Migration and Remittances in the Former Soviet Union Countries of Central Asia and the South Caucasus

What Are the Long-Term Macroeconomic Consequences?

Martin Brownbridge
Sudharshan Canagarajah

Abstract

Armenia, Georgia, the Kyrgyz Republic, and Tajikistan have all experienced substantial out-migration of workers and an associated inflow of workers' remittances over the past two decades. These four countries have much higher human capital, as measured by the Human Capital Index, than is typical for countries with similar levels of per capita income, and this may enable migrant workers to exploit opportunities to work in economies where labor productivity is higher. The inflow of workers' remittances has had effects analogous to those of Dutch disease in the Kyrgyz Republic and Tajikistan, which have experienced a large rise in expenditure to output and the share of services in gross domestic product, appreciation of the Balassa-Samuelson adjusted real exchange rates, and poor trade performance. In Armenia and Georgia, where remittances are a smaller share of gross domestic product, the effects were much more muted and their trade performance was much better.

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1. Introduction

Large-scale out-migration and receipt of workers' remittances characterize several of the countries on the periphery of the former Soviet Union (FSU). Of the 24 countries in the world with a population larger than one million and which received personal remittances which exceeded 10 percent of their GDP, averaged over 2014-18, five are from the former FSU. Migration and remittances have potentially profound macroeconomic consequences, In the short term, inflows of remittances can undoubtedly support economic growth, by boosting domestic demand and alleviating foreign exchange constraints if these are relevant, although they may exacerbate macroeconomic volatility.

The longer-term macroeconomic impact of migration and remittances, which is mainly mediated through the supply side of the economy, is more complex and potentially problematic for long-term development. Migrant sending countries incur a reduction of their labor force, possibly involving some of their most productive workers, while the increase in national income brought about by the receipt of remittances may have macroeconomic effects which are analogous to those of Dutch disease. These effects include an expansion of total expenditure relative to domestic output, a shift in the structure of the economy towards non-traded goods industries at the expense of traded goods industries, an appreciation of the real exchange rate and the erosion of the economy's external competitiveness.

This paper explores the long-term macroeconomic implications of migration and receipt of remittances in the FSU countries in Central Asia and the South Caucasus (CASC). In particular we explore what migration and remittances mean for the external competitiveness and structure of the economies of the migrant sending countries. We also discuss what role human capital might play as a driver of out-migration. Of the eight FSU countries in CASC, four – Armenia, Georgia, the Kyrgyz Republic and Tajikistan – received annual remittances amounting to more than 10 percent of GDP since 2010, hence it is on this group of countries that the paper focusses.[1] The other four FSU countries in CASC – Azerbaijan, Kazakhstan, Turkmenistan and Uzbekistan – are major hydrocarbon producers and exporters.[2]

The paper is organized as follows. Section 2 sets out the context for the subsequent analysis by providing data on net migration flows, the stock of migrants and the countries in which they reside and the implied impact on the labor forces of the eight FSU countries in CASC. This section also provides data on the remittance receipts of these countries. Section 3 explores the

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[1] The fifth FSU country which receives remittances of more than 10 percent of its GDP is Moldova, which is not covered in this paper.

[2] Uzbekistan has also been a major recipient of remittances, but since 2010, remittances have only exceeded 10 percent of its GDP in two years, 2012 and 2013, and they have since 2013 fallen sharply to 3 percent of GDP in 2016, according to the WDI data. The remittance data for Uzbekistan are somewhat of an enigma in that they are very volatile, which is difficult to explain, and that the higher numbers for remittance receipts, such as 11.6 percent of GDP in 2013, do not appear consistent with the migration data shown in table 1.

link between human capital and migration. Section 4 examines the level of expenditure and structure of the economy, section 5 constructs measures of the Balassa-Samuelson adjusted real exchange rates for these economies and explores whether they are under or over-valued and section 6 looks at export performance. Section 7 concludes.

