

# **The economic effect of a resolution of the Nagorno-Karabakh conflict on Armenia and Azerbaijan**

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## Executive Summary

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In this study, we analyse multiple dimensions, in which a resolution of the Nagorno-Karabakh conflict is likely to lead to economic “benefits of peace” to Armenia and Azerbaijan: public finances, trade in goods and services, the energy and water sectors as well as financial markets and investments. In our scenario, we assume a full resolution of the Nagorno-Karabakh conflict leading to a complete normalisation of relations between Armenia, Azerbaijan and Turkey with open borders, trade and the potential for cooperation.

The main economic benefits of peace for Armenia and Azerbaijan would lie in the three dimensions:

1. Public finances
2. The energy and water sectors
3. Financial markets and investments.

In public finances, both Armenia and Azerbaijan would strongly benefit from large savings on conflict-related **fiscal expenditures**. Military expenditures could be reduced by 2% of annual GDP in both countries to a level comparable with other countries at peace. In addition, Armenia could save annual expenditures of 0.9% of GDP for supporting the local economy in Nagorno-Karabakh and 0.1% of GDP in interest payments, thus saving 3% of GDP every year. Azerbaijan could eventually save expenditures for supporting displaced people amounting to 0.4% of annual GDP, thus reducing total expenditure by 2.4% of GDP yearly. Such large fiscal savings would enable both countries to sharply reduce budget deficits and at the same time substantially increase spending in socially useful areas such as education or health by eliminating present budgetary pressures.

Very substantial “benefits of peace” could in the long run also be gained in the domain of the **energy and water** sectors. An integrated electricity market is a demanding political, technical and economic project, but would allow significantly cheaper generation of power. This would mainly benefit Armenia, deferring the need for investment into expensive new power plants as the country could import electricity during the dry season. The ability to purchase gas from Azerbaijan, which would require rehabilitation or reconstruction of pipelines, would also benefit Armenia, which would have a better bargaining position with competition on the supplier side, while Azerbaijan would gain a new customer and transit route. The joint management of shared water resources, however, would strongly benefit Azerbaijan, where water is scarce. A more efficient joint usage of water resources would lead to more and better quality water arriving in Azerbaijan from the Kura-Aras basin, its main freshwater source. Hence, very substantial gains exist, but as the benefits for both countries lie in different fields (energy for Armenia, water for Azerbaijan), these gains are not easy wins. In order to materialise the gains, trading benefits in the energy sector for benefits in the water sector (“energy for water deal”) could be a net gain for all involved parties.

**Capital flows** to Armenia and Azerbaijan are constrained at present to a large extent due to elevated country risk as a consequence of the ongoing conflict. The effect of country risk on ratings, risk premiums on bonds, loans and equity, investment and, finally, economic growth is likely to be very strong. Both countries' ratings would probably improve by one notch (Armenia from B+/B1 to Baa3/BB-, Azerbaijan from BB+/Ba2 to BBB-/Ba1). This would lead to noticeable effects e.g. on sovereign Eurobond interest payments where fiscal savings for Armenia would amount to USD 10 m annually, USD 12.5 m for Azerbaijan. Most important, however is the long run effect on investment and economic growth. Increases in the inward FDI stocks due to reduced country risk could significantly and permanently elevate the level of GDP for both countries, by 3.4% to 6.0% of GDP in Armenia and 6.0%-10.6% in Azerbaijan.

In the dimension of **trade**, benefits of peace exist, but would overall be smaller than might be expected at first. As Armenia and Azerbaijan are both relatively small economies and complementarities in the export and import baskets are not large, bilateral goods trade would be limited at around 1% of total trade for Armenia and less than 1% of Azerbaijan's total trade in the long run. Also, transport routes with other trade partners could not be shortened when borders are opened. Considerable benefits in trade would however materialise for Armenia due to an increase of trade with Turkey. Armenia would annually export USD 123 m to its western neighbour in the medium term, while in the long term the share of Turkey in Armenia's trade would reach a sizeable 13%.

In **summary**, our research shows that a resolution of the Nagorno-Karabakh conflict would yield large economic benefits of peace and would hence be in the economic interest of both countries and their people. Both countries will benefit massively from increased investments. Armenia would in addition very strongly benefit from substantial fiscal savings, also due to reduced needs for expensive investments in power plants. For Azerbaijan, additional budgetary resources can be used to invest in people's skills. The agricultural sector could grow thanks to better access to fresh water, supporting a gradual import substitution in the agro-food sector. In combination, this would contribute to reducing the country's dependency on the oil and gas sector.

Considering the **cumulative, multi-year impact of conflict resolution** over a medium to long term perspective, it appears likely that 10 years after conflict resolution, both countries could be on a higher development path: on the one hand, huge annual fiscal savings will have permitted large public investment into the health and education of the populations as well as infrastructure, thus increasing productivity and wages. On the other hand, the reduction in country risk will have unlocked large volumes of investment, with a large impact on the permanent level of GDP. These effects will not only happen at the same time, but will reinforce each other to result in significantly improved standards of living in both countries. The economic benefits of peace hence form a strong argument in favour of finding a permanent solution to the Nagorno-Karabakh conflict.

## Summary of results

Category	Effect on Armenia	Effect on Azerbaijan
<b>Fiscal</b>	Large (+++)	Large (+++)
<b>Goods trade</b>	Moderate (++)	Small (+)
<b>Services trade</b>	Small (+)	Insignificant (0)
<b>Energy and water</b>	Electricity: Large (+++) Gas: Moderate (++) Water: Insignificant (0)	Electricity: Moderate (++) Gas: Small (+) Water: Large (+++)
<b>Financial markets and investments</b>	Large (+++)	Large (+++)

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## 1. Introduction

The Nagorno-Karabakh conflict impacting on Armenia and Azerbaijan has now gone on for 30 years. Starting in 1988, during the dissolution of the Soviet Union, the conflict has seen phases ranging from outright war to ceasefires, but remains unsolved until today. Armenians have been in control of the former Nagorno-Karabakh Autonomous Oblast and surrounding territories since the end of the Nagorno-Karabakh war in 1994, but a state of war officially persists between Armenia and Azerbaijan, with occasional skirmishes disrupting the cease-fire. No diplomatic or economic relations exist between the two neighbouring countries. Furthermore, there are no diplomatic relations between Armenia and Turkey and the bilateral border remains closed. In Nagorno-Karabakh, a republic has been self-proclaimed but is internationally not recognised by any state, including by Armenia, and remains highly dependent on Armenia.

**Figure 1.1: Map of Armenia and Azerbaijan**



Source: own display

Aside from the immense suffering from violence, the Nagorno-Karabakh conflict must have a strongly negative economic impact on the involved countries. Conflicts are economically wasteful, as expenditures on military activities do not create welfare (at best, they protect from welfare losses), closed borders and lack of cooperation prevents trade and exploitation of efficiencies in various fields and the presence of conflict deters (foreign) investment.

In this study, we will quantitatively assess the economic benefits of peace (or, interchangeably, the costs of conflict) for Armenia and Azerbaijan. The conclusion is that these provide further arguments for a lasting peace.

Our approach is to analyse and, where possible, quantify the benefits of peace in key dimensions:

- Public finance: expenditures related to the conflict (e.g. elevated military expenditures) could be redirected to welfare-increasing uses such as health, education or investment.
- Trade: opening the borders between Armenia and Azerbaijan as well as Armenia and Turkey would result in increased bilateral and transit trade, in both goods and services.
- Energy and water economy: resolution of the conflict would permit exploiting efficiencies, e.g. by connecting grids and coordinating the use of water resources, including for generating hydroelectricity.
- Financial markets and investment: conflict resolution would lead to increased FDI inflows, now deterred by country risk, improve credit ratings and lower the interest rates faced by borrowers and investors in Armenia and Azerbaijan.

We will analyse each dimension in turn, chapter by chapter. Each chapter will follow the same basic structure: we first describe salient aspects of methodology and scenario assumptions. Next, we analyse the impact of conflict resolution on Armenia and Azerbaijan in separate sections. Here, we first describe the status quo in the respective dimensions, highlighting e.g. the broad fiscal situations of the two countries. We then describe the effects of conflict resolution in this dimension (e.g. the magnitude of fiscal savings), stating the prerequisites for estimating the size of these effects, and putting estimated effects in context (e.g. alternative use of funds).

Our overarching scenario assumes a full resolution of the conflict, including the reopening of borders, resolution of all questions concerning internally displaced people (IDPs) and refugees, and resumption of trade and other forms of economic policy cooperation between Armenia and Azerbaijan as well as Armenia and Turkey. In so doing, we do not aim for a scenario that is likely to be realised in the short run, but highlight the full potential economic benefits that a comprehensive resolution of the conflict, including the building up of trust and cooperation between the two countries, would offer. In each chapter, the timeframe in which the expected effects could materialise differs: whereas some fiscal savings may be quite immediate, new arrangements in energy trade may take a decade to yield effects. Very long-run economic effects based on various second-round effects and higher GDP growth are, however, beyond the scope of this study. When we derive quantitative results, these generally refer to the annual impact of conflict resolution. Where possible, we use comparable data from international sources such as the IMF or World Bank.

The structure of this study is as follows: chapter 2 presents brief economic profiles of Armenia and Azerbaijan. Chapter 3 analyses the fiscal savings that could be made in case of conflict resolution. Chapter 4 analyses the effects on goods trade, both bilateral and transit. The effect on trade in services is analysed in chapter 5. Chapter 6 looks at gains from jointly using energy and water resources. The investment dimension including country ratings, interest rates, increased investment flows is analysed in chapter 7. Priority economic issues for maximising the short run benefits of peace are listed in chapter 8.

## 2. Short economic profiles of Armenia and Azerbaijan

The economies of Azerbaijan and Armenia are fundamentally different. Azerbaijan's economy, largely based on oil production and exports and with only very small manufacturing and agricultural sectors, is vastly larger than the economy of Armenia, which is based on a mix of agriculture, industry and services including a growing tourism sector. With a GDP of USD 40.7 bn in 2017, Azerbaijan's economy is almost four times as large as Armenia's economy at USD 11.5 bn. As Azerbaijan's population is more than three times the size of Armenia's population, per capita GDP – a measure of living standards – is relatively similar, at USD 4,141 in Azerbaijan and USD 3,861 in Armenia.

However, Azerbaijan's economy has been considerably depressed by low oil prices in the past few years, which have led to significant depreciation of its currency, the Manat. Oil prices have partially recovered in 2017/2018, but it is not yet clear, whether they will permanently return to the high levels of previous years. Due to low oil prices, the value of Azerbaijan's exports fell significantly throughout 2014-2016, turning the previously large current account surplus, on average around 20% of GDP in 2006-2015<sup>1</sup>, into a deficit of 3.6% of GDP in 2016, which recovered to a surplus of 3.5% in 2017. As public revenues are highly tied to petroleum sales, the previous budget surplus of the public sector turned into a deficit of 4.8% of GDP in 2015, recovering to a surplus of 0.9% of GDP in 2017.

Armenia, on the other hand, has seen sluggish real GDP growth rates of around 3% in the past years. Closed borders and lack of political and economic relations with its neighbours Azerbaijan and Turkey<sup>2</sup> have largely isolated the country within the region and constrained economic development. Lack of substantial progress with institutional reforms and in the fight against corruption constrains growth and investment, while unemployment remains very high. Whether the new political circumstances in Armenia will lead to a change of these conditions remains to be seen.

Armenia depends heavily on military support from Russia. In 2015, Armenia joined the Eurasian Economic Union, a customs union centred on Russia. Mainly due to a narrow export base, Armenia runs a very large trade deficit and is heavily dependent on foreign remittances from its large diasporas in order to ensure that the trade deficit does not translate into a higher current account deficit. Despite external challenges in recent years, including drops in remittances and the price of copper, a key export good, the price of which has only partially recovered, Armenia has managed to largely maintain macroeconomic stability, but its budget deficit remains a vulnerability.<sup>3</sup>

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<sup>1</sup> International Monetary Fund (2016).

<sup>2</sup> A limited degree of economic relations exists with Turkey (esp. indirect imports of Turkish goods via Georgia).

<sup>3</sup> International Monetary Fund (2017).

**Table 2.1: General economic indicators, 2017**

Indicator	Units	Armenia	Azerbaijan
Nominal GDP	USD bn	11.5	40.7
Population	m	3.0	9.8
Nominal GDP per capita	USD	3,861	4,141
Share of agricultural sector in GVA	%	15.9	6.1
Share of mining and quarrying in GVA	%	2.6	36.8
Share of manufacturing in GVA	%	9.2	5.1
Unemployment	% of labour force	18.9	5.0
Imports of goods	% of GDP	36.2	22.2
Exports of goods	% of GDP	19.4	37.2
Current account balance	% of GDP	-2.6	3.5
Public revenues	% of GDP	22.4	37.0
Public expenditures	% of GDP	25.2	36.1
Public net lending/borrowing	% of GDP	-2.8	0.9

Source: IMF World Economic Outlook, IMF Government Finance Statistics, national statistical offices

Note: Nagorno-Karabakh is not included in the data

The economy in Nagorno-Karabakh is not included in the economic data of Armenia or Azerbaijan. Population and economic activity is mainly restricted to the area of the former Nagorno-Karabakh Autonomous Oblast. No recent verified statistical information exists on Nagorno-Karabakh, but the de-facto authorities state a reported population of ca. 146,000 and a reported GDP of ca. USD 480 m for 2016<sup>4</sup>, although experts consider these figures to likely be inflated. Hence the economy in Nagorno-Karabakh itself is small in regional comparison. In this study, we analyse economic effects of conflict resolution only for the economies that today are included in data for Armenia and Azerbaijan. Of course Nagorno-Karabakh itself would also benefit from security and economic and social development, following conflict resolution.

<sup>4</sup> „Artsakh Republic National Statistical Service“ (2017).

### 3. Public finance

#### 3.1. Methodological note

Resolution of the Nagorno-Karabakh conflict would enable Armenia and Azerbaijan to cut conflict-related spending, redirecting the financial resources in the budget towards solving the aftermath of the conflict (e.g. handling the return of displaced persons), welfare-increasing uses such as health, education or investment or reducing the budget deficit without concomitant welfare losses.

In this chapter, we focus on **quantifying conflict-related expenditures** in the budgets of Armenia and Azerbaijan that could be cut after a full resolution of the Nagorno-Karabakh conflict. As the current state of the conflict is asymmetrical, with Armenians in control of Nagorno-Karabakh and surrounding territories, conflict-related expenditures differ somewhat between the two countries.

- Both Armenia and Azerbaijan have significantly elevated **defence and military spending** due to the conflict. We benchmark the defence expenditures of Armenia and Azerbaijan as % of GDP to similar countries to derive the savings potential.
- **Support of the local economy** in Nagorno-Karabakh: Armenia regularly gives “interstate loans<sup>5</sup>” to the de-facto authorities in Nagorno-Karabakh. These are a vital component of the revenue side of the budget of the de-facto authorities and are unlikely ever to be repaid.
- Azerbaijan still has significant **expenditures on refugees and internally displaced persons**.<sup>6</sup>
- **Higher interest rates on government debt** emitted on capital markets due to higher risk premiums caused by political risk (using analysis and results from chapter 7).

The identified fiscal costs should be understood as a *potential* for fiscal savings, not as guaranteed savings, as they have different prerequisites and would materialise over different timespans. Our analysis relies on budget data from Armenia and Azerbaijan (including expenditures of the State Oil Fund of Azerbaijan, SOFAZ), focusing on the year 2017 but also taking into account expenditures in 2015 and 2016 in order to calculate annual average savings potential as % of GDP.<sup>7</sup> Defence expenditures are verified and benchmarked using the database of the Stockholm International Peace Research Institute (SIPRI).

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<sup>5</sup> Source: Ministry of Finance of Armenia, <http://www.gov.am/am/budget/>

<sup>6</sup> Refugees designate former citizens of another state, i.e. ethnic Azerbaijanis who fled their homes in Armenia, whereas IDPs designate Azerbaijanis who fled from the territories now under the control of Armenians. Most expenditures appear focused on IDPs. We will hence generally refer to IDPs in the text. Despite significant inflows of ethnic Armenian refugees from Azerbaijan, no significant dedicated expenditures exist in the government budget of Armenia.

<sup>7</sup> Some conflict-related expenditures, such as Armenian “interstate loans” to the Nagorno-Karabakh de-facto authorities vary considerably between years, hence restricting analysis to one year could be misleading.

## 3.2. Impact on Armenia

### Status quo

Armenia's public sector is relatively small, with public expenditures at 25.2% of the country's GDP in 2017. This public sector share has remained fairly constant over the past years. Limited revenues restrict the ability of the government to increase spending directed at increasing growth, such as raising public investments from a very small 1.8% of GDP, or combating poverty.<sup>8</sup> Armenia's public sector budget deficit in 2017 amounted, due to overall good macroeconomic management, to 2.8% of GDP. The government's gross debt is under control, but not insignificant at 56% of GDP.

