Political Economy, he works as a consultant on industrial policy for the United Nations Industrial Development Organization (UNIDO) and German Corporation for Development Cooperation (GIZ).

STATISTICS

Annex I

Table 1: Four Most important Subsectors: Value Added (in current USD), Share in Total Manufacturing, Growth Rate (CAGR)

	Value added 2003	Value added 2008	Value added 2014	Value added 2016	Share in MVA 2003	Share in MVA 2008	Share in MVA 2014	Share in MVA 2016	Growth 2003-2008	Growth 2008-2014	Growth 2014-2016	Growth 2003-2016
Armenia	*Starting 2004								**Growth 2004-2008			
15 Food and beverages	242,105,042	491,941,836	447,005,085	408,758,153	49.90%	49.90%	49.90%	49.90%	19.39%	-1.58%	-4.37%	4.11%
16 Tobacco products	27,462,737	48,052,158	129,305,480	118,241,762	5.66%	4.87%	14.44%	14.44%	15.01%	17.94%	-4.37%	11.88%
27 Basic metals	62,998,520	128,008,932	116,315,872	106,363,579	12.99%	12.99%	12.99%	12.99%	19.39%	-1.58%	-4.37%	4.11%
26 Non-metallic mineral products	19,604,954	39,836,003	36,197,157	33,100,033	4.04%	4.04%	4.04%	4.04%	19.39%	-1.58%	-4.37%	4.11%
D Total manufacturing	485,153,615	985,800,868	895,752,238	819,109,319					19.39%	-1.58%	-4.37%	4.11%
Azerbaijan												
23 Coke, refined petroleum products, nuclear fuel	187,289,975	1,338,818,432	1,553,015,508	700,245,766	29.22%	58.24%	43.85%	39.13%	48.20%	2.50%	-32.85%	10.68%
15 Food and beverages	244,902,184	335,649,084	893,406,798	443,859,260	38.21%	14.60%	25.23%	24.80%	6.51%	17.72%	-29.51%	4.68%
26 Non-metallic mineral products	23,412,303	116,598,914	256,332,444	113,913,204	3.65%	5.07%	7.24%	6.37%	37.86%	14.03%	-33.34%	12.94%
29 Machinery and equipment n.e.c.	21,999,275	32,131,642	237,879,297	208,987,106	3.43%	1.40%	6.72%	11.68%	7.87%	39.61%	-6.27%	18.91%
D Total manufacturing	640,862,662	2,298,645,359	3,541,475,213	1,789,449,605					29.10%	7.47%	-28.92%	8.22%
Georgia												
15 Food and beverages	47,392,911	149,802,588	515,332,506	382,153,229	35.64%	22.97%	48.86%	41.55%	25.88%	22.86%	-13.89%	17.42%
27 Basic metals	6,864,726	118,405,519	82,727,264	140,808,669	5.16%	18.16%	7.84%	15.31%	76.75%	-5.80%	30.46%	26.16%
24 Chemicals and chemical products	6,838,627	44,825,703	111,874,040	100,641,121	5.14%	6.87%	10.61%	10.94%	45.65%	16.47%	-5.15%	22.98%
26 Non-metallic mineral products	12,465,453	97,808,212	121,391,689	100,338,562	9.37%	15.00%	11.51%	10.91%	50.98%	3.67%	-9.08%	17.40%
D Total manufacturing	132,987,859	652,048,844	1,054,705,219	919,643,490					37.43%	8.34%	-6.62%	16.04%

Source: UNIDO INDSTAT 2, Revision 3, own calculation

Table 2: Outputs of Armenia's Four Main Important Subsectors (Converted into Current USD), CAGR of Outputs, Employment Elasticity