2. Trends in Migration and Remittances

Data on annual net migration, per thousand of the population, for the eight FSU countries in Central Asia and the South Caucasus, in five-year periods beginning at the turn of this century, are shown in table 1. In the first decade of this century, net migration for Armenia and Georgia was negative (more migrants left than arrived) and averaged more than 1 percent of the population per annum; hence they incurred a drop of more than 10 percent of their population over the course of the decade. Since 2010, net out-migration from Armenia has reduced markedly, to less than a quarter of the levels in the previous decade. Net out-migration from Georgia accelerated in the first half of the second decade of the century, but then fell back sharply after 2015.

Table 1   Net International Migration Rates per 1000 population (annual averages)

	2000-05	2005-10	2010-15	2015-20	2000-20
				projection	
Armenia	-10.6	-10.5	-2.1	-1.7	-6.2
Azerbaijan	0.9	1.2	0.0	0.0	0.5
Georgia	-12.1	-13.7	-14.9	2.5	-9.6
Kazakhstan	0.6	-0.4	1.9	0.0	0.5
Kyrgyz Republic	-6.9	-2.9	-4.9	-3.3	-4.5
Tajikistan	-2.5	-2.0	-2.5	-2.2	-2.3
Turkmenistan	-5.4	-2.5	1.9	-0.9	-1.7
Uzbekistan	1.9	-1.0	-0.4	-0.3	0.1

Source: Asian Development Bank

The Kyrgyz Republic experienced heavy net out-migration in the first five years of the century, which then reduced in the second five years before increasing again after 2010. Net out-migration from Tajikistan has been fairly stable, at between 0.2 and 0.25 percent of the population per annum, since 2000.

Table 2 shows net cumulative migration over the 2000-18 period as a percentage of the 2018 labor force of each country. The two countries with the largest loss of population to net migration relative to their labor force were Georgia and Armenia. Since the turn of the century, net migration from Georgia and Armenia amounted to 37 percent and 27 percent respectively

of their 2018 labor forces. These were followed by the Kyrgyz Republic and Tajikistan which incurred negative net migration of 17 percent and 12 percent respectively of their 2018 labor forces. Apart from Turkmenistan, which incurred negative net migration equivalent to nearly 6 percent of its labor force, the other oil and gas producers experienced small positive net migration as a share of their labor forces, although the net flow was negligible for Uzbekistan. Not all migrants are members of the labor force, but it is a reasonable assumption that a large majority of them are. Hence, we can derive a rough estimate of the magnitude of the reduction in the labor force emanating from net migration from the data in table 2. These data suggest that Georgia may have incurred a reduction of around a third in its labor force since the beginning of the century and Armenia a reduction of close to a quarter, with the Kyrgyz Republic and Tajikistan suffering smaller but still substantial falls in their labor forces.

Table 2   Net Migration 2000-18 as Percentage of 2018 Labor Force

	Labour force millions 2018	Net Migration 2000-18 millions	Net migration 2000-18 % of 2018 Labour force
Armenia	1.4	-0.37	-26.9
Azerbaijan	5.1	0.09	1.8
Georgia	2.0	-0.76	-37.3
Kazakhstan	9.3	0.17	1.9
Kyrgyz Republic	2.6	-0.45	-16.9
Tajikistan	2.6	-0.31	-12.0
Turkmenistan	2.6	-0.15	-5.8
Uzbekistan	15.5	0.02	0.1

Sources: labor force, WDI; Net Migration, Asian Development Bank

Table 3 presents data on the stock of migrants from the eight FSU countries in the CASC by country of residence in 2017. One point to note about these data is that the stock of migrants from some of the FSU countries is much greater than the net flows from these countries since 2000. This difference mainly reflects very large out-migration flows which took place before 2000, especially around the time of the breakup of the Soviet Union. The Russian Federation is by far the most important destination for migrants from the FSU CASC countries, accounting for 54 percent and 56 percent of the migrant stock from Georgia and Armenia respectively and 78 percent and 81 percent respectively from the Kyrgyz Republic and Tajikistan in 2017.