**Table 3.1: Government expenditures and revenues of the Republic of Armenia, 2017**

	AMD bn	USD m	% of GDP
<b>Public revenues</b>	<b>1,210.0</b>	<b>2,506.7</b>	<b>22.4</b>
Taxes	1,135.0	2,351.3	21.0
VAT	383.4	794.2	7.1
Personal Income Tax	342.1	708.7	6.3
<b>Public expenditures</b>	<b>1,360.1</b>	<b>2,817.6</b>	<b>25.2</b>
Social protection	408.9	847.1	7.6
General public services	265.0	549.1	4.9
Defence	209.8	434.6	3.9
Education	127.6	264.3	2.4
Health	85.9	177.9	1.6
Public investments	98.6	204.2	1.8
<b>Budget balance</b>	<b>-150.1</b>	<b>-310.9</b>	<b>-2.8</b>

Source: IMF Government Finance Statistics, Budget of the Republic of Armenia, own calculations

### Effect of conflict resolution

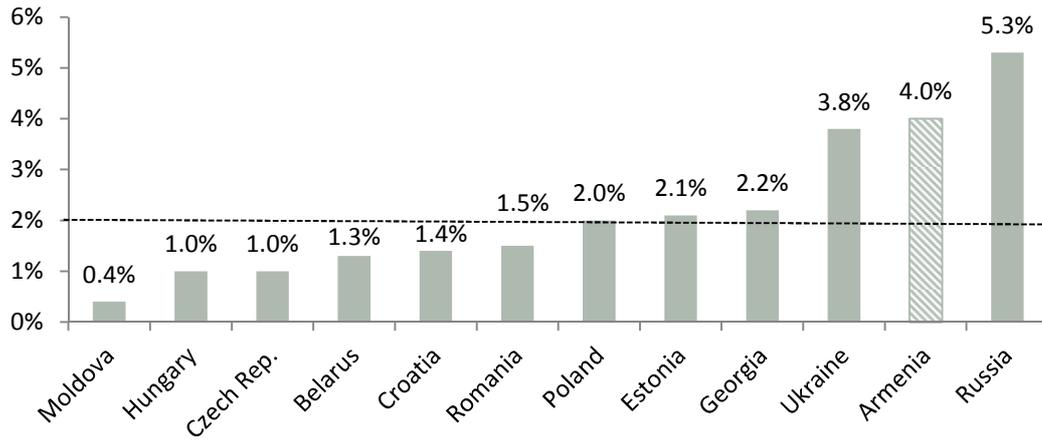
As a consequence of conflict resolution and normalisation of relations with its neighbours Azerbaijan and Turkey<sup>9</sup>, Armenia could reduce its sizeable **defence expenditures**. Defence expenditures of Armenia have been, on average, 4% of GDP in the past three years. Benchmarking Armenia's defence expenditures, we assume that they could be reduced to

<sup>8</sup> World Bank (2014).

<sup>9</sup> Armenian-Turkish relations are a highly complex and historically charged. Our scenario assumes that a resolution of the Nagorno-Karabakh conflict would translate into normalisation of Armenian-Turkish relations at least with regard to the threat of military conflict and into an opening of the Armenian-Turkish border for trade, which was closed as a reaction to the war between Armenia and Azerbaijan.

2% of GDP. This benchmark is the average level of military expenditures of all middle-income countries in the world in 2016, according to the World Bank.<sup>10</sup> Figure 3.1, which displays the defence expenditures of selected countries in Central and Eastern Europe shows quite concisely that most countries without larger power projection ambitions (Russia), frozen or ongoing conflicts (Georgia, Ukraine) or difficult relations with a larger neighbour (Estonia) have defence expenditures at or below this benchmark.

**Figure 3.1: Defence expenditures as % of GDP, selected countries, 2016**



Source: Stockholm International Institute for Peace Research (SIPRI)

Hence, resolution of the conflict would permit fiscal savings on defence expenditure at a magnitude of 2% of GDP per year, which would correspond to a fiscal saving of AMD 107.9 bn or USD 223.5 m in 2017. These savings would gradually materialise over the course of 10 years, with some savings being achievable quite rapidly and the full extent of the savings potential materialising only later, when sufficient trust has built up between both countries. As Armenia’s forces are made up to no small extent of conscripts, reducing the size of the armed forces is feasible in relatively short timespans. Corresponding increases in unemployment may be partially addressed with the savings generated.

Armenia would also eventually be able to cut **budgetary support to de-facto authorities in Nagorno-Karabakh**, currently given in the form of annual “interstate loans”. As Nagorno-Karabakh presently lacks the capacity to repay these loans, we consider them to be de-facto expenditures. Together with remittances and grants from Armenian diaspora funds, this support is currently vital in maintaining current living standards in Nagorno-Karabakh, with a reported per-capita GDP of USD 3,050 in 2014 not far below that of Armenia or Georgia and clearly much higher than what the weak local economy could provide without assistance.<sup>11</sup>

<sup>10</sup> Source: World Bank, <https://data.worldbank.org/indicator/MS.MIL.XPND.GD.ZS?locations=XP>

<sup>11</sup> G. Welton, B. Barrowman (2016).

**Table 3.2: “Interstate loans” of the Republic of Armenia to Nagorno-Karabakh**

	2013	2014	2015	2016	2017
AMD bn	39.3	43.6	45.5	47.3	47.4
% of GDP	0.86	0.90	0.90	0.93	0.85

Source: Ministry of Finance of Armenia, own calculations

Over the past years, annual “interstate loans” corresponded on average to around 0.9% of Armenian GDP. We hence consider the average annual savings potential to be 0.9% of GDP, corresponding to AMD 48.6 bn or USD 100.6 m for the reference year 2017. This saving could probably only be achieved in the medium to long term, once the local economy of Nagorno-Karabakh has recovered from decades of conflict. Probably, significant volumes of investment in Nagorno-Karabakh would be required before the present reason for these transfers would cease to exist.

Finally, using the analysis and results from chapter 7 of this study, due to reduced political risk and hence better ratings, money could be saved on **interest rates on sovereign bonds**. Assuming that bonds emitted on capital markets would stay in the current magnitude of two Eurobonds of USD 500 m each, annual savings upon rollover of the bonds in the medium term to long term would amount to USD 10 m or 0.1% of GDP.

## Conclusion

Fiscal savings as a consequence of the resolution of the Nagorno-Karabakh conflict would strongly benefit Armenia. Total annual fiscal savings potential for Armenia would sum up to 3% of GDP, or AMD 161.3 bn in the reference year 2017. To illustrate, the savings would have enabled Armenia to achieve *either* of the following in 2017:

- Turning the budget deficit of 2.8% of GDP into a surplus of 0.2% of GDP, *or*
- Increasing public investments by ca. 160%, *or*
- Increasing education expenditures by ca. 125%

In reality, Armenia would most likely and ideally use the savings for a combination of these and other socially useful aims. Over a medium to long term, this could have a significant impact on the country. The cumulative effect of several years of increased spending on, for example, education could be huge, especially considering the small current size of the Armenian public sector and sharp constraints on the possibility for higher public expenditures. Better skills of a healthier workforce in combination with improved public infrastructure could unlock substantial economic growth, resulting in higher wages. Conflict resolution could hence have a large economic impact through the domain of public finances.

**Table 3.3: Summary of fiscal saving potential for Armenia**

	AMD bn	USD m	% of GDP	Time horizon
<b>Defence spending</b>	107.9	223.5	2.0	1-10 years
<b>Transfers to Nagorno-Karabakh</b>	48.6	100.6	0.9	5-10 years
<b>Interest on public debt</b>	4.8	10.0	0.1	5-10 years
<b>Total</b>	<b>161.3</b>	<b>334.1</b>	<b>3.0</b>	

Source: own calculations. Note: Reference year for AMD and USD figures is 2017

### 3.3. Impact on Azerbaijan

#### Status quo

Azerbaijan's public finances remain highly dependent on oil revenues. In 2017, around half of total public revenues came from the State Oil Fund of Azerbaijan (SOFAZ). Consequently, the country has been hit severely by the decline of global oil prices since 2014. After years of budget surpluses, public revenues fell into deficit in 2015 and necessitated a strict regime of thrift to keep the budget under control, which was in surplus again in 2017. Due to budget deficits in past years, but even more because of a sharp devaluation of the Manat (AZN), the gross debt of Azerbaijan's government soared from 14.4% of GDP to now 54.8%.

**Table 3.4: Public expenditures and revenues of Azerbaijan, 2017**

	AZN m	USD m	% of GDP
<b>Public revenues</b>	<b>25,573.0</b>	<b>14,868.0</b>	<b>37.0</b>
Tax revenues	12,685.7	7,375.4	18.3
Revenues of State Oil Fund	12,137.5	7,056.7	17.6
<b>Public expenditures</b>	<b>24,946.0</b>	<b>14,503.5</b>	<b>36.1</b>
Defence	2,658.8	1,545.8	3.8
Social Protection	2,267.3	1,318.2	3.3
Education	1,747.0	1,015.7	2.5
Health	750.1	436.1	1.1
Public investments*	8,946.3	5,201.3	12.9
<b>Public surplus</b>	<b>627.0</b>	<b>364.5</b>	<b>0.9</b>

Source: IMF, budget of Azerbaijan, own calculations. \* Net acquisitions of nonfinancial assets

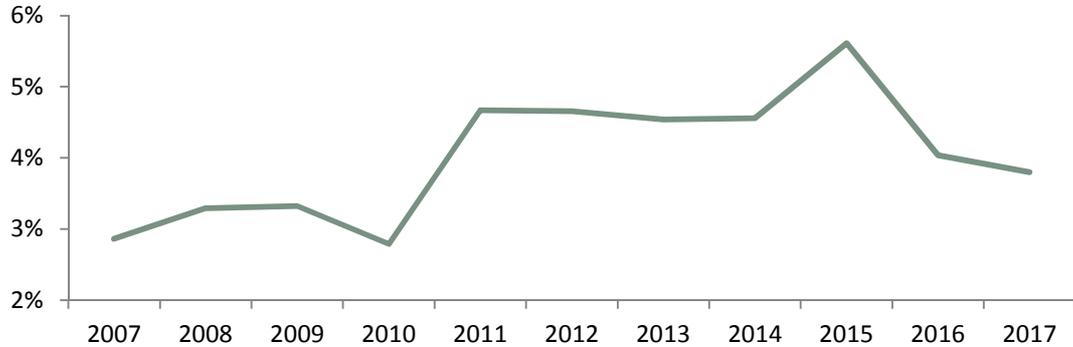
Pressure on expenditures remains high, despite the ongoing gradual recovery of oil prices. Military expenditures, which had been constantly increasing as a share of GDP before the oil price decline, had to be cut to around 4% of GDP. Savings potential exists in the very high level of public investment deemed unsustainable by the IMF in their last Article IV report of September 2016.

#### Effect of conflict resolution

As a result of conflict resolution, Azerbaijan, too, could reduce its **military expenditures**, which peaked at 5.6% of GDP in 2015 but have stabilised at 4% of GDP in 2016 and 3.8% in 2017. For our calculations, we assume annual defence expenditures of 4% of GDP, which also corresponds to the amount originally budgeted for 2017 (actual expenditures as a share of GDP were lower because of higher GDP growth than forecast). We understand this to be

a conservative estimate, as Azerbaijan is under pressure to reduce expenditures mainly due to presently low oil prices, which may change in future.

**Figure 3.2: Defence expenditures of Azerbaijan, % of GDP, 2007-2017**



Source: SIPRI, Budget of Republic of Azerbaijan, own calculations

Applying the same benchmark of 2% of GDP for defence expenditures in peacetime as for Armenia, we hence arrive at a total potential for annual fiscal savings of 2% of GDP due to reduced defence expenditures once peace is solidified and there is sufficient trust between Armenia and Azerbaijan. This would correspond to AZN 1,383 m or USD 804 m in the reference year 2017.

Conflict resolution would also imply a permanent settlement of the status of those still displaced. Currently, UNHCR lists 613,000 displaced in Azerbaijan, out of which 597,000 are individuals who fled their homes in the early 1990s as a result of the conflict. Without making any assumption as to how exactly the issue would be dealt with – e.g. return to former homes or settling permanently in other places – **those now displaced would in the long run, after permanent settlement, no longer require specific expenditures** as at present.

**Table 3.5: Displaced-related expenditures of Azerbaijan**

	2015		2016		2017	
	AZN m	% of GDP	AZN m	% of GDP	AZN m	% of GDP
State Committee for Refugees and IDPs	2.2	0.0%	2.2	0.0%	2.2	0.0%
Social protection and housing	228.5	0.4%	227.8	0.4%	198.5	0.3%
SOFAZ projects	150.0	0.3%	150.0	0.2%	90.0	0.1%
<b>Total expenditures on displaced people</b>	<b>380.7</b>	<b>0.7%</b>	<b>380.0</b>	<b>0.6%</b>	<b>290.7</b>	<b>0.4%</b>

Source: Budget of the Republic of Azerbaijan, Annual reports of SOFAZ, expert judgements

In total, expenditures on displaced have been declining constantly over the past years. This is understandable, since projects such as building houses or improving the social conditions will reduce the overall need. On the other hand, the needs would remain high<sup>12</sup> and support could not immediately be phased out. Regardless of whether the displaced would return to former homes or permanently settle in other places, large upfront investments would be required before assistance could be phased out. We do assume that significant international support would be given to the resettlement and reintegration, as well as for possible compensation payments, hence we do not deduct these costs from the savings potential highlighted here. In the short run, expenditures could already be redirected from measures focused on ensuring subsistence towards more constructive investments into a permanent settlement that would generate more positive economic effects, e.g. through allowing agricultural activity of the displaced.

In 2017, expenditures amounted to AZN 290.7 m, 0.4% of GDP. We take this to be the current potential for annual fiscal savings, but it should be understood as a snapshot of current expenditures rather than as a picture of present or future needs of displaced. Actual savings would only materialise in the medium to long term (5-10 years after conflict resolution), when the affected people have settled permanently, regardless of precise location, and their housing and economic situation has been improved to the point of no longer requiring specific assistance.

Furthermore, as for Armenia, conflict resolution would result in lower interest rates on government bonds. Assuming that bonds emitted on capital markets would stay in the current magnitude of one sovereign bond of USD 1,250 m,<sup>13</sup> annual savings upon rollover of the bond at better conditions in the medium to long term would amount to USD 12.5 m or 0.03% of GDP.

## Conclusion

Azerbaijan would benefit from conflict resolution in the fiscal domain especially in the current situation of strained public finances as oil revenues have still not fully recovered to the levels of previous years.<sup>14</sup> Conflict resolution could ease pressure on the budget and enable the government to conduct more growth-friendly expenditures than would otherwise be the case. In total, we quantify the annual fiscal savings potential for Azerbaijan at 2.4% of annual GDP. To illustrate, these savings would have enabled Azerbaijan to achieve *either* of the following in 2017:

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<sup>12</sup> <http://www.internal-displacement.org/europe-the-caucasus-and-central-asia/azerbaijan/2014/azerbaijan-after-more-than-20-years-idps-still-urgently-need-policies-to-support-full-integration/>

<sup>13</sup> There are also publicly guaranteed quasi-sovereign bonds of a volume of USD 3,750 m issued by SOEs (Socar, South Gas Corridor) that would be subject to interest savings of USD 37.5 m per year upon rollover, but these interest payments would only indirectly affect the government budget.

<sup>14</sup> Should oil prices return to previous levels, the importance of fiscal savings would be diminished.

- Repaying public debt by increasing the government surplus to 3.3% of GDP, *or*
- Almost doubling expenditures on education, *or*
- Increasing expenditures on health by ca. 225%

As in Armenia, these savings would probably and ideally be used to affect a combination of these aims. In the long run, consistently higher spending on socially and economically useful aims would help to achieve key economic policy objectives, for example reducing the country's dependency on the oil and gas sector by improving workforce skills through higher education expenditures and hence contributing to the growth of non-oil sectors.

**Table 3.6: Summary of fiscal saving potential for Azerbaijan**

	AZN m	USD m	% of GDP	Time horizon
<b>Defence spending</b>	1,382.8	803.9	2.0	1-10 years
<b>Expenditures on displaced people</b>	276.6	160.8	0.4	5-10 years
<b>Interest on public debt</b>	21.5	12.5	0.0	5-10 years
<b>Total</b>	<b>1,680.8</b>	<b>977.2</b>	<b>2.4</b>	

Source: own calculations. Note: Reference year for AZN and USD figures is 2017

### 3.4. Summary and comparison of effects

Both Armenia and Azerbaijan could save defence expenditures of 2% of GDP per year, with initial savings being smaller and the full potential being realised as sufficient trust in the lasting peace is established between both countries. In the medium to long term, conflict resolution would alleviate the need for spending on consequences of the conflict: Armenia could save budget transfers to support the economy in Nagorno-Karabakh, amounting to 0.9% of GDP annually and Azerbaijan could save expenditures on people displaced by the conflict amounting to currently 0.4% of GDP. Smaller savings around USD 10 m per year for each country would accrue through lower interest rates on sovereign bonds.

These possible fiscal savings would amount to clearly noticeable “benefits of peace” for both countries, although in different ways: it would enable Armenia to increase spending on priority areas for growth and poverty alleviation, easing the constraint of chronically low public revenues. For Azerbaijan, the benefit would be especially strong in the current situation of strained public finances due to low oil prices, although space for non-conflict related savings also exists in the large public expenditures of Azerbaijan.