Volume of industrial production by type of economic activity in mln. current USD					
	2009	2014	2016	CAGR 2009–14	CAGR 2014–16
15 Food and beverages	USD 608.982	USD 1,042.462	USD 829.990	11.35%	-10.77%
16 Tobacco products	USD 39.193	USD 151.748	USD 283.639	31.09%	36.72%
27 Basic metals	USD 261.126	USD 413.133	USD 317.485	9.61%	-12.34%
26 Non-metallic mineral products	USD 114.555	USD 126.622	USD 71.492	2.02%	-24.86%
Employment					
15 Food and beverages	28,932	20,556	22,044	-6.61%	3.56%
16 Tobacco products	3,248	2,321	2,950	-6.50%	12.74%
27 Basic metals	6,540	4,235	4,340	-8.32%	1.23%
26 Non-metallic mineral products	8,677	4,291	4,736	-13.14%	5.06%
Elasticity					
				Elasticity 2009–14	Elasticity 2014–16
15 Food and beverages				-0.582	-0.330
16 Tobacco products				-0.209	0.347
27 Basic metals				-0.866	-0.100
26 Non-metallic mineral products				-6.493	-0.203

Source: National Statistic Yearbooks, UNIDO INDSTAT 2, Revision 3, own calculation

Annex 2

Table 1: CAGR of Value Added (MVA) Based on Current USD, of Manufacturing Employment (ML) and Employment Elasticity

	VA Growth 2003–08	L Growth 2003–08	Elasticity 2003–08	VA Growth 2008–14	L Growth 2008–14	Elasticity 2008–14	VA Growth 2014–16	L Growth 2014–16	Elasticity 2014–16	VA Growth 2003–16	L Growth 2003–16	Elasticity 2003–16
Armenia												
15 Food and beverages	19.39%	-3.82%	-0.20	-1.58%	-8.08%	5.10	-4.37%	3.56%	-0.81	4.11%	-4.74%	-1.15
16 Tobacco products	15.01%	-3.83%	-0.25	17.94%	-7.99%	-0.45	-4.37%	12.74%	-2.91	11.88%	-3.44%	-0.29
27 Basic metals	19.39%	-3.82%	-0.20	-1.58%	-9.49%	5.99	-4.37%	1.23%	-0.28	4.11%	-5.74%	-1.40
26 Non-metallic mineral products	19.39%	-3.82%	-0.20	-1.58%	-13.47%	8.51	-4.37%	5.06%	-1.16	4.11%	-7.15%	-1.74
D Total manufacturing	19.39%	-3.82%	-0.20	-1.58%	-9.23%	5.83	-4.37%	2.45%	-0.56	4.11%	-5.44%	-1.32
Azerbaijan												
23 Coke, refined petro- leum products, nuclear fuel	48.20%	-0.31%	-0.01	2.50%	-3.83%	-1.53	-32.85%	-7.25%	0.22	10.68%	-3.03%	-0.28
15 Food and beverages	6.51%	12.59%	1.94	17.72%	2.90%	0.16	-29.51%	-2.59%	0.09	4.68%	5.63%	1.20
26 Non-metallic mineral products	37.86%	12.70%	0.34	14.03%	5.33%	0.38	-33.34%	0.06%	0.00	12.94%	7.25%	0.56
29 Machinery and equipment n.e.c.	7.87%	-6.19%	-0.79	39.61%	4.10%	0.10	-6.27%	7.65%	-1.22	18.91%	0.53%	0.03
D Total manufacturing	29.10%	2.98%	0.10	7.47%	-0.81%	-0.11	-28.92%	-2.15%	0.07	8.22%	0.42%	0.05
Georgia												
15 Food and beverages	25.88%	0.51%	0.02	22.86%	9.65%	0.42	-13.89%	3.99%	-0.29	17.42%	5.18%	0.30
27 Basic metals	76.75%	9.53%	0.12	-5.80%	3.89%	-0.67	30.46%	-2.13%	-0.07	26.16%	5.06%	0.19
24 Chemicals and chemical products	45.65%	2.62%	0.06	16.47%	1.81%	0.11	-5.15%	9.17%	-1.78	22.98%	3.22%	0.14
26 Non-metallic mineral products	50.98%	6.17%	0.12	3.67%	8.02%	2.19	-9.08%	8.90%	-0.98	17.40%	7.44%	0.43
D Total manufacturing	37.43%	1.99%	0.05	8.34%	6.79%	0.81	-6.62%	1.80%	-0.27	16.04%	4.15%	0.26

Source: UNIDO/INDSTAT 2, Revision 3, own calculation