The gross receipts of workers' remittances as a percentage of GDP are shown in table 4. The Kyrgyz Republic and Tajikistan have become the largest recipients of remittances among the countries of CASC, with annual remittances currently amounting to around a third of their GDP, although remittances to Tajikistan have declined from the levels recorded during 2005-15 when they were closer to 40 percent of GDP. Remittances to Armenia are currently around 13 percent

of GDP, having declined from 18 percent of GDP during 2010-15, while in Georgia remittances have averaged 11 percent of GDP since 2010. Uzbekistan has also received substantial amounts of remittances, especially during 2005-15, although they have subsequently fallen back.

Table 3   The Stock of Migrants from the FSU countries of the Caucasus and central Asia in 2017 by total and main countries of residence.

	Country of origin of migrants							
	Armenia	Azerbaijan	Georgia	Kazakhstan	Kyrgyz Rep	Tajikistan	Turkmenistan	Uzbekistan
Total 000s)	951	1,155	838	4,074	760	579	243	1,992
Country of residence	%	%	%	%	%	%	%	%
Percent of total								
Armenia		7.6	4.9	0.0			0.4	0.1
Azerbaijan	15.3		6.0	0.1	0.3	0.0	0.7	0.8
Russia	55.5	66.5	53.8	62.9	77.9	80.7	76.4	57.6
Ukraine	5.0	7.2	7.8	5.5	3.6	5.1	9.4	11.1
Kazakhstan	1.0	4.3	0.4	0.0	0.9	2.8	0.4	14.5
Germany	1.3	1.7	2.7	25.0	11.0	5.0	2.7	2.1
Greece	1.5	0.0	9.8	0.7	0.1	0.0	0.0	0.4
USA	9.7	1.9	3.2	0.7	0.8	0.8	0.9	
Others	10.6	10.9	11.5	5.1	5.5	5.5	9.0	13.3
Total	100	100	100	100	100	100	100	100

Source: United Nations, Department of Economic and Social Affairs, Population Division, Trends in International Migrant Stock, 2017 Revision

Table 4   Remittances as percent of GDP (2000-18)

	2000-04	2005-09	2010-14	2015-18
Armenia	12.9	17.6	18.3	13.1
Azerbaijan	2.0	3.6	2.6	2.4
Georgia	6.7	8.5	11.2	11.4
Kazakhstan	0.3	0.3	0.3	0.3
Kyrgyz Republic	2.8	18.5	29.2	30.0
Tajikistan	9.3	37.2	40.1	29.0
Turkmenistan	na	0.2	0.1	0.0
Uzbekistan	na	7.3	9.4	3.4

Source: World Development Indicators

3. Human Capital and Migration

A striking feature of most FSU countries is that their human capital is much greater than is typical for countries with similar levels of per capita income, or conversely their per capita incomes are much lower than is typical for countries with similar endowments of human capital, which is likely to be a legacy of the strong educational and health systems which existed during the Soviet period and, in some countries, notably the Kyrgyz Republic, Tajikistan and Uzbekistan, continued high levels of public expenditure on education as a share of national income. It may also reflect other constraints, common to all the FSU countries, which prevent human capital generating the same level of returns than is the case in other regions of the world.

Table 5   Ranking of FSU countries by HCI and GDP at PPP per worker

Country	Human Capital Index (0-1, a higher score denotes more human capital)	HCI ranking (1 = highest ranking country)	GDP PPP per worker (average 2015-17, in constant 2011 US dollars	GDP PPP per worker ranking (1 = highest ranking country)
Armenia	0.572	75	22,915	83
Azerbaijan	0.597	66	33,257	64
Georgia	0.614	58	22,522	84
Kazakhstan	0.746	29	46,968	50
Kyrgyz Republic	0.580	73	11,142	108
Moldova	0.580	72	18,549	89
Russian Federation	0.729	32	49,663	44
Tajikistan	0.533	83	13,786	99
Ukraine	0.647	47	18,734	88

The total number of countries is 141

Sources: HCI, world Bank, GDP PPP per worker, Penn World Tables and WDI

The World Bank has recently published a Human Capital Index (HCI) which is a composite of indicators of the educational attainment and health status of the population, for more than 150 countries. In general, a higher HCI correlates with higher productivity and thus higher GDP per worker. The cross-country correlation coefficient of the HCI and GDP at Purchasing Power Parity per worker is 0.72. A labor force with more human capital will, ceteris paribus, be more productive, but the relationship also runs in the opposite direction, in that a more productive labor force generates more resources for investment in human capital, whether by the state or households.