## 4. Trade in goods

### 4.1. Methodological Note

Due to the closure of the Armenia-Azerbaijan and Armenia-Turkey borders, no trade exists between Armenia and Azerbaijan. Between Armenia and Turkey, only indirect trade via Georgia exists at present. Also, other trade links including the important Armenia-Russia and Azerbaijan-Turkey trade links at present have to fully bypass Azerbaijan and Armenia respectively. An end of the conflict including the opening of both Armenia-Azerbaijan and Armenia-Turkey borders for people and goods would then permit bilateral trade links (Armenia-Azerbaijan, Armenia-Turkey) to be (re-)established and would allow the adjustment of other trade routes to take advantage of possibly shorter and/or cheaper routes.

In this chapter, we analyse the possible **increases in goods trade** due to opening of both borders, covering services trade separately in the next chapter.<sup>15</sup> Our analysis focuses on the increase of bilateral trade between Armenia and Azerbaijan, Armenia and Turkey but also considers whether shortened and/or cheaper transport routes would lead to increases in trade with third countries.

We use two models to measure the expected effect of conflict resolution on goods trade.<sup>16</sup> On the one hand, we use a “**gravity model**”, a standard tool in trade economics, which was very successful indicating, for instance, the re-orientation of the trade of the Central and East European transition economies in the early 1990s. It assumes that trade links between countries are similar to the gravitational force between physical objects. Hence, in this model, trade is directly proportional to the size of partner economies (GDP) and inversely proportional to the ‘economic distance’ between them (comprising all transaction costs, such as transport, communication, trade barriers, different product regulations etc.). Our gravity model only predicts a trade structure, relative shares of partner countries, not magnitudes. As gravity estimates do not take into account the commodity composition of trade, they should be interpreted as a long-run pattern: for trade to develop as predicted, structures such as supply side production capacities may have to adjust and emerge, which will require time.

The second model that we apply is a custom-made tool, “**trade complementarity analysis**”. Using this model, we calculate potential increases in bilateral trade between Armenia-Azerbaijan and Armenia-Turkey based on whether the export basket of one partner country fits the import basket of the other partner country. Exporters would be interested in

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<sup>15</sup> Goods trade is statistically recorded with a higher level of detail than services trade and parts of service trade. Hence, separate analysis allows taking advantage of high detail levels (analysis by ca. 5000 separate products) in goods trade. Furthermore, one share of possible increases in services trade will be a by-product of increased goods trade (e.g. transport services for shipments of goods), so logically services trade can only fully be analysed after goods trade results have been obtained.

<sup>16</sup> A more detailed, technical description of all used methods is provided in the annex.

supplying products to a new market if they can do so (exports of this product already exist) and they can offer lower prices than competitors assuming that they can meet the quality requirements. This model takes into account the present product structure of trade (at a detail level of ca. 5,000 products) and should therefore be interpreted as a short to medium term focused model. It predicts magnitudes of exports and imports achievable in the short to medium term. This model is complementary to the gravity model and serves as a “reality check”, based on more restrictive assumptions but permits a finer sectoral disaggregation. As this analysis requires product-level trade data only available for 2016, all monetised figures in this chapter refer to 2016. Percentages of trade or GDP carry over for future years.

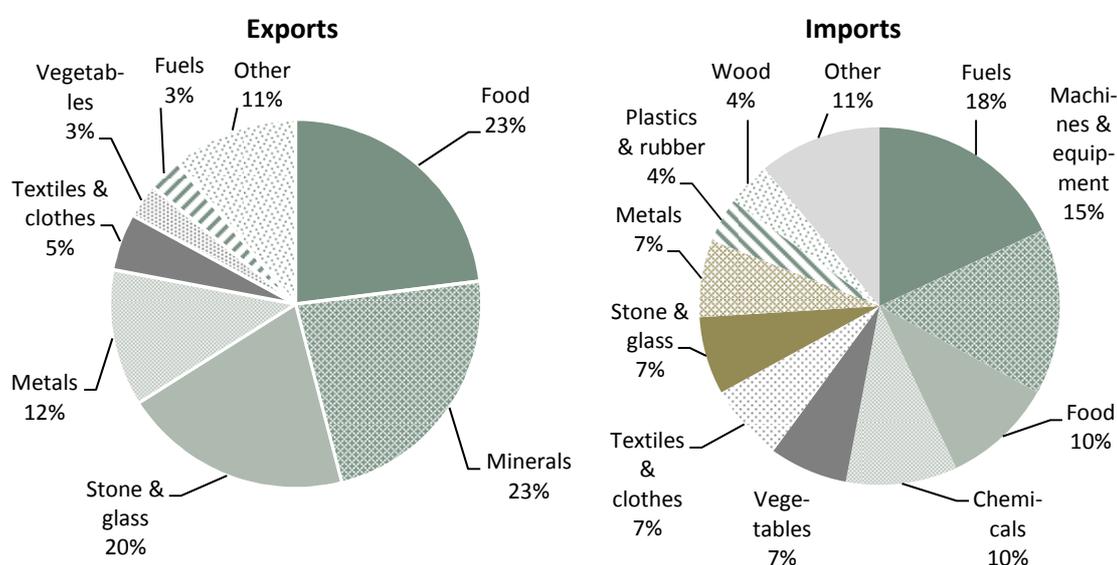
To analyse whether trade of Armenia or Azerbaijan with third countries would change, we finally also analyse existing and possible (due to opened borders) **transport routes** for goods traffic with key trading partners such as Russia for Armenia and Turkey for Azerbaijan.

## 4.2. Impact on Armenia

### Status quo

Armenia’s total annual trade volume accounts on average for 50% of GDP in 2012-2016. Exports of goods constituted on average about 14% of GDP, while imports accounted for 36%, resulting in an extensive trade deficit.

**Figure 4.1: Structure of Armenia’s trade in goods, 2016**



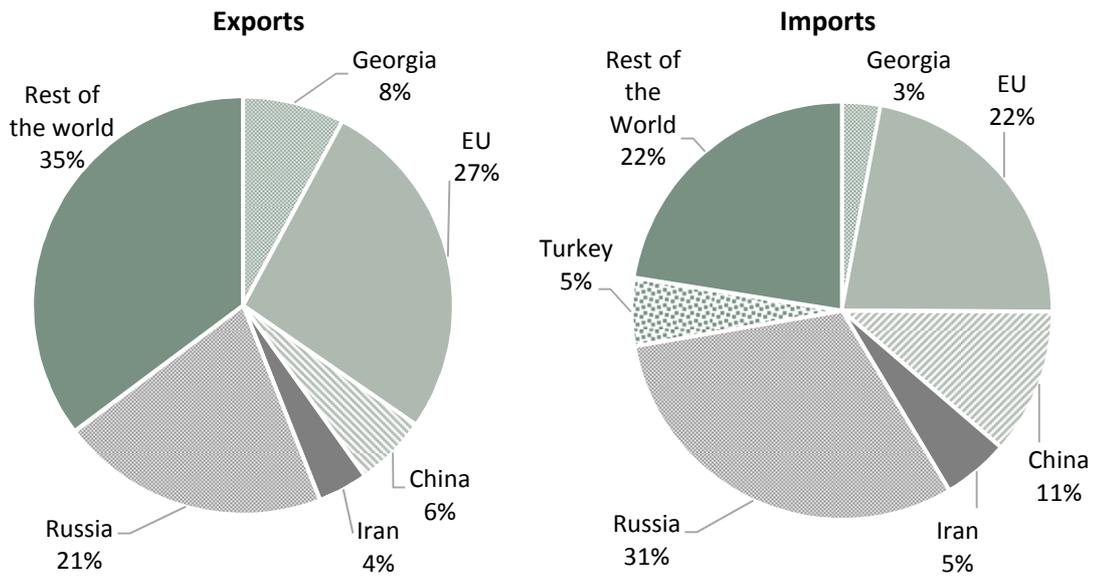
Source: UN Comtrade

In 2016, Armenia exported USD 1.8 bn of goods and USD 2.0 bn in 2017 (+11%). The small volume of exports is due mainly to a low production base and is concentrated in few key export products: food, in particular spirits and tobacco products, and minerals, primarily metal ores. Imports accounted for USD 3.2 bn in 2016 and USD 4.1 bn in 2017 (+28%) and

are much more diversified with fuels, machines and equipment being the most important import commodities.

Russia and the EU (taken as a bloc) are the main trade partners of Armenia. In exports, the EU is Armenia’s main customer, while the share of Russia is largest in imports, in particular as a source of mineral fuels, which Armenia receives at discounted prices from Russia.<sup>17</sup> China is the third largest partner of Armenia. Georgia accounts for 8% of Armenia’s exports, and Iran – 4%, while there is no trade with Azerbaijan and very limited trade with Turkey, which appears shipped through Georgia.

**Figure 4.2: Geography of Armenia’s trade in goods, 2016**



Source: UN Comtrade

With regard to trade policy, Armenia has a high level of tariff protection with the average Most Favoured Nation (MFN)<sup>18</sup> duty at 6% and slightly higher duties on agricultural products of 8%. Armenia is a member of the WTO and recently joined the Eurasian Economic Union (EAEU) that also includes Russia, Belarus, Kazakhstan and Kyrgyzstan. In connection with Armenia’s EAEU accession, tariffs for selected goods will increase significantly as Armenia must apply the EAEU’s single external tariff.

<sup>17</sup> <https://www.azatutyun.am/a/28813616.html>

<sup>18</sup> MFN duty is the basic World Trade Organization import duty applied among its members.

## Effect of conflict resolution

### A. Gravity model analysis

Our gravity model analysis predicts **Azerbaijan and Turkey would make up 1% and 13% of Armenia's trade if borders are opened**, up from no trade at all with Azerbaijan and 3% of total trade with Turkey at present, exclusively made up by indirectly imported goods. As Turkey is a much bigger economy than Azerbaijan, its share in Armenia's future trade as predicted by the gravity model is much bigger.

**Table 4.1: Gravity model, predicted and actual trade structure (imports and exports)**

	Predicted	Actual
EU	24%	24%
Turkey	13%	3%
Russia	15%	27%
China	6%	9%
Iran	4%	5%
Azerbaijan	1%	0%
Georgia	2%	5%
Rest of the world	35%	27%

Source: own estimates

Higher trade shares of Azerbaijan and Turkey of course imply that the shares of other partners will have to decline, although the results do not indicate whether trade volumes with other partners would decrease in absolute terms. Especially the predicted shares of Russia and Georgia are lower than they are today. This reduction is not unrealistic, as Georgia and Russia may indeed cover for the “lost” trade volumes with the neighbours Azerbaijan and Turkey at present.

In sum, the gravity model results indicate that with Azerbaijan and Turkey together making up 14% of Armenia's total trade, conflict resolution and normalisation of bilateral relations would have a substantial impact on Armenia's trade. Benefits for Armenia would be an increase of total trade but also cheaper prices for imports from Azerbaijan and Turkey and higher prices for its exports. This positive welfare effect originates in decreased transport cost by dealing more with immediate neighbours.

### B. Trade complementarity analysis

Results from trade complementarity analysis broadly confirm the finding from the gravity model. The complementarity analysis assesses the compatibility of the actual export and import baskets of the partner countries. Especially on the export side, the analysis shows that significant increases of the trade would be possible in the medium term (3 years) as Armenia already produces goods that should be competitive on the markets of Azerbaijan and Turkey.

## Trade with Turkey

**Exports** to Turkey could increase up to USD 123 m per year, 7% of current total goods exports of Armenia. Compared to the 13% trade share predicted by the gravity model for the long run, this analysis suggests that indeed Armenia already is able to produce a range of products suitable and competitive on the vast Turkish market, which can easily absorb the relatively small export volumes that Armenia would offer.

**Table 4.2: Potential exports to Turkey, top 5 products**

Product	USD m	% of exports to Turkey
Aluminium	21.7	18%
Clothes	14.3	12%
Plastics (bottles & misc. products)	10.1	8%
Glass (bottles)	8.1	7%
Leather articles	5.4	4%

Source: own calculations

Among the key new exports to Turkey would be aluminium foil (the USSR-era factory in Yerevan has been modernised in the 2000s), diverse clothes, plastic and glass bottles as well as leather articles.

Competitive **imports** from Turkey would also find their way to the Armenian market. According to our calculations, Armenia would import additional goods to a value of USD 207 m, 6% of its total goods imports, from Turkey each year, including fuels, machines and electric machines (especially telephones and other communication devices). The new imports would benefit Armenian consumers, as they would be cheaper than imports from present sources.

**Table 4.3: Potential imports from Turkey, top 5 products**

Product	USD m	% of imports from Turkey
Mineral fuels	43.5	21%
Machines	27.1	13%
Electric machines	24.4	12%
Pharmaceutical products	18.1	9%
Iron and steel	9.0	4%

Source: own calculations

## Trade with Azerbaijan

**Exports** to Azerbaijan could reach USD 73 m or about 4% of current total goods exports of Armenia, similar to the results of the gravity model. In the export field, Armenia already produces some suitable products in order to successfully export to Azerbaijan in the short to medium term. Still, the total impact of bilateral trade with Azerbaijan on Armenia would be small.

**Table 4.4: Potential exports to Azerbaijan, top 5 products**

Product	USD m	% of exports to AZE
<b>Tobacco products</b>	27.8	38%
<b>Beverages</b>	5.4	7%
<b>Plastics</b>	4.6	6%
<b>Glass</b>	3.3	4%
<b>Clothes, not knitted</b>	3.2	4%

Source: own calculations

The by far most important export good to Azerbaijan would be cigarettes, making up 43% of the total predicted export volume to Azerbaijan. **Imports** from Azerbaijan, however, would be quite minimal at USD 13 m or 0.4% of total goods imports.<sup>19</sup>

### C. Trade with third countries: Transport routes analysis

Opening of the borders with Azerbaijan and Turkey would not lead to increased trade with other countries due to shorter **transport routes** even though Armenia at first sight appears to be heavily constrained in transport routes due to the closed borders. Our analysis of the key trade transport routes shows that the existing routes through Georgia and Iran indeed are either the shortest and quickest or distance and time savings are minimal (as for trade with several European countries through Turkey instead of Georgia). The only exception is that exports to Kazakhstan could be shipped cheaper using ship transport from Baku (Azerbaijan) to Aktau (Kazakhstan). As exports to Kazakhstan are very small (0.3% of total 2016 exports) the aggregate effect of this shortened route will be insignificant.

However, the opening of the border with Azerbaijan could help improve **trade capacity and reliability with Russia**. The current connection through Georgia crosses extremely rough terrain, is sensitive to weather conditions and has large sections of very low-quality road. It is regularly mentioned as a bottleneck by stakeholders<sup>20</sup>. The establishment of by-pass

<sup>19</sup> Due to favourable prices from Russia, purchasing fuels in large volumes from Azerbaijan would not be cheaper at present than purchasing it mainly from Russia. A more long-run view is presented in chapter 7 on the energy and water sectors.

<sup>20</sup> Negotiations between Georgia and the Russian Federation on the creation of additional transit routes ("trade corridors") through Georgia under a WTO agreement are ongoing, but are unlikely to substantially improve traffic between Armenia and the Russian Federation in the nearer future <https://jamestown.org/program/russia-georgia-disagree-north-south-trade-corridors/>

through Azerbaijan, including the possibility of rail transport<sup>21</sup>, is unlikely to make exports cheaper, but it could offer more capacity, predictability and thus stimulate trade to and through Russia.

In the medium term, the development of the **Trans-Caspian Transportation Route**, sometimes positioned as a component of China’s One Belt – One Road initiative, could offer cheaper goods transport to and from China and other Asian countries using Azerbaijan’s Caspian Sea ports.

#### D. Conclusion

Armenia would benefit from increased trade with its neighbours Azerbaijan and Turkey in case of conflict resolution, especially Armenia-Turkey trade could expand significantly and relatively quickly have tangible economic benefits for population and regions close to the border on both the Armenian and Turkish sides as well as increasing non-trade exchanges. Trade with neighbours rather than distant countries allows saving transport costs, hence allowing higher producer prices for exporters and lower consumer prices for imports. Especially trade with Turkey, a large market of around 80 m people with a GDP of USD 850 bn in 2017, would very much improve Armenia’s integration in regional trade. Whereas the gravity model predicts trade shares (imports and exports together) of 13% and 1% for Turkey and Azerbaijan respectively in the long run, trade complementarity analysis shows that in the medium term, Armenia has very good chances of developing substantial trade with Turkey, whereas trade potential with Azerbaijan appears limited.

**Table 4.5: Impact on Armenia, trade complementarity results**

	Impact on exports			Impact on imports		
	USD m	% of current exports	% of GDP	USD m	% of current imports	% of GDP
Turkey	123	7%	1%	207	6%	2%
Azerbaijan	73	4%	1%	13	0%	0%
<b>Total</b>	<b>196</b>	<b>11%</b>	<b>2%</b>	<b>220</b>	<b>7%</b>	<b>2%</b>

Source: own calculations

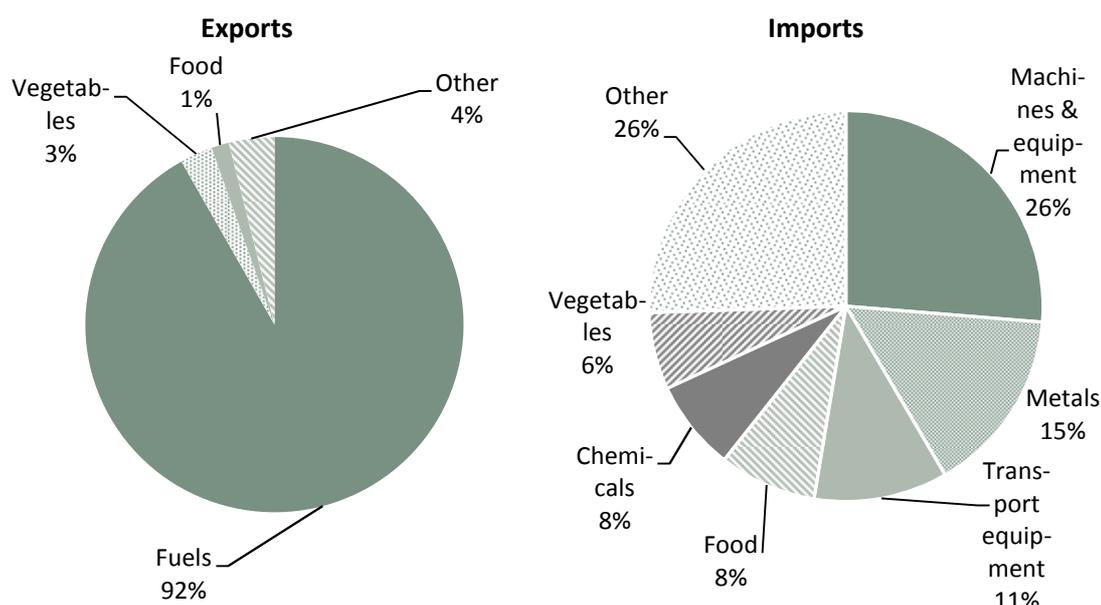
<sup>21</sup> Either using restored Armenia-Azerbaijan rail links or using a route from Russia to Armenia via Azerbaijan and Georgia.

### 4.3. Impact on Azerbaijan

#### Status quo

Exports of oil and gas are the economic backbone of Azerbaijan. Trade in goods accounts on average for 55% of GDP in 2012-2016. Goods exports alone amounted to 39% of GDP on average. The country thus features a large positive balance in trade in goods, which is however compensated by a deficit in services trade. The country was significantly affected by the oil price decline between 2014 and 2016 which led to a decrease of exports and a depreciation of the Manat's exchange rate versus the USD.

**Figure 4.3: Structure of Azerbaijan's trade in goods, 2016**

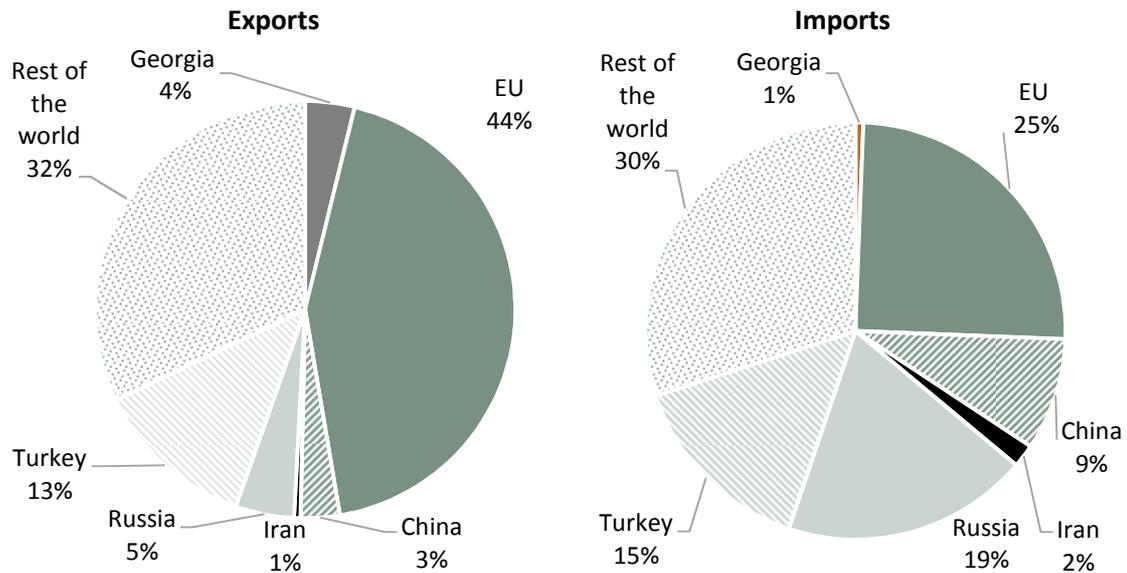


Source: UN Comtrade

In 2016, Azerbaijan exported goods worth USD 13.5 bn, 13% less than a year before. Exports are dominated by fuels, although the diversification of exports is a policy priority. Imports accounting to USD 8.5 bn in 2016 (a 8% year-on-year drop) are much more diversified with machines and equipment and metals being the most important import commodities.

Azerbaijan exports mainly to EU countries as well as diverse other countries in the world, a consequence of its main export good, fuels, being a global commodity. Georgia is the destination of 4% of Azerbaijan's exports (although a large share of this is in-kind compensation for the transit of oil and gas exports through Georgia). Turkey is a crucial partner country as the destination of 13% of exports and source of 15% of imports. Russia, itself a hydrocarbon extraction-based economy, is only important as a source country for imports (19%).

**Figure 4.4: Geography of Azerbaijan’s trade in goods, 2016**



Source: UN Comtrade

Azerbaijan has a **high level of tariff protection** with the average Most Favoured Nation (MFN) duty at 9% and higher duties on agricultural products. This higher protection is quite typical for an oil-based economy as resource exports tend to cause a high exchange rate, hence reducing the international competitiveness of the non-oil economy. Unlike its neighbours, the country is not a WTO member, although it has been steadily negotiating its accession since 1997, i.e. more than twenty years. One of the obstacles in negotiations is that Azerbaijan seeks to obtain the status of developing country in the WTO that would provide certain privileges, including prolonged implementation periods, an increased *de-minimis* level of the agricultural support, and provision of special assistance.

### Effect of conflict resolution

#### A. Gravity model analysis

Gravity model analysis predicts only a **share of Armenia in Azerbaijan’s exports** below 1%, approximately at par with Georgia and hence plausible. The results of the gravity model for trade with other partner countries indicate a more diversified trade structure than at present, especially with regard to exports. However, the existing geographical concentration of Azerbaijan exports is partially technically determined by pipeline structures etc., thus the predicted diversification may not be realistic even in the long run.

**Table 4.6: Gravity model, predicted and actual trade structure (imports and exports)**

	Predicted	Actual
<b>EU</b>	21%	35%
<b>Turkey</b>	7%	14%
<b>Russia</b>	24%	12%
<b>China</b>	7%	6%
<b>Iran</b>	6%	1%
<b>Armenia</b>	0.3%	0%
<b>Georgia</b>	0.8%	2%
<b>Rest of the world</b>	35%	30%

Source: own estimates

#### B. Trade complementarity analysis

Trade complementarity analysis is in tune with the gravity results, predicting only very small short to medium term potential for trade with Armenia. Our calculations yield possible **exports** to Armenia of only USD 12 m or about 0.1% of total annual exports, made up of a relatively wide range of goods with small volumes, of which 17% for self-propelled shovels (i.e. construction equipment) and 14% for oil cake (a by-product from vegetable or nut oil production used mainly as animal feed) are the largest. In no small part, the limited potential for additional exports is due to the fact that Armenia receives favourable fuel prices from Russia and hence has no economic incentive to switch supplier.

**Imports** from Armenia would be more significant at USD 83 m per year, 1% of total imports. As listed in Table 4.2, cigarettes would be the main import good, making up 36% of imports from Armenia.

#### C. Trade with third countries: transport routes analysis

Opening the border with Armenia would not significantly reduce **transport distances** with key trade partners for Azerbaijan. The routes through Georgia, even for trade with Turkey (benefiting from the new Baku-Tbilisi-Kars railway) are in most cases the shortest or the difference is negligible. As this railway goes through Armenian-populated regions of Georgia, a slight uptake of trade between these regions and Azerbaijan using the railway could be expected with conflict resolution. Overall, however, the opening of borders would not lead to increased trade of Azerbaijan with third countries.

#### D. Conclusion

Due to the small size of the Armenian economy, Azerbaijan would not substantially benefit from increased trade due to conflict resolution and opening of the border with Armenia. However, the re-opening of the Armenian-Azerbaijani border would particularly benefit the population living on both sides and help revive traditional trade patterns.

**Table 4.7: Impact on Azerbaijan**

	Impact on exports			Impact on imports		
	USD m	% of current exports	% of GDP	USD m	% of current imports	% of GDP
<b>Total</b>	<b>12</b>	<b>0.1%</b>	<b>0.03%</b>	<b>83</b>	<b>1%</b>	<b>0.2%</b>

Source: own calculations

## 5. Trade in services

### 5.1. Methodological note

As conflict resolution would permit a resumption of goods trade over opened borders, analysed in the previous chapter, **trade in services** between Armenia and Azerbaijan and Armenia and Turkey would also be resumed. Services trade will increase through two main channels. Firstly, the resumption of goods trade will directly cause an increased **trade in services linked to goods trade**, such as transportation and logistics services, insurance, business travel and other related activities. We calculate this impact through input-output analysis. This methodology uses input-output tables that disclose the use of services and other inputs when producing goods in individual industries. This effect is expected to arise alongside the development of trade in goods, between 1 to 5 years after the resolution of the conflict.

Secondly, conflict resolution will permit **direct bilateral trade in services**. We analyse three types of services, that together usually make up the vast majority of international services trade: travel (incl. tourism), transport and selected business services (ICT and other business services such as legal, consulting and accounting services). The increase in tourism is estimated based on an estimated potential increase in the number of tourists and their average spending in the country. For other sectors, we analyse the existing trade structure of each country, identify potential matches at the aggregate level and then make conservative estimates of potential impact. Increased direct bilateral services trade can be expected to materialise in the medium to long term, 5-10 years after the conflict resolution when the resolution of the conflict becomes credible and trade in goods links strengthen. Our methodology is presented in more detail in the annex.

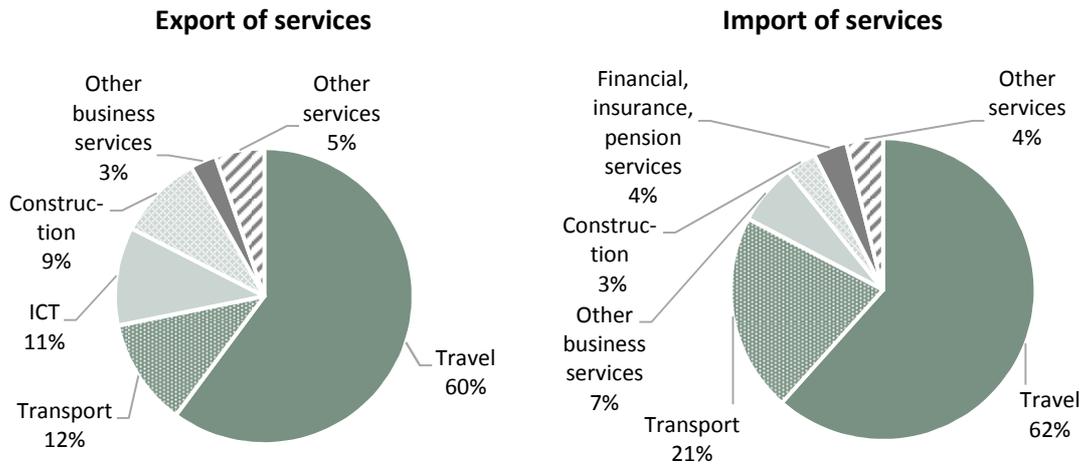
### 5.2. Impact on Armenia

#### Status quo

Services trade, especially exports, is important in the economy of Armenia. In 2016, exports of services amounted to USD 1.6 bn or 15% of GDP, a magnitude comparable with Armenia's exports of goods accounting for 17% of GDP. Import of services was USD 1.7 bn. Unlike trade in goods, only a small trade deficit of about USD 0.1 bn existed in services.

**Travel** is the dominant service traded by Armenia, accounting for 61% of total services trade. Versatile landscapes and rich cultural heritage make Armenia an attractive place for tourists, and unsurprisingly, Armenia defined the development of tourism as its state policy priority. At the same time, the extensive labour migration of Armenians to other countries explains why Armenia's services imports are also dominated by travel.

**Figure 5.1: Armenia's trade in services, 2016**

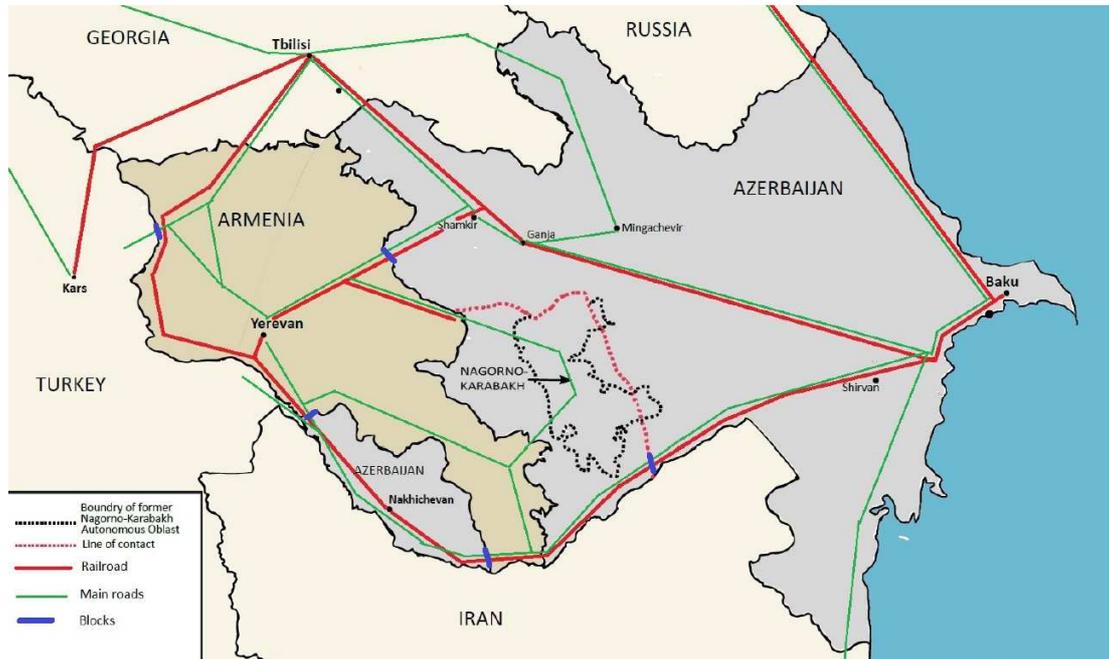


Source: UN Comtrade, ITC Trade Map

Armenia is a net importer of **transport services**. The development of the sector is heavily constrained by a mixture of physical and political constraints. The country is landlocked and has only two out of four of its international borders (with Georgia and Iran) open for trade. Direct land transportation between Armenia with Azerbaijan and Turkey is blocked. The mountainous terrain further restricts Armenia's attractiveness as a transit country for goods trade.

Georgia serves as the hub for Armenia's trade with its key partners – the EU and Russia – through road and sea transportation as well as pipelines. Most goods transport in and out of Armenia is conducted by roads; railways are used to a lesser extent. Georgia has no railroad connection with Russia after the connection through Georgia was cut during the Abkhazia conflict in the early 1990s. Many parts of the rail network inherited from Soviet times, with interlinkages with Azerbaijan and Turkey is presently of limited use. Large parts are blocked due to the conflict, including the railway through Nakhichevan. The development of routes entirely by-passing Armenia, such as the recent completion of the Baku-Tbilisi-Kars railway, significantly reduces the potential for attracting transit traffic through Armenia.

**Figure 5.2: Main international roads and railroads in Armenia and Azerbaijan**



Source: own display

Among **selected business services**, telecommunication, computer and information services accounted for 11% of Armenia’s total services exports in 2016, almost doubling in value over last five years. The increase is explained by the development of a competitive IT cluster in Yerevan. This sector’s development and exports have been stimulated by an influx of foreign investments, partly associated with the diaspora (e.g. Synopsis and Synergy companies owned by Armenian Americans) in early 2000.<sup>22</sup>

### Effect of conflict resolution

#### A. Travel

Trade in travel and tourism services would be the services trade most positively affected by conflict resolution through three channels:

1. Conflict resolution will make Armenia more **attractive for tourists**. The country would no longer be a conflict area and open borders with Azerbaijan allow tourists to visit both countries (plus Georgia) during the same trip. According to the Ministry of Internal Affairs of Georgia, in 2017, there were about 105 thousand tourists visiting Georgia and Armenia simultaneously, 100 thousand visiting Georgia and Turkey and 36 thousands visiting Georgia and Azerbaijan. Assuming that the number of visitors coming to Armenia and Azerbaijan would be at least half of Georgia-Azerbaijan tourists, Armenia could attract about 18 thousand more tourists and thus export USD 13.8 m of travel services in addition.

<sup>22</sup>OECD (2011).