What is notable about the FSU countries is that, when we rank countries both according to their HCI and their GDP PPP per worker, all FSU countries with the exception of Azerbaijan have a much better HCI ranking than a GDP PPP per worker ranking. This is shown in table 5, which gives rankings out of 141 countries. The nine FSU countries shown in the table have an HCI ranking which is 19 places higher on average than their GDP PPP per worker ranking. Of the four remittance receiving FSU countries in CASC, the Kyrgyz Republic has an HCI ranking which is 35 places better than its GDP PPP per worker ranking, that of Georgia is 26 places better, Tajikistan 16 places better and Armenia eight places better. There could be various reasons for these differentials. In some of the FSU countries, the capital stock per worker is lower than is typical for a county at similar levels of income: Armenia, Georgia and the Kyrgyz Republic each have low capital-output ratios compared to other lower-middle-income countries, although somewhat surprisingly, Tajikistan has a very high capital-output ratio. A second reason could be poor total factor productivity because of structural constraints in the economy. Whatever the reason, the fact that GDP per worker is lower in these countries than would be typical for a country with a similar endowment of human capital suggests that workers, which can take their human capital with them, could migrate to another country, with a higher capital stock per worker or with higher total factor productivity, and produce more output and thereby earn higher wages than they would in their home country.

To explore this issue further, we estimate a production function using cross-country data in which GDP PPP per worker is regressed on the HCI and the capital stock per worker for each country, with all data in logs. There are 141 countries for which there are both data on the HCI and the capital stock in the Penn World Tables. The GDP PPP per worker and the capital stock (also at PPP prices) per worker are both averages over 2015-17. The regression result is the following:

lnGDP PPP per worker = 0.065 + 0.4*lnHCI + 0.74 * lncapital stock per worker

The T statistic for the coefficient on the HCI is 2.26 and that on the capital stock per worker is 19.0. The regression has an adjusted R squared of 0.91.

We can use these coefficients to estimate what the output per worker would be if a worker from, for example, Tajikistan, with the average HCI for that country were to migrate to Russia and work with the average capital per worker of Russia. These estimates, for the four remittance receiving FSU countries of CASC, are shown in table 6.

Table 6   **Fitted output per worker in Russia for a worker with average home country HCI, 2011 US$ at PPP**

Country of Migrant Worker	Output per worker in home country (2011 US dollars, PPP)	Output per worker in Russia (2011 US dollars, PPP)	Difference between output per worker in Russia and home country (2011 US dollars)
Armenia	22,915	43,249	20,334
Georgia	22,522	44,497	21,975
Kyrgyz Republic	11,142	43,494	32,352
Tajikistan	13,786	42,034	28,248

Sources: Output per worker, Penn World Tables; Fitted output in Russia, authors' calculations

The output per migrant worker is between double and three times more in Russia than it would be in the home country of the migrant worker. Most of the difference arises from the much higher capital stock per worker in Russia than in the migrant sending countries. Also note that the output per worker of migrants from each of the four sending countries is fairly similar. This is because the difference between the highest HCI (Georgia) and the lowest HCI (Tajikistan) of these four is only 15 percent and, given the coefficient of 0.4 on the log of HCI in the regression, this translates into a difference in output per worker of only 6 percent holding capital per worker constant. One might argue that, because capital per worker is the main determinant of output per worker, it does not matter how much human capital migrant workers have as long as they migrate to a country with a much larger capital stock per worker than their home country. But that ignores the fact that the human and physical capital are complements: a larger capital stock per worker will usually comprise more technologically sophisticated capital and this will require workers with more human capital to operate it.