2. The opening of borders can be expected to stimulate **personal travel of Armenians and Azerbaijanis**. Due to the conflict, about 360 thousand Armenians left Azerbaijan<sup>23</sup> and 200 thousand Azerbaijanis left Armenia<sup>24</sup>. The end of conflict and opening of borders would permit those who are willing to reconnect family or other social ties or visit former places of residence as well as burial places of ancestors and relatives. Assuming very conservatively that the opening of the border will stimulate only 1% of these people to travel per year,<sup>25</sup> we expect an increase in exports of travel services to Azerbaijan by USD 1.5 m and of imports by USD 4.8 m.
3. Increased goods exports to Azerbaijan and Turkey would cause an increase in **business travel** of USD 0.6 m in exports of business travel services to Turkey and USD 0.4 m to Azerbaijan. Imports of travel services as a corollary of increased goods trade will rise by USD 1.1 m in case of Turkey and mere USD 70 thousand in case of Azerbaijan.

In total, travel services exports would increase by USD 16.3 m per year (a 2% increase of total current exports services in this category), mostly generated by expected increase in 'transit' tourism. Imports will expand by USD 6.0 m.

#### *B. Transport*

As discussed previously, **goods transit** through Armenia will not significantly increase, as efficient other routes already exist, are developed and used. However, the restoration of **goods trade with Azerbaijan and Turkey** will cause quite sizeable exports of transport services to Azerbaijan of USD 3.3 m and to Turkey of USD 5.5 m per year, amounting to a 4.7% increase of transport services exports. Imports from Turkey would cause transport services imports to increase by USD 9.3 m and from Azerbaijan - by USD 0.6 m, together 2.7% of current transport imports.

#### *C. Selected business services*

The intensification of goods trade links will cause an increase in selected business services to Azerbaijan and Turkey by USD 2.9 m or 5.1% of selected business services exports, and an increase of imports of USD 3.2 m or 5.5% of selected business services imports.

#### *D. Conclusion*

Benefits of peace in service trade would be limited for Armenia. Services exports to Azerbaijan and Turkey would amount to USD 28.0 m (0.3% of GDP). Most gains are associated with the intensification of tourist flows. Imports would increase much more moderately at USD 19.1 m (0.2% of GDP). However, the increased tourist flows as well as the reestablishment of personal travel between Armenia and Azerbaijan could yield further, nonmaterial benefits as well. With conflict resolution, the retaliatory measures by

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<sup>23</sup> <http://ec.europa.eu/social/BlobServlet?docId=8829&langId=en> Note that these figures only include those people who left one country to another and hence differ from the statistics including internally displaced people in Chapter 3.

<sup>24</sup> <http://ec.europa.eu/social/BlobServlet?docId=8832&langId=en>

<sup>25</sup> We make a conservative assumption here taking half of the rate of circular labour migration in Armenia.

Azerbaijan against individuals travelling without its permission to Nagorno-Karabakh from Armenia would be lifted, unleashing further the region’s tourism potential, which would also benefit tourism flows to Armenia (as well as Azerbaijan).

**Table 5.1: Impact on Armenia**

	Impact on exports			Impact on imports		
	USD m	% of current value	% of GDP	USD m	% of current value	% of GDP
<b>Travel</b>	16.3	1.0%	0.2%	6.0	0.3%	0.1%
<b>Transport</b>	8.8	0.5%	0.1%	9.9	0.6%	0.1%
<b>Sel. business services</b>	2.9	0.2%	0.0%	3.2	0.2%	0.0%
<b>Total</b>	<b>28.0</b>	<b>1.7%</b>	<b>0.3%</b>	<b>19.1</b>	<b>1.1%</b>	<b>0.2%</b>

Source: own calculations

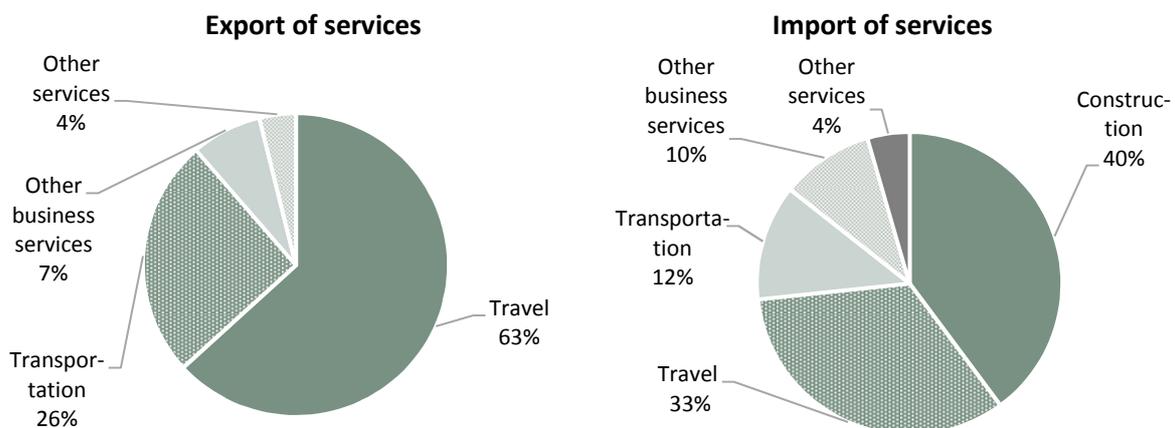
### 5.3. Impact on Azerbaijan

#### Status quo

**Azerbaijan is a net importer of services** with exports at USD 4.4 bn in 2016 and imports at USD 7.5 bn. Exports of services are much smaller compared to exports of goods: 12% vs 35% of GDP. However, this is mainly due to the enormous importance of fuels exports, accounting for over 90% of goods exports.

The **main export category in Azerbaijan’s service exports is travel**, accounting for 63% of total exports, out of which three quarters are personal travel and one quarter is business travel. In imports, travel services are less important in relative terms due to large imports of construction services (e.g. projects in the oil and gas sector).

**Figure 5.3: Azerbaijan’s trade in services, 2016**



Source: UN Comtrade, ITC Trade Map

**Transport** is the second most important services export and the third largest category of services imports. Azerbaijan is a net exporter of oil and gas and thus extensively uses

pipeline services for transporting its oil and gas exports. Also, recently Azerbaijan has been actively developing its transport infrastructure with the aim to become a regional hub on the Trans-Caspian Transportation Route (TITR), a part of the Chinese Belt and Road project, a goods transport route from the Far East to Central Asia, the Caucasus and Europe. The Baku-Tbilisi-Kars (BTK) railway was launched in late 2017. Baku seaport and the port in Alat, still under construction, allow processing shipments from other Caspian countries, in particular Kazakhstan, while Georgia actively exploits Batumi and builds Anaklia port on the Black Sea to connect the TITR with Europe.

### **Potential impact**

#### *A. Travel*

**Tourists** interested in visiting simultaneously several countries in the region are estimated to be at least 18 thousand per year. In this case, additional revenues generated by them constitute about USD 16.8 m or about 0.6% of travel exports. Exports of business travel services associated with goods trade will increase only by a minor USD 0.06 m, while imports will increase by USD 0.4 m. Following the same logic as for Armenia, **resumed personal travel of Armenians** and Azerbaijanis is estimated to increase exports of travel services to Armenia by about USD 4.8 m and imports from Armenia by about USD 1.5 m. In total, travel services exports would increase by USD 21.7 m per year, mostly due to increased tourist interest. Imports will only expand by USD 1.9 m.

#### *B. Transport*

Exports of **transport services** due to goods trade with Armenia will increase by 0.5 m or 0.1% of sector exports in 2016, while imports will increase by USD 3.7 m, 0.4%. As no significant increase of goods transit trade is likely to occur due to opening of the border with Armenia, no increased trade in transport services due to increased goods traffic is expected.

#### *C. Selected business services*

The restoration of trade flows after conflict resolution with Armenia is estimated to result in USD 0.1 m increase in exports of these services and imports of USD 0.9 m, a tiny increase compared to total value of sector's trade.

#### *D. Conclusion*

Quantitative gains in services trade for Azerbaijan would be negligible. Most of the gains would be due to increased tourism. The tourism potential in Nagorno-Karabakh would contribute to the increase of tourism flows to Azerbaijan, too.

**Table 5.2: Impact on Azerbaijan**

	Impact on exports			Impact on imports		
	USD m	% of current value	% of GDP	USD m	% of current value	% of GDP
<b>Travel</b>	21.7	0.51%	0.06%	1.9	0.03%	0.01%
<b>Transport</b>	0.5	0.01%	0.00%	3.7	0.05%	0.01%
<b>Selected business services</b>	0.1	0.00%	0.00%	0.9	0.01%	0.00%
<b>Total</b>	<b>22.3</b>	<b>0.52%</b>	<b>0.06%</b>	<b>6.5</b>	<b>0.09%</b>	<b>0.02%</b>

Source: own calculations

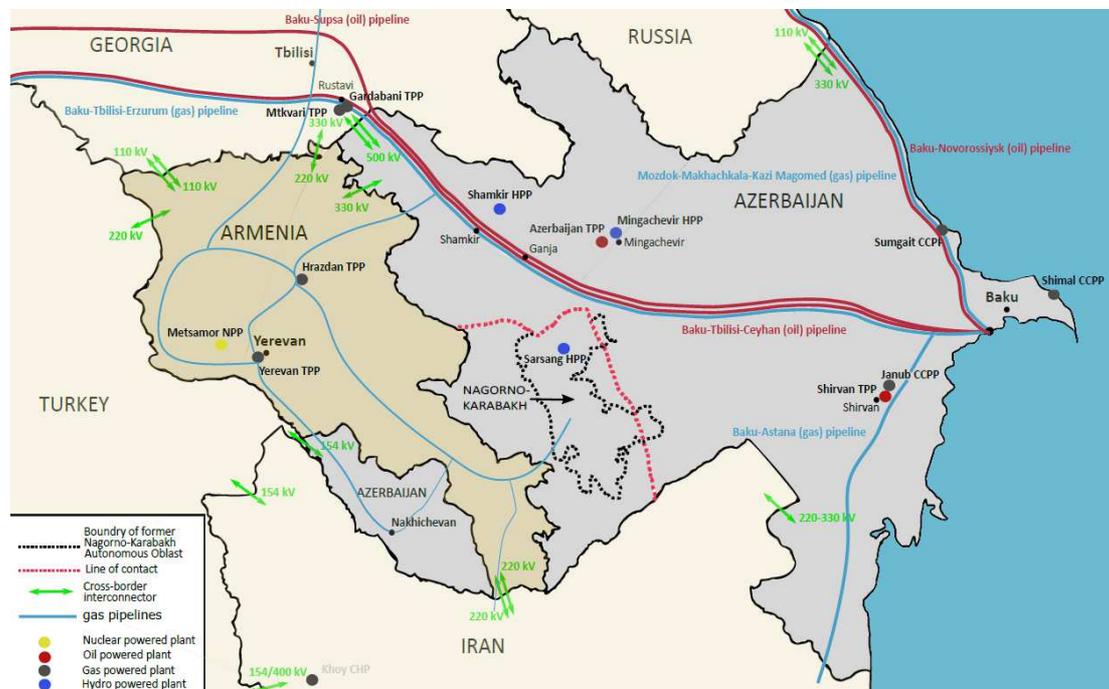
## 6. Energy and water

### 6.1. Methodological note

This chapter aims to identify benefits for Armenia and Azerbaijan arising from increased cooperation in the electricity, gas and water sector. Most benefits would arise from using currently underexploited complementarities between the two countries and in the region. To analyse the benefits of cooperation we first explore the status quo in the region and analyse how a cooperative approach could make both sides better off. Based on this we discuss, for both countries individually, the potential benefits from increased cooperation in each sector.

The resolution of the political conflict can enable different modes of energy and water sector cooperation between Armenia and Azerbaijan, the use of Nagorno-Karabakh resources, as well as in the wider regional picture including Turkey, Iran and Russia. We will describe here the most benign scenario we deem imaginable: a fully synchronised regional electricity market; purely commercially based gas and oil exchanges and jointly agreed management of water resources. If ever, such cooperation will not arise overnight. The setting up of a functioning framework and institutions for such cooperation can easily take a decade. And if not enough trust between all parties can be built, cooperation might be much less intensive.

**Figure 6.1: Map of main energy infrastructure in the region**



Source: Own display

## 6.2. Regional Cooperation

### Electricity - Status quo

Armenia and Azerbaijan feature quite different electricity production mixes. Azerbaijan relies on 80% gas, while Armenia uses a combination of hydro, nuclear and gas plants. The two countries do not directly exchange electricity (the transmission lines have been cut). And also in general, electricity exchanges in the Southern Caucasus are relatively small and often based on inflexible bilateral arrangements. When excluding the gas-for-electricity barter between Armenia and Iran, the hydro-power-rich country only trades 5% of its electricity consumption. One reason is that its transmission links to Turkey and Azerbaijan are offline. Azerbaijan's electricity trade accounts for a mere 2% of consumption, as it transforms valuable domestic oil and gas into electricity for domestic usage. Only hydro-power-rich Georgia – that invested substantially in interconnection and tries to develop a functioning electricity market – trades more than 10% of its consumption with four partners (Armenia, Azerbaijan, Turkey, Russia). This is, however, still little compared to hydro-power rich countries in Europe – such as Norway and Switzerland (see Table 6.2).

**Table 6.1: Electricity exports, GWh 2016**

From \ To	Georgia	Armenia	Azerbaijan	Turkey	Russia	Iran
<b>Georgia</b>	-	140/120	5/7	<b>274/225</b>	48/50	-
<b>Armenia</b>	40/NA	-	54/NA*			<b>1047/NA</b>
<b>Azerbaijan</b>	69/120	NA/49*	-	<b>381/646</b>	119/149	24/NA
<b>Turkey</b>	-	-	-	-	-	-
<b>Russia</b>	<b>436/347</b>	-	61/61	-	-	-
<b>Iran</b>	-	NA /85	NA/ 23	-	-	-

Source: Comtrade

Note: Reported by exporting country / reported by importing country; \*Indirect trade, "–" = no trade

### Electricity – potential benefit of cooperation

As the generation mix is quite different between the countries, there should be substantial electricity trade potential in the region. One indication is the relatively low utilisation of existing generation capacities (see Table 6.2).

**Table 6.2: Generation capacity utilisation and trade/consumption 2015**

	Arme- nia	Azer- baijan	Georgia	Iran	Turkey	Norway	Switzer- land
<b>Capacity utilisation</b>	27%	49%	32%	53%	61%	51%	59%
<b>Trade/consumption</b>	20% (5%*)	2%	13%	4%	4%	23%	102%

Source: WRI for capacities and IEA for total production

Note: \*5% excluding the gas-for-electricity barter-deal based electricity exchange with Iran

From a technical and economic standpoint this could be best achieved by synchronising the national electricity systems and creating a regional market. In such a system additional demand in one country can be easily provided by increasing production in another country. Currently, there are three synchronous areas in the region: (1) Russia, Georgia and Azerbaijan; (2) Turkey – which happens to be synchronised with the continental EU network; and (3) Iran and parts of Armenia. In addition, there are asynchronous connections between Turkey and Georgia.

There are currently ongoing discussions to connect the region, either along the north-south axis (Iran-Armenia-Georgia-Russia) or the east-west axis (Azerbaijan-Georgia-Turkey). Either project might end up excluding some countries. Conflict resolution could, instead, enable creating a regional synchronisation area that could benefit each partner. Such full synchronisation will require investments in the involved countries, sufficient time to properly prepare the synchronisation and a joint institution that ensures technical coordination. The existing preparations on the Iran-Armenia-Georgia-Russia synchronisation project and on Azerbaijan-Georgia-Turkey synchronisation project could form the basis for this regional project.

Making Armenia and Azerbaijan part of an integrated electricity market that includes the Russian Federation, Iran and Turkey will allow substantial cost savings for all parties. If a regional market arrangement were to replace the inflexible and inefficient barter deals between Iran and Armenia and between Georgia and Armenia<sup>26</sup>, it would ensure that only the lowest cost plants in the region would be used to meet the demand at any given time – saving fuel and investment cost. That is, plants with high variable cost (gas and coal fired) might run less, being replaced by cheaper plants (hydro, wind, solar, nuclear) in other countries. Costly national excess capacities would be needed less often as peak demand situations may be addressed through market-based imports. Furthermore, the larger market could accommodate more renewables, such as solar and wind, that are cheap, but also volatile. Thereby, generation shortfalls due to windless and shady hours in one part of the South Caucasus could be compensated through wind and solar based power generation in

<sup>26</sup> According to the scheme, in the summer Armenia buys an excess of cheap electricity produced by Georgian hydroelectric power stations. In the winter, it sells electricity to Georgia. <https://jam-news.net/?p=69454>

other parts of the region, or through more flexible hydro resources. Another benefit is that a regional market would allow competition between nationally dominant generators from different countries. This is likely to induce efficiency improvements and reduce generation cost. Finally, a well-managed larger system would increase supply security for all parties, as there are more possibilities to resolve individual problems.

### Gas -Status quo

The region features three of the world’s biggest natural gas producers: Russia, Iran and Azerbaijan; as well as three countries that depend on gas imports: Armenia, Georgia and Turkey. Gas trade in the region is politicised. Armenia does not buy gas from Azerbaijan and gas transit from Azerbaijan to Turkey circumvents Armenia. At the same time, Georgia tries not to buy gas from Russia.

**Table 6.3: Gas exports, million cubic meters, 2016**

From \ To	Georgia	Armenia	Azerbaijan	Turkey	Russia	Iran
<b>Azerbaijan</b>	<b>NA/735</b>			NA/2	NA/23	
<b>Russia</b>	10/80	<b>6/1348</b>		<b>460/662</b>		
<b>Iran</b>		<b>NA/265</b>			NA/1	

Source: Comtrade

Note: Reported by exporting country / reported by importing country. UN Comtrade reports „kg“, but the numbers appear to refer to million cubic meters

### Gas – potential benefit of cooperation

Resuming direct gas exports from Azerbaijan to Armenia would benefit both sides (see country chapters).

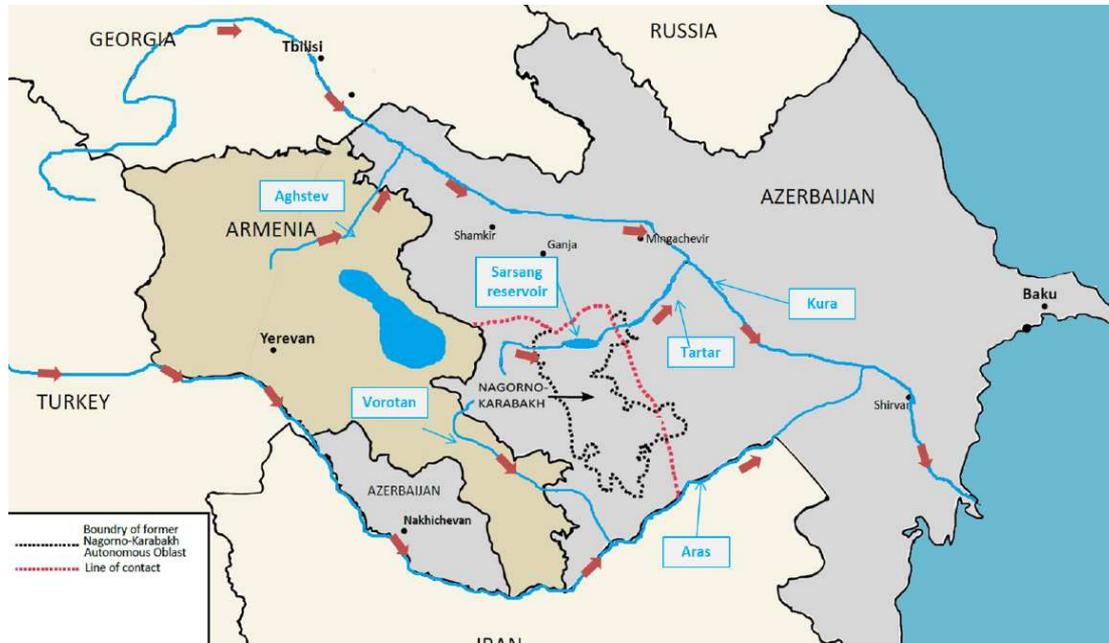
### Water - Status quo

Georgia, Armenia and Azerbaijan are part of the Kura–Aras basin – named after the two main rivers that respectively run from Turkey, Georgia and Armenia to Azerbaijan. The basin is faced with substantial water quantity and quality problems. In general terms, Georgia has a lot of water, Armenia has some shortages due to poor management, and Azerbaijan has a lack of water; moreover, its groundwater is of poor quality. In Armenia, the main use of the Kura–Aras water is agriculture and industry. In Azerbaijan, it is the primary source of freshwater, and 70% of drinking water comes from these rivers.<sup>27</sup> Only two reservoirs exist on the main rivers Kura and Araks, but more than 130 major reservoirs exist on the tributaries (most water is held in 11 reservoirs with a total 1.1 million m<sup>3</sup> in Armenia and 7 reservoirs with a total 20.5 million m<sup>3</sup> in Azerbaijan). Azerbaijan complains that especially

<sup>27</sup> <http://www.fao.org/nr/water/aquastat/basins/kura-araks/index.stm>

the water supply from the Sarsang reservoir in Nagorno-Karabakh for downstream Azerbaijani use is reduced in summer when water would be most needed and only resumed in autumn.<sup>28</sup> Currently, there is no cooperation on shared water resources across the conflict divide. Instead, water issues are used as political arguments.<sup>29</sup>

**Figure 6.2: Kura-Aras basin**



Source: own display

### Water – potential benefit of cooperation

Joint management of shared water resources as well as the Sarsang Dam<sup>30</sup> can lead to a more efficient usage of scarce water. For Armenians to cede water that is currently inefficiently used by them to Azerbaijan, there would need to be some form of a deal. Azerbaijan could, for example, make investments into upstream water infrastructure or supply natural gas in return for ensuring certain water quantity and quality measures. Such a coordinated approach might result in better water quality in the entire region.

<sup>28</sup> <https://eurasianet.org/s/azerbaijan-can-a-water-reservoir-help-resolve-the-karabakh-conflict>

<sup>29</sup> <https://www.azernews.az/aggression/110284.html>; Vogtmann and Dobretsov (2005).

<sup>30</sup> „Built in 1976 on the Tartar River at an altitude of 726 metres above sea level, the Sarsang reservoir used to provide water for drinking and irrigation to the territory of Nagorny Karabakh as well as six adjoining regions of Azerbaijan. It had the capacity to hold 560 m cubic metres of water.“ <https://iwpr.net/global-voices/water-politics-angers-armenia>

### 6.3. Impact on Armenia

#### Electricity

Armenia is importing natural gas and exporting electricity produced by an old nuclear plant, several hydro plants and natural gas. Existing generation capacities have a very low utilisation, but the desired closure of Metsamor NPP, which is both technically obsolete and situated in a highly earthquake-prone area, as well as other aging plants (Hradzavan TPP was commissioned in 1966) and the increasing demand will require investments. Current per capita electricity consumption in Armenia and Azerbaijan is significantly below that of neighbouring countries (see Table 6.4) - let alone EU countries such as Germany (6.3 MWh per capita).

**Table 6.4: Per capita electricity demand 2015**

in MWh/capita	Georgia	Armenia	Azerbaijan	Turkey	Iran
<b>Electricity consumption</b>	2.5	1.8	1.8	2.7	2.6

Source: IEA

Integration in a regional market will allow Armenia to rely on imports in the dry season, thereby enabling the country to defer investment in expensive new power plants.<sup>31</sup> At the same time, it will allow Armenia to export electricity to its neighbours when excess electricity from hydro and potentially other renewable sources is available. Overall, increasing efficiency and competition in a regional market might substantially reduce generation cost.

#### Gas

Armenia is importing gas from Russia (through Georgia that receives 10% of the gas as transit revenue) and Iran (based on a barter deal in exchange for electricity). Both contracts are not commercially priced as prices are not determined between two commercially minded companies, but between state-owned companies and the respective governments. The Iran-Armenia contract does not have a price, but is barter against electricity.<sup>32</sup> The import from Russia is at a relatively favourable price of 150 USD per thousand cubic meters.

<sup>31</sup> In the past, the construction of a new 1,000 MW nuclear power plant at cost around USD 5 bn was discussed: <http://arka.am/ru/news/economy/15157>

<sup>32</sup> <http://iran-daily.com/News/208509.html> [the article says 3 kWh of electricity for 1 million m<sup>3</sup> of gas, but it more likely is 3 kWh of electricity for 1 m<sup>3</sup> of gas. If Armenia's power plant has a 40% efficiency, it could produce about 3.9 kWh for 1 m<sup>3</sup> of gas; receiving hence 0.9 kWh of electricity for the capital intensive transformation service.

**Table 6.5: Reported export prices**

USD/mcm	2015	2016	2017	2018
Azerbaijan-Georgia	180	165	n/a	120 <sup>a)</sup> /143 <sup>b)</sup>
Russia-Georgia	210	215	185	185
Russia-Armenia	165	150	150	150
Azerbaijan-Turkey	340	170	195 <sup>c)</sup>	n/a
Russia-Turkey	418	180	200 <sup>c)</sup>	n/a
Iran-Armenia	Barter			

Source: Greenfields petroleum investor update; AZ Tariff Council; media reports

Note: a) for households, b) for thermal stations, c) average price for 1Q-3Q 2017

Conflict resolution could allow Armenia to buy gas from Azerbaijan, thus providing it with more options regarding energy supply. This diversification of suppliers will facilitate obtaining more favourable gas supply conditions for Armenia.

In the longer term, conflict resolution could even allow Armenia to become a transit country for gas from the major producers Iran and Azerbaijan to Turkey and Nakhichevan.

Finally, a more predictable and resilient gas import situation could allow Armenia to develop a post-nuclear energy scenario.

### **Water**

Armenia could offer cooperation on the management and quality of shared water resources in return for benefits in other areas (e.g., investments or gas imports from Azerbaijan).

## 6.4. Impact on Azerbaijan

### Electricity

Power generation in Azerbaijan is dominated by domestic gas – but Azerbaijan also still burns oil to produce electricity. The sector is very isolated – cross-border trade in 2015 only amounted to 2% of domestic consumption (see Table 6.2). For supplying Nakhichevan, Azerbaijan has to rely on Iran.

Regional electricity market integration would allow Azerbaijan to import power when it is cheap in neighbouring countries, and thereby save valuable gas and oil for exportation. Furthermore, the existing fossil capacities can be used to balance the seasonality in the hydro-production in Georgia and Armenia – earning a decent price for electricity exports.<sup>33</sup> Regional integration will also allow Azerbaijan to integrate more cost-efficient renewables into the system and enjoy a higher security of supply.

Finally, conflict resolution would make it easier to supply Nakhichevan with electricity.

### Gas

Azerbaijan is a major gas producer and it exports about half of its production. Exports through Russia were replaced by exports through Georgia.

Through conflict resolution, Azerbaijan could get direct access to the Armenian market. This might allow a higher margin than exports that require expensive transit routes (through Georgia and Turkey). An alternative outlet, possibly involving construction of a link to Turkey<sup>34</sup>, could also provide Azerbaijan leverage in negotiations with other consumers and transit countries (Turkey/Georgia).

Finally, conflict resolution would make it easier for Azerbaijan to supply both Nagorno-Karabakh and Nakhichevan with natural gas.

### Water

Water is scarce in Azerbaijan and the country's main freshwater source is the Kura–Aras basin (70% of the drinking water). Due to neglect upstream, the quality and quantity of water arriving in Azerbaijan – where it is needed for agriculture, industry and the population – is insufficient.

Conflict resolution could allow a mutually beneficial arrangement that could for example consist of Azerbaijan supporting upstream investments into better water management in Armenia and of Nagorno-Karabakh resources in return for measurably higher quantities and quality of water.

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<sup>33</sup> A detailed quantification would require access to hourly production and consumption data in the countries of the region.

<sup>34</sup> <http://asbarez.com/77667/eu-envoy-says-armenia-may-be-route-for-future-pipeline/>

### 6.5. Summary and comparison of effects

Conflict resolution would allow Armenia and Azerbaijan to exploit substantial complementarities in their respective water and energy sectors. Azerbaijan could find an attractive market for its natural gas and develop a new exporting route; benefit from lower cost electricity imports and its ability to generate and export electricity when prices in the region are high. Conflict resolution would be the political requirement for creating a regional electricity market that would allow Armenia and Azerbaijan to better use their existing power plants and reduce the need to invest in rarely-used peaking units. Especially Armenia would benefit from integration in a larger electricity market. Armenia will also benefit from the ability to obtain gas from Azerbaijan - as this might for example increase pressure on other suppliers to offer better conditions.

A coordination of the water management in the region would not only bring substantial environmental benefits. It would also allow Azerbaijan to receive increased quantities and quality of water if an agreement can be found to incentivise Armenia to better manage its water resources. Peace would enable the population living along the current Line of Contact and on both sides of the Armenia-Azerbaijani border to enjoy safe access to water sources and result in economic, in particular agricultural, opportunities.

**Table 6.6: Comparison of effects of cooperation**

	Electricity	Gas	Water
Armenia	Large (+++)	Moderate (++)	Insignificant (0)
Azerbaijan	Moderate (++)	Small (+)	Large (+++)

*Source: own display*

The most substantial potential benefits require investments and active (institutionalised) cooperation. In effect, Armenia and Azerbaijan would have to make an, at least implicit, package deal of “energy for water”, trading cooperation in the electricity and gas sectors, mainly benefiting Armenia, for cooperation in water sector, where the main benefits would accrue to Azerbaijan. The necessary trust-building will require time, and hence results should not be expected overnight. Consequently, thinking about suitable schemes with technical experts on both sides should start as early as politically possible, in order to be able to reap the significant potential benefits as quickly as possible.

## 7. Financial markets and investment

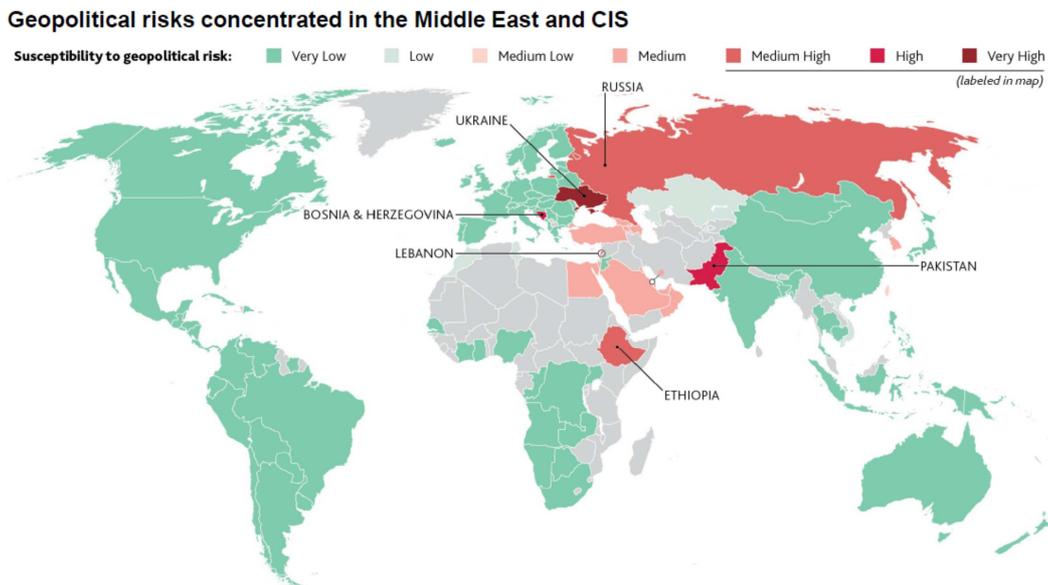
### 7.1. Methodological note

Both Armenia and Azerbaijan are part of the global financial system. Non-residents hold substantial amounts of financial and real assets in both countries; likewise, residents of both countries own different kinds of foreign assets.

**Country risk** is an important determinant of the size, composition and cost of the inflows of foreign capital – direct investment, bonds, loans, and shares. Country risk<sup>35</sup> refers to the broad risk of doing business in a particular country from a cross-border perspective, which includes the operating environment, the legal regime, the tax system, risk of capital controls as well as political risk. A related concept is sovereign risk, which focuses more narrowly on the capacity and the willingness of the sovereign to honour its debt obligations.

On a conceptual level, political risk can be broken down into two components: domestic political risk (e.g. terrorism, political instability) and geopolitical risk (e.g. unresolved political or military issues with neighbouring countries). Geopolitical risk is particularly relevant in the CIS and the Middle East (see Figure 7.1).

**Figure 7.1: Overview of geopolitical risk**



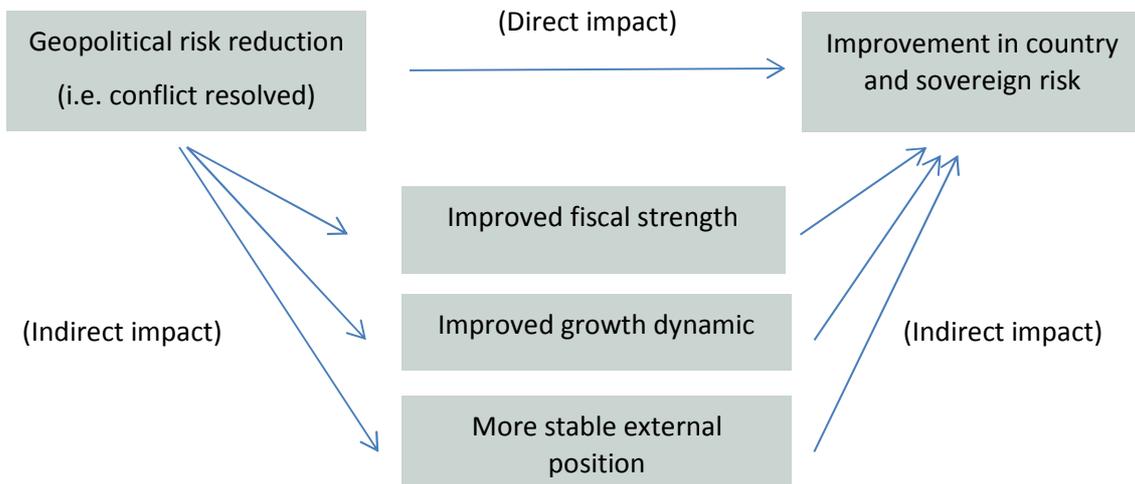
Source: Moody's (2016a)

Geopolitical risk affects country risk and sovereign creditworthiness not only directly, but also indirectly, e.g. via economic and financial transmission channels (e.g. economic

<sup>35</sup> See Fitch (2017).

strength, fiscal strength).<sup>36</sup> Figure 7.2 shows how the main assumption of this study, a resolution of the Nagorno-Karabakh conflict involving Armenia and Azerbaijan, translates into an **improvement in country and sovereign risk** in both countries.