We can infer two conclusions from the data in table 6. The first is that, as long as there are very large differences between what a worker, given his or her education and skills, can earn at home and abroad, powerful incentives for large-scale labor migration will continue. Secondly, given the magnitude of these differentials, especially in the Kyrgyz Republic and Tajikistan, it is unlikely that marginal gains to returns to labor in the domestic economy will have much impact in terms of reducing incentives for workers to migrate.

4. Aggregate Expenditure and the Structure of the Economy

This section examines what happened to aggregate final expenditure and the structure of the economy in the remittance receiving FSU countries of CASC. We would expect that an increase in remittances as a share of GDP would be accompanied with an expansion of total expenditure, relative to output, and a shift in the structure of the economy towards the production of non-traded goods. Table 7 provides data on total expenditure alongside services value added, as a

proxy for non-traded gods, as a share of GDP, for the four remittance receiving countries of CASC.[3]

Table 7   Total Expenditure and Services as Percent of GDP, Armenia, Georgia, Kyrgyz Republic and Tajikistan: 2000-18

	2000-04	2005-09	2010-14	2015-18
	%	%	%	%
Armenia				
Total Expenditure/GDP	119.7	120.7	121.4	112.3
Services/GDP			46.3	50.4
Georgia				
Total Expenditure/GDP	115.1	123.5	117.3	114.2
Services/GDP	52.3	56.9	59.4	58.3
Kyrgyz Republic				
Total Expenditure/GDP	105.0	130.0	141.6	135.6
Services/GDP	35.2	45.4	49.7	50.5
Tajikistan				
Total Expenditure/GDP	109.2	136.1	145.0	121.5
Services/GDP	33.5	43.1	43.2	42.1

Source: WDI

For the two countries which are the largest recipients of remittances as a share of GDP, there was a clear and marked expansion of total expenditure as a share of GDP since the beginning of the century. In both the Kyrgyz Republic and Tajikistan, total expenditure rose by approximately 36 percentage points of GDP from 2000-04 to 2010-15, mirroring the steep rise in remittances to GDP shown in table 4. In Tajikistan, the subsequent fall in remittances was also accompanied by a sharp decline in total expenditure as a share of GDP in 2015-18. There was a much smaller fall in total expenditure in 2015-18 in the Kyrgyz Republic, where remittances were more stable. In both the Kyrgyz Republic and Tajikistan, services expanded their share of GDP, by nearly 15 and 10 percentage points respectively from 2000-04 to 2010-14, before flattening out. The fall in total expenditure in 2015-18 did not lead to a significant decline in services as a share of GDP in either country.

The trends in Armenia and Georgia are less clear cut. In Armenia total expenditure increased only marginally from 2000-04 to 2010-14 and then fell back quite sharply, by nine percentage

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[3] Total expenditure is the sum of consumption and investment and Final is derived by adding the trade deficit to GDP.

points of GDP. In that country the increase in remittances that occurred in 2005-09 and 2010-14 does not appear to have boosted spending although the subsequent fall in remittances in 2015-18 may have contributed to the contraction of expenditure in that period. In Georgia, final expenditure declined in 2010-14 and further in 2015-18 at a time when remittances as a share of GDP were increasing, albeit by only three percentage points of GDP. Clearly any positive impact of remittances on spending in that country was offset by other factors. Services as a share of GDP in Georgia expanded by about six percentage points of GDP from 2000-04 to 2015-18 but this is not markedly different than the average change of four percentage points of GDP for all middle-income countries in this period. There are no data on services as a share of GDP during 2000-09 for Armenia.