**Figure 7.2: Stylized transmission channel**



*Source: own display*

A lower **country risk premium** affects the financial and real investment decisions by foreign investors in both countries across all asset-classes:

- Bonds, both sovereign and corporate
- Cross-border bank loans to domestic public and private entities
- Equity, both foreign direct investment and portfolio investments

Thus a reduction in risk due to the resolution of the conflict lowers the **cost of foreign capital** and increases its availability. In the private sector, higher inflows of foreign capital contribute to higher investment and consumption. In the public sector, financing costs decline, e.g. when sovereign Eurobonds or local bonds can be issued at lower interest rates.

In the following sections, we will look at the likely impact of a conflict resolution on the financial markets of Armenia and Azerbaijan separately. We follow an approach based on the methodology of rating agencies that include political risk in their assessment of sovereign risk.<sup>37</sup>

<sup>36</sup> Some of these indirect effects (e.g. fiscal strength) are analysed in other chapters of this study.

<sup>37</sup> Moody's (2014) identifies geopolitical risk as one of the four main drivers of sovereign creditworthiness.

## 7.2. Impact on Armenia

Geopolitical risk is currently included in the sovereign ratings published by the major **global rating agencies**. The following table gives an overview of the current sovereign credit ratings of Armenia.

**Table 7.1: Sovereign credit ratings for Armenia**

Agency	Local Currency	Foreign Currency	Outlook
Fitch	B+	B+	Positive
Moody's	B1	B1	Positive

Sources: Moody's, Fitch

Note: Armenia is not rated by Standard and Poor's

Both agencies rate sovereign debt identical (B1 is the same as B+ when expressed in a common rating scale)<sup>38</sup> as “highly speculative”, with a positive outlook. The respective rating reports<sup>39</sup> mention geopolitical tensions with Azerbaijan explicitly as a relevant political risk factor and credit challenge.

How would a removal of these tensions affect the credit ratings for Armenia? Both agencies have their own methodologies to account for political (and other) risk factors, involving a mixture of quantitative and qualitative factors.<sup>40</sup> However, they tend to come to similar conclusions (as Table 7.1 also suggests).

Given the importance of geopolitical risk, and taking into account the general stickiness of ratings (i.e. they tend to change only gradually), we think the likely overall impact of the removal of the geopolitical risk factor on Armenia's rating is a **rating upgrade** by one notch, i.e. from B+/B1 to BB-/Ba3.<sup>41</sup> This would improve the rating from “highly speculative” to “non-investment grade speculative”. The upgrade would take place in the medium term, once the conflict is permanently resolved and the associated economic benefits become visible.

How would a rating upgrade affect financial markets and capital inflows? The total stock of foreign liabilities (and assets) at market values is recorded in the International Investment Position (IIP) where we focus on the main categories on the liability side:

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<sup>38</sup> We provide an overview of the rating scale for each agency in the Annex.

<sup>39</sup> Fitch (2018a), Moody's (2018a).

<sup>40</sup> Political risk is also assessed via a mix of qualitative and quantitative factors. In the latter case, the World Bank Governance Indicator “Political Stability and the Absence of Violence” is used by Fitch, which itself is a statistical aggregation of perceptions of various governance aspects collected from a wide range of private and public sources (Fitch, 2017).

<sup>41</sup> This assessment is based on a) the sovereign rating methodologies mentioned above and b) discussions with rating analysts.

- Foreign direct investment (equity and shareholder loans)
- Portfolio investment (shares and bonds)
- Other investment (loans)

For the latest available date (3Q2017), Armenia had **gross liabilities** of USD 13.4 bn (116% of 2017 GDP). The majority (58%) were other investments (mainly loans, often issued to the sovereign on concessional terms), followed by FDI (34%). Portfolio investments, e.g. sovereign Eurobonds issued by Armenia, played a much smaller role at 8%.

A rating upgrade by one notch would bring Armenia into the same category as Georgia<sup>42</sup>. The current yield spread between sovereign Eurobonds of both countries<sup>43</sup> is 100 base points. Thus, Armenia's interest rate on new Eurobonds could be reduced by 1 percentage point. Currently, the country has two sovereign Eurobonds outstanding (USD 1 bn combined outstanding volume); this would translate into annual **fiscal savings** of about USD 10 m (or USD 100 m accumulated over an assumed 10-year maturity). Similar savings could be expected on non-concessional loans, which are an important source of external funding.

Turning to the **economic impact** of lower cost of capital, foreign direct investment would also be positively affected as foreign investors would apply a lower discount rate to their potential investment projects, leading to an increase in FDI. The impact on the FDI inward stock has been quantified in previous work by Banaian/Roberts (2007), which found a strong empirical relation between a reduction in political risk and an increase in the FDI stock. They concluded that a reduction in conflict risk by 25%<sup>44</sup> will boost the FDI stock by 50%.<sup>45</sup> Following this approach, what would be the impact on GDP if the FDI stock (USD 4.6 bn) increases by 50%? Based on a simple Cobb-Douglas production function, we provide in Table 7.2. some plausible range for an increase in GDP.

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<sup>42</sup> We use Georgia as a benchmark as it is a neighbour that shares a common past with Armenia. Using the rating peer group would involve many smaller countries around the globe (e.g. Seychelles, Dominican Republic, Bangladesh) for which data are not readily available.

<sup>43</sup> We use Armenia Sep-2020 and Georgia April-2021 for this exercise. This serves as a very rough estimation, as yield spreads vary over time and are influenced by a multitude of other factors, not just ratings. However, the yield-spread to Georgia was relatively stable over time.

<sup>44</sup> Based on 22 risk indicators compiled by the International Country Risk Guide (ICRG).

<sup>45</sup> The results are taken from a cross-sectional regression involving a sample of more than 110 countries. The empirical relationship between conflict risk reduction and resulting FDI increase by 50% is thus applicable for both Armenia and later Azerbaijan (See Table 3.1 in Banaian and Roberts (2007)).

**Table 7.2: Impact of 50% increase in FDI stock on GDP**

Capital-Output-Ratio (K/GDP)	Implied value of K (USD bn)	% increase in K due to 50% increase in FDI	% increase in GDP
2.0	23.1	10.0%	6.0%
2.5	28.9	8.0%	4.8%
3.0	34.6	6.6%	4.0%
3.5	40.4	5.7%	3.4%

Source: Own calculations based on Banaian and Roberts (2007)

Note: As the exact capital-output-ratio is not known, we provide a range that covers 68% of 71 developing countries in a dataset constructed by the World Bank (1993). The average value was 2.8. We use a coefficient of 0.6 as the share of capital in national income in the production function, which is in line with emerging markets, and nominal GDP of USD 11.548 bn (2017). Note that we make the simplifying assumption that an increase in the FDI stock translates into an equivalent increase in the capital stock, which may not be the case in practice, as both variables differ conceptually.

The **higher FDI stock will lift GDP** by 3.4% - 6.0%, depending on the assumed size of the overall domestic capital stock. As Banaian and Roberts (2007) note, this probably understates the total economic effect of the reduction in political risk: first, FDI is not just “capital” but usually associated with further productivity- and efficiency-enhancing properties that will over time spill-over to the domestic economy<sup>46</sup>. Second, also the domestic component of the capital stock will react to the new situation with lower cost of capital. All this would help to lift the economy-wide gross investment ratio in Armenia, which is at 18.5% of GDP rather low. By contrast, the median investment ratio of the countries with the same investment rating as we expect for Armenia after conflict resolution is 20.9% of GDP; in neighbouring Georgia, it is 29.8% of GDP.

### 7.3. Impact on Azerbaijan

Azerbaijan is rated by all three major agencies:<sup>47</sup>

**Table 7.3: Sovereign credit rating for Azerbaijan**

Agency	Local Currency	Foreign Currency	Outlook
<b>Fitch</b>	BB+	BB+	Stable
<b>Moody's</b>	Ba2	Ba2	Stable
<b>Standard and Poor's</b>	BB+	BB+	Stable

Source: Moody's, Fitch, Standard and Poor's

<sup>46</sup> This is confirmed by our own recent research on the impact of FDI on Ukraine and Moldova: FDI companies were found to be significantly more productive than domestically-owned companies, both in terms of labour as well as in total factor productivity. See German Advisory Group Ukraine (2018), German Economic Team Moldova (2017).

<sup>47</sup> Fitch (2018b), Moody's (2018b), Standard and Poor's (2018).

Compared with Armenia, two observations stand out. First, **Azerbaijan is rated several notches higher than Armenia**. However, this is not due to the geopolitical risk factor, which is the same as in Armenia, but due to other economic and financial factors, e.g. its stronger external balance and public finances. Second, in the case of Azerbaijan, there are slight differences in the opinions of the rating agencies. While Fitch and Standard and Poor's have an identical rating, Moody's rates the country one notch below the other two agencies.

Following the same logic as in the case of Armenia, we assume that a resolution of the conflict will lead to a **rating upgrade by one notch for each agency**. This implies the rating moves from BB+/Ba2 to BBB-/Ba1. In the case of Fitch and Standard and Poor's, this moves Azerbaijan from "non-investment grade speculative" to „lower medium grade“, which implies investment grade status, which is an important feature for many investors, as they are only then allowed to invest into such assets. In the case of Moody's, a one-notch upgrade would still leave the country in "non-investment grade speculative".

Turning to the **structure of liabilities** to non-residents, the analysis is complicated by the fact that Azerbaijan does not publish its International Investment Position<sup>48</sup>. Only for some components, data and estimates exist. The FDI inward stock (2016) is quite substantial at USD 26.7 bn (71% of GDP); gross external debt (i.e. loans and bonds) is estimated at USD 19 bn (46.3% of GDP).

A rating upgrade by one notch would take Azerbaijan into the same rating category as Russia. Comparing again the yield spread of sovereign Eurobonds of both countries,<sup>49</sup> this translates again into a reduction in interest rates (i.e. coupons) on new Eurobonds of about 100 base points (=1 percentage point).

Azerbaijan is quite active in the Eurobond market, with issues of the sovereign, quasi-sovereigns and banks outstanding. If we concentrate on sovereign and quasi-sovereign<sup>50</sup> issues only, the current outstanding volume is USD 5 bn, split between sovereign issuance of 1,250 m<sup>51</sup> and quasi-sovereign issuance of 3,750 m. If this debt is eventually rolled over, this translates into annual **fiscal savings** on interest payments of about USD 12.5 m (or USD 125 m accumulated over an assumed 10-year maturity), and further quasi-fiscal savings of USD 37.5 m (USD 375 m over 10 years). Further savings could be expected on other external loans and bonds.

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<sup>48</sup> Fitch (2018b) has an estimate which shows a positive net international position of 216% of GDP, i.e. the country is a significant net creditor to the rest of the world. This is consistent with a history of (often substantial) current account surpluses of energy exporting Azerbaijan.

<sup>49</sup> As in the case of Armenia, we prefer to use one country, Russia, as a comparison rather than a diverse rating peer group. The spread was calculated using Azerbaijan Mar-2024 and Russia Sep-2023 Eurobonds.

<sup>50</sup> Quasi-sovereign bonds are issued by SOCAR and the Southern Gas Corridor, with the latter carrying an explicit state guarantee.

<sup>51</sup> We do not consider sovereign bonds that were issued in 2017 as part of the restructuring of International Bank of Azerbaijan, as this is a special case.

Turning to the **economic impact**, we think a country upgrade could also increase the amount of foreign direct investment, and, more importantly, diversify it towards the non-energy sector. In order to illustrate the impact of increased FDI on GDP, we again use the methodology and results obtained by Banaian and Roberts (2007) with a simple Cobb-Douglas production function. Table 7.4 provides a range of values for an increase in GDP:

**Table 7.4: Impact of 50% increase in FDI stock on GDP**

Capital-Output-Ratio (K/GDP)	Implied value of K (USD bn)	% increase in K due to 50% increase in FDI	% increase in GDP
2.0	75.6	17.6%	10.6%
2.5	94.5	14.1%	8.5%
3.0	113.4	11.8%	7.1%
3.5	132.3	10.1%	6.0%

Source: Own calculations based on Banaian and Roberts (2007)

Note: the nominal GDP amounted to USD 37.8 bn in 2016. We assume a capital share in nominal income of 0.6, similar to Armenia

The **increased FDI stock will lift the level of GDP** by 6.0% - 10.6% in the long term, depending on the assumed size of the overall domestic capital stock. Taking into account a further positive impact on domestic capital formation, which is not modelled here, the reduction could help to increase the gross investment ratio, which currently stands at 23.6% of GDP.

#### 7.4. Summary and comparison of effects

Currently, geopolitical risk is reflected in the sovereign ratings of both Armenia and Azerbaijan. This has a negative impact on the respective country risk premiums, keeping interest and discount rates higher and foreign capital inflows lower.

Overall, a reduction in political risk due to the resolution of the conflict will impact financial markets in both countries in a positive manner, as a reduction in the cost of capital will stimulate all types of cross border flows – direct investment, portfolio investment and loans both to the private and public sector. The economic impact can be illustrated by focussing on FDI: if we assume a 50% increase in the FDI inward stock as a result of the reduction in political risk, this would increase the level of GDP in Armenia by 3.4% - 6.0% in the long term. In Azerbaijan, this would in the long run lift the level of GDP by 6.0% - 10.6%.

In terms of interest, i.e. fiscal savings on Eurobonds due to an expected rating upgrade, Azerbaijan will benefit the most with USD 12.5 m annual savings, as it is more active in this market than Armenia (USD 10 m).

## 8. Priority economic issues to maximise the short and medium-term “benefits of peace”

In order to maximise the benefits of peace in the short and medium term, a range of measures could be undertaken by Armenia and Azerbaijan:

- Peace agreement supported by confidence- and security-building measures: fiscal savings from reducing the high defence expenditures to a normal peacetime level could be accelerated if both countries would conclude a peace agreement that actively includes measures – ideally also involving Turkey - to build up the trust required for a gradual drawdown of military strength.
- Re-open closed borders, communications and enable inclusive regional cooperation in the South Caucasus.
- A speedy effort to rebuild economic and social infrastructure in Nagorno-Karabakh itself as well as the surrounding territories would permit cutting the economic support for Nagorno-Karabakh, currently paid for by Armenia, and Azerbaijan’s expenditures for displaced, taking into account how voluntary return is being addressed in the peace settlement.
- Reconstruction and rehabilitation of the key transport links between Armenia and Azerbaijan and between Armenia and Turkey is a prerequisite for all benefits of peace in goods and services trade. Efforts should focus on reopening and rehabilitating a few important links rather than an unfocused, broad effort. Roads should be prioritised first, in particular with regard to return of displaced people, as railway reconstruction takes longer and is more costly.
- Conclusion of formal agreements between Armenia and Azerbaijan as well as preparing the legal base within each country to permit and put on a solid legal foundation the bilateral trade between these countries, accompanying the physical opening of the borders to people, goods and services.
- Creating Trade Steering Committees comprised of representatives of governments and business from Armenia and Azerbaijan and from Armenia and Turkey: these committees should act as platforms for discussion of specific issues related to bilateral trade and help to find practical solutions including the initiation of necessary policy changes.
- Armenia and Azerbaijan could conclude a mutually beneficial natural gas deal for a limited volume, such as 0.5 bcm, at a commercial price. This could Armenia help put pressure on other suppliers and Azerbaijan would obtain additional revenues. It might require some rehabilitation of the existing pipelines between both countries.
- Azerbaijan could offer Armenia the supply of a certain volume of gas, in return for Armenians ensuring a certain water flow from its cascades and allowing Azerbaijan to monitor these flows. Technical discussions should start as early as is politically possible.
- Armenia and Azerbaijan could start discussing reconnecting their electricity systems, to enable bilateral trade, enable electricity flows between mainland Azerbaijan to Nakhichevan and to enable regional electricity transit.

## References

- “Artsakh Republic National Statistical Service” (2017): *Statistical Yearbook of Nagorno Karabakh Republic 2010-2016*.
- AZERNEWS (2017, March 15), Shirinov R., Azersu: *Armenia uses Sarsang reservoir for political threats*, Retrieved on May 15, 2018 from <https://www.azernews.az/aggression/110284.html>
- Banaian/Roberts (2007): *The Impacts of Conflict Risk Reduction on the Armenian Economy. Conference Study*.
- EurasiaNet (2016, March 22), Shikhali I. and Safarov D., *Azerbaijan: Can a Water Reservoir Help Resolve the Karabakh Conflict?*, retrieved on May 15, 2018 from <https://eurasianet.org/s/azerbaijan-can-a-water-reservoir-help-resolve-the-karabakh-conflict>
- Fitch (2017): *Sovereign Rating Criteria. Master Criteria*.
- Fitch (2018a): *Armenia. Full Rating Report*.
- Fitch (2018b): *Azerbaijan. Full Rating Report*.
- FAO (2009), *Kura Araks Basin*, Water Report 34, Retrieved on May 15, 2018 from <http://www.fao.org/nr/water/aquastat/basins/kura-araks/index.stm>
- German Advisory Group Ukraine (2018): *The economic impact of FDI on Ukraine*, Policy Study No. 01/2018.
- German Economic Team Moldova (2017): *The economic impact of FDI in Moldova – Results from an empirical analysis*, Policy Study No. 01/2017.
- International Crisis Group (2017): *Nagorno-Karabakh’s Gathering War Clouds, Europe Report N°244*.
- International Monetary Fund (2016), Country Report No. 16/269, *Republic of Azerbaijan*.
- International Monetary Fund (2017), Country Report No. 17/226, *Republic of Armenia*.
- Internal Displacement Monitoring Centre/Norwegian Refugee Council (2015, March 26), *Azerbaijan. After more than 20 years, IDPs still urgently need policies to support full integration*, Retrieved on May 15, 2018 from <http://www.internal-displacement.org/europe-the-caucasus-and-central-asia/azerbaijan/2014/azerbaijan-after-more-than-20-years-idps-still-urgently-need-policies-to-support-full-integration/>
- Iran Daily (2018, January 21), *Iran bent on boosting gas trade with Armenia*, Retrieved on May 15, 2018 from <http://iran-daily.com/News/208509.html>
- Moody’s (2014): *How geopolitical risks affect creditworthiness*.
- Moody’s (2015): *How sovereign credit quality can affect other ratings. Cross-Sector Rating Methodology*.
- Moody’s (2016a): *Political and Geopolitical Risk and Sovereign Creditworthiness*.
- Moody’s (2016b): *Sovereign Bond Ratings. Rating Methodology*.

Moody's (2018a): *Government of Armenia. Credit Opinion.*

Moody's (2018b): *Government of Azerbaijan. Credit Opinion.*

OECD (2011), *Development in Eastern Europe and the South Caucasus Armenia, Azerbaijan, Georgia, Republic of Moldova and Ukraine.*

PRS Group, International Country Risk Guide (ICRG).

Radio Azatutyun, Sargis Harutyunyan (2017, October 24), *Russia To Maintain 'Special' Gas Price For Armenia*, Retrieved on May 15, 2018 from

<https://www.azatutyun.am/a/28813616.html>

Standard and Poor's (2018): *Research Update: Outlook on Azerbaijan Revised to Stable from Negative.*

Vogtmann H., Dobretsov N. (Eds.), 2005, *Transboundary Water Resources: Strategies for Regional Security and Ecological Stability: Strategies For Regional Security and Ecological Stability.*

World Bank (2014), *Republic of Armenia Public Expenditure Review: Expanding the Fiscal Envelope.*

Welton, G., Barrowman, B. (2016): *The Political Economy of Conflict in Nagorno-Karabakh.*

United Nations, Department of Economic and Social Affairs, Population Division, *International Migrant Stock: The 2017 revision*, Retrieved on May 15, 2018 from

[http://www.un.org/en/development/desa/population/migration/data/estimates2/estimate\\_s17.shtml](http://www.un.org/en/development/desa/population/migration/data/estimates2/estimate_s17.shtml)

## Annex

### Annex 1

#### Methodological note on gravity estimates

The gravity model of international trade claims that bilateral trade is directly proportional to the size of the partners' economies, measured by the GDP, and inversely proportional to the 'economic distance' between them (comprising all transaction costs, such as transport, communication, trade barriers, different product regulations, etc.).

To estimate a potential structure of trade of Armenia and Azerbaijan after the resolution of the conflict, we use the gravity model with mean coefficients identified by Head and Mayer (2013) through analysis of over 150 studies using gravity model and published in top economic journals.<sup>52</sup> Thus, our model equation is the following:

$$\ln X_{ij} = \text{Const} + 0.98 \cdot \ln \text{GDP}_i + 0.84 \cdot \ln \text{GDP}_j + 0.53 \cdot \text{Contiguity} + 0.54 \cdot \text{Common language} + 0.92 \cdot \text{Colonial link} + 0.59 \cdot \text{FTA} - 0.93 \cdot \ln \text{Distance}_{ij},$$

where  $i$  is the origin country and  $j$  is the destination country. The estimates are done for each pair of partners and then the potential structure of trade is calculated.

#### Sources of data:

- World Bank Development Indicators – for GDP
- CEPII database – for Distance, Contiguity, Common language, Colony
- WTO – for FTA

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<sup>52</sup> Table 4 in Head and Mayer (2013) Gravity Equations: Workhorse, Toolkit, and Cookbook. CEPII Working Paper 2013- 27, September 2013 , CEPII, [http://www.cepii.fr/PDF\\_PUB/wp/2013/wp2013-27.pdf](http://www.cepii.fr/PDF_PUB/wp/2013/wp2013-27.pdf)

**Table A1: Predicted trade structure of Armenia and Azerbaijan**

	Armenia		Azerbaijan
Russia	14.7%	Russia	23.6%
Turkey	12.6%	China	6.7%
USA	6.3%	USA	6.2%
China	6.2%	Iran	5.9%
Germany	4.2%	Turkey	6.6%
Iran	4.1%	Germany	3.8%
Great Britain	3.2%	India	3.1%
France	2.9%	Great Britain	2.9%
Italy	2.9%	France	2.6%
India	2.7%	Italy	2.5%
Japan	2.2%	Japan	2.3%
Georgia	1.9%	Saudi Arabia	1.8%
Saudi Arabia	1.8%	Spain	1.3%
Spain	1.4%	Iraq	1.1%
Belgium	1.3%	United Arab Emirates	1.1%
Iraq	1.3%	Netherlands	1.0%
Azerbaijan	1.3%	Korea	1.0%
Israel	1.3%	Israel	1.0%
Netherlands	1.1%	Switzerland	1.0%
Switzerland	1.1%	Poland	1.0%
		Armenia	0.3%
<i>EU28</i>	<i>24.4%</i>	<i>EU28</i>	<i>21.3%</i>

Source: Own calculations

## Annex 2

### Methodological note on trade complementarity estimates

We use trade complementarity (matching) approach to construct potential product structures of trade between Armenia and Azerbaijan and Armenia and Turkey. Currently, the trade flows between these pairs of countries is non-existing, except for Armenia's imports from Turkey, likely re-exported through Georgia.

**Table A2: Algorithm of the estimates**

<p><b>1. Product match</b></p>	<ul style="list-style-type: none"> <li>Match disaggregated exporter's product structure with disaggregated importer's product structure</li> <li><b>Result:</b> the list of potential products that appear both in exporter's and importer's lists and thus could form potential trade flows</li> </ul>
<p><b>2. Price difference</b></p>	<ul style="list-style-type: none"> <li>Calculate the difference in prices of exporter and importer for each product controlling for tariffs and transportation costs.</li> <li>We use unit value (UV) measured in USD per kg as a proxy of price.</li> <li><math>UV_{difference} = UV_{importer} - 1.1 \cdot (1 + duty_{importer}) \cdot UV_{exporter}</math></li> <li>It is assumed that trade flow will exist only if exporter can get higher price on new import market compared to price that it gets on other markets. It means that only for <math>UV_{difference} &gt; 0</math>, there is a potential for exports</li> <li><b>Result:</b> the list of products with positive <math>UV_{difference}</math> thus having export potential</li> </ul>
<p><b>3. Quality gap control</b></p>	<ul style="list-style-type: none"> <li>We exclude products, for which the difference in exporter and importer prices is high as likely these products are of different type/quality and thus exporter supply and import demand structures do not match de-facto.</li> <li><math>UV_{ratio} = UV_{importer} / (1.1 \cdot (1 + duty_{importer}) \cdot UV_{exporter})</math></li> <li>We assume that quality gap occurs when <math>UV_{ratio} &gt; 5</math></li> <li><b>Result:</b> the list of products with no (controlled) quality gap and thus having export potential</li> </ul>

<p><b>4. Potential volume</b></p>	<ul style="list-style-type: none"> <li>• For products with positive <math>UV_{difference}</math> and controlled quality gap, we estimate potential volume of exports in kg</li> <li>• As a control for imperfect elasticity of substitution among products from different partners (Armington elasticity), we assume that imports of any single product cannot be substituted by more than a <u>quarter</u>. It is further assumed that exporter will be ready to reorient up to a half of its exports to new market</li> <li>• Thus, potential volume is measured as minimum of two figures – a half of exports volume and a quarter of imports volume.</li> <li>• <b>Result:</b> potential volumes per product</li> </ul>
<p><b>5. Potential values</b></p>	<ul style="list-style-type: none"> <li>• We assume that the price difference that generated trade flow is equally split between exporter and importer</li> <li>• We estimate potential value of exports multiplying potential volume on the expression <math>UV_{exporter} + 0.5 \cdot UV_{difference}</math></li> <li>• We estimate potential value of exports multiplying potential volume on the expression <math>UV_{exporter} - 0.5 \cdot UV_{difference}</math></li> <li>• <b>Result:</b> potential exports and imports value per product</li> </ul>

Source: Own display

We use the 6-digit level of Harmonized Nomenclature (HS) for the analysis. Trade data are taken from UN Comtrade database, while information on ad valorem equivalents of import duties from the WITS (World Integrated Trade Solution).

### Annex 3

#### Methodological note on analysis of transportation routes

We analysed transportation routes for top-20 partners of Armenia and Azerbaijan in exports and imports to identify potential for the reduction in transportation costs associated with the opening of borders after the conflict resolution.

We considered road transportation and road/sea transportation. The distance is measured from the capital to the capital in km using existing roads as suggested by Google Maps.

Then, we compare alternative routes using average price of shipping as USD 2 per km per 20 tons. The average price for international shipments from Armenia and Azerbaijan is estimated using information of logistic companies working in the region. The ferries' tariffs are taken for Georgia-Bulgaria route on the Black Sea and Azerbaijan-Kazakhstan route on the Caspian Sea.

**Table A3: Armenia's top export partners**

Partner	share in exports, % of total	increase in exports, USD m	Comment
<b>Russian Federation</b>	21%	0.00	Higher trade capacity and stability due to availability of Azerbaijan route; no cost reduction
<b>Bulgaria</b>	9%	0.01	Cost reduction if shipped by road through Istanbul; irrelevant for copper ore exports
<b>Georgia</b>	8%	0.00	No gains
<b>Iraq</b>	8%	0.00	No gains
<b>Germany</b>	7%	0.00	Shortest route through GEO and RUS
<b>Canada</b>	7%	0.00	Sea shipment through GEO
<b>China</b>	6%	0.00	Sea shipment through GEO; potential future gains if TCTR initiative is successful
<b>Switzerland</b>	5%	0.02	Cost reduction if shipped by road through Istanbul; irrelevant for copper ore exports
<b>Iran</b>	4%	0.00	No gains
<b>United Arab Emirates</b>	4%	0.00	No gains

Partner	share in exports, % of total	increase in exports, USD m	Comment
China, Hong Kong SAR	3%	0.00	Sea shipment through GEO
Netherlands	3%	0.00	Shortest route through GEO and RUS
Belgium	2%	0.00	Shortest route through GEO and RUS
USA	2%	0.00	Sea shipment through GEO
Italy	2%	0.20	Cost reduction if shipped by road through Istanbul
Syria	2%	0.00	No gains
Romania	1%	0.00	Cost reduction if shipped by road through Istanbul; irrelevant for copper ore exports
Poland	1%	0.00	Shortest route through GEO and RUS
Belarus	1%	0.00	Shortest route through GEO and RUS
Ukraine	0%	0.00	Shortest route through GEO and RUS
France	0%	0.06	Cost reduction if shipped by road through Istanbul
ROW	4%		
<b>TOTAL</b>		<b>0.29</b>	

**Table A4: Armenia's top import partners**

Partner	share in imports, % of total	increase in imports, USD m	Comment
Russian Federation	31%	0.00	Higher trade capacity and stability due to availability of Azerbaijan route; no cost reduction
China	11%	0.00	Sea shipment through GEO; potential future gains if TCTR initiative is successful

Partner	share in imports, % of total	increase in imports, USD m	Comment
Turkey	5%		<i>Analysed separately</i>
Iran	5%	0.00	No gains
Germany	5%	0.00	Shortest route through GEO and RUS
Italy	4%	1.06	Cost reduction if shipped by road through Istanbul
Ukraine	3%	0.00	Shortest route through GEO and RUS
Georgia	3%	0.00	No gains
USA	2%	0.00	Sea shipment through GEO
India	2%	0.00	No gains
United Arab Emirates	2%	0.00	No gains
Belgium	2%	0.00	Shortest route through GEO and RUS
France	2%	0.32	Cost reduction if shipped by road through Istanbul
Brazil	2%	0.00	
Switzerland	1%	0.10	Cost reduction if shipped by road through Istanbul
Poland	1%	0.00	Shortest route through GEO and RUS
Japan	1%	0.00	Sea shipment through GEO
Bulgaria	1%	0.26	Cost reduction if shipped by road through Istanbul
United Kingdom	1%	0.00	Shortest route through GEO and RUS
Netherlands	1%	0.00	Shortest route through GEO and RUS
ROW	15%		
<b>TOTAL</b>		<b>1.74</b>	

**Table A5: Azerbaijan top export partners**

Partner	share in exports, % of total	increase in exports, USD m	Comment
Italy	17%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
Turkey	12%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
Israel	7%	0.00	No gains
Germany	7%	0.00	Shortest route through RUS
France	5%	0.00	Shortest route through RUS
India	5%	0.00	No gains
Russian Federation	5%	0.00	No gains
Georgia	4%	0.00	No gains
China	3%	0.00	Sea shipment through GEO
Portugal	3%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
Croatia	3%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
Czechia	2%	0.00	Shortest route through RUS
Tunisia	2%	0.00	No gains
Spain	1%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
Turkmenistan	1%	0.00	No gains
Austria	1%	0.00	Shortest route through RUS
Malta	1%	0.00	Sea shipment through GEO
Thailand	1%	0.00	Sea shipment through GEO
Romania	1%	0.00	Shortest route through RUS
USA	1%	0.00	Sea shipment through GEO
ROW	17%		
<b>TOTAL</b>		<b>0.00</b>	

**Table A6: Azerbaijan top import partners**

Partner	share in imports, % of total	increase in imports, USD m	Comment
<b>Russian Federation</b>	19%	0.00	No gains
<b>Turkey</b>	15%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
<b>China</b>	9%	0.00	Sea shipment through GEO
<b>USA</b>	7%	0.00	Sea shipment through GEO
<b>Italy</b>	5%	0.00	Negligible difference (ca. 20 km) if shipped through GEO or ARM
<b>United Kingdom</b>	5%	0.00	Shortest route through RUS
<b>Germany</b>	4%	0.00	Shortest route through RUS
<b>Japan</b>	3%	0.00	Sea shipment through GEO
<b>Ukraine</b>	3%	0.00	Shortest route through RUS
<b>Singapore</b>	2%	0.00	Sea shipment through GEO
<b>Norway</b>	2%	0.00	Shortest route through RUS
<b>Brazil</b>	2%	0.00	Sea shipment through GEO
<b>Iran</b>	2%	0.00	No gains
<b>France</b>	1%	0.00	Shortest route through RUS
<b>Rep. of Korea</b>	1%	0.00	Sea shipment through GEO
<b>Kazakhstan</b>	1%	0.00	No gains
<b>Netherlands</b>	1%	0.00	Shortest route through RUS
<b>Czechia</b>	1%	0.00	Shortest route through RUS
<b>Belarus</b>	1%	0.00	Shortest route through RUS
<b>Hungary</b>	1%	0.00	Shortest route through RUS
<b>ROW</b>	14%	0.00	
<b>TOTAL</b>		<b>0.00</b>	

## Annex 4

### Methodological note on estimates of trade in services linked to trade in goods

To estimate the link between trade in goods and services, we used the Leontief coefficients derived from input-output matrix. As there are no input-output matrixes available for Armenia and Azerbaijan, we used the Ukraine's matrix for 2015 as a proxy.

The estimates are done in two steps: first, a total increase in product of a service sector is estimated using Leontief coefficients; second, an increase in exports is estimated by splitting the total increase into those consumed domestically and exported.

**Table A7: Link between trade in goods and trade in services**

	Leontief coefficients (average for agriculture and industry)	Share of exports
<b>Travel</b>	0.00522	1.0
<b>Transportation</b>	0.09005	0.5
<b>ICT</b>	0.01818	0.2
<b>Other business services</b>	0.05464	0.2

Source: Own calculations

The share of exports is assumed to be equal 100% for travel, 50% for transportation and 20% for ICT and other business services including legal and accounting services, research and development, advertising and related activities. The estimates are done for exports, while imports are always taken as mirror data.

## Annex 5

**Table A8: Credit rating scales of Moody's, S&P and Fitch**

	Moody's	S&P	Fitch
<b>High grade</b>	Aaa, Aa1, Aa2, Aa3	AAA, AA+, AA, AA-	AAA, AA+, AA, AA-
<b>Upper medium grade</b>	A1, A2, A3	A+, A, A-	A+, A, A-
<b>Lower medium grade</b>	Baa1, Baa2, Baa3	BBB+, BBB, BBB-	BBB+, BBB, BBB-
<b>Non-investment grade speculative</b>	Ba1, Ba2, Ba3	BB+, BB, BB-	BB+, BB, BB-
<b>Highly speculative</b>	B1, B2, B3	B+, B, B-	B+, B, B-
<b>Substantial risk</b>	Caa1	CCC+	CCC
<b>Extremely speculative</b>	Caa2	CCC+	CCC
<b>In default with little prospect for recovery</b>	Caa3, Ca, Ca	CCC-, CC, C	CCC, CCC, CCC
<b>In default with little prospect for recovery</b>	C, /, /	D, D, D	DDD, DD, D

Sources: Moody's, Fitch