Can we conclude that the Kyrgyz Republic and Tajikistan have demonstrated some of the symptoms of Dutch disease as a result of receiving large inflows of remittances? Clearly the increase in remittances has been accompanied by a marked reorientation of their economies towards the production of services. To some extent there is an increase in the share of services in GDP as per capita incomes rise in most developing economies, but the percentage point increase in the Kyrgyz Republic and Tajikistan was much greater than the average for low- and middle-income countries of around four percentage points of GDP during the first two decades of this century. Although not all services are non-traded, as discussed in section 6, both the Kyrgyz Republic and Tajikistan have services exports, it is likely that traded services account for only a small share of services value added and so the large rise in services as a share of GDP must have been at the expense of traded goods production. Hence it is difficult to avoid the conclusion that the economies of the Kyrgyz Republic and Tajikistan have both experienced a marked shift in their production structures, from traded goods to non-traded goods. It is not possible to draw this conclusion for Armenia and Georgia, Not only was the shift towards services smaller in these countries, but they have also developed substantial services export industries, as discussed in section 6.

5. The Balassa-Samuelson Adjusted Real Exchange Rate

We adopt the approach of Johnson, Ostry and Subramanian (2007) and Rodrik (2008) to compute the Balassa-Samuelson adjusted real exchange rates of the FSU CASC countries; an approach which enables a cross-country comparison of real exchange rates to be made. The Balassa-Samuelson theory suggests that a country's real exchange rate should appreciate as its income per capita increases. This is because rises in per capita income are normally driven by productivity growth in the traded goods sector, because the industries in this sector are more capable, for technical reasons and because they operate in more competitive markets, of raising their productivity than are the non-traded goods industries. Hence as income per capita rises, the productivity differential between the traded and non-traded goods industries should increase. Whereas international trade will tend to equalize the prices of traded goods across countries, within countries, labor mobility will equalize wage rates between traded and non-traded goods industries. Hence, to maintain domestic balance, non-traded goods prices must rise relative to traded goods prices: i.e. the real exchange rate should appreciate as the per capita

income of a country rises (Balassa, 1964). Choudri and Khan (2005) provide empirical evidence of the Balassa-Samuelson effect in developing countries.

The approach to estimating Balassa-Samuelson adjusted real exchange rates involves three steps.

First, using data from the WDI, we compute real exchange rates from 2000 to 2017 or 2018 (depending on availability of data) by dividing the purchasing power parity (PPP) conversion factor for each country by the official exchange rate to the US dollar for that country. The former is a measure of how much a basket of goods, which in the United States would cost one dollar, costs in the domestic currency of each country. Dividing the PPP conversion factor by the nominal exchange rate gives a measure of the domestic price level relative to the price level in the United States, computed at official exchange rates. A higher number denotes a more appreciated real exchange rate.

Second, to estimate the expected Balassa-Samuelson adjusted real exchange rates (henceforth BSA RER), we regress the log of the real exchange rate computed in step one on the log of per capita income in a cross-country regression involving 151 countries (countries with a population of less than half a million were omitted).[4] We run separate cross-country regressions for each of four sub-periods; 2000-04, 2005-09, 2010-14 and 2015-18. We obtained an intercept of between -2.2 and -2.7 for the four sub-periods and a coefficient on the log of GDP per capita of 0.18 to 0.21. The latter is similar to, although slightly lower than, the coefficient of 0.24 reported by Rodrik (2008). The coefficients are significant in each of the regressions. We then use these estimated coefficients to compute a fitted BSA RER for each country in each sub-period, which is an estimate of what the real exchange rate would be if the only determinant of it is the per capita income of the relevant country, relative to that of all other countries.

This fitted BSA RER is not the same as an "equilibrium real exchange rate" which would be consistent with long-run external balance and which would take into account other factors which affect the balance of payments, such as the terms of trade and sustainable capital flows and transfers, including remittances. A country may have an RER consistent with its fitted BSA RER but that does not guarantee that its balance of payments will be in short- or long-run equilibrium. But the BSA RER does provide a rough guide to estimating how competitive a country's production of traded goods is in terms of its domestic costs relative to its productivity.

In the third step, we compute the under-valuation or over-valuation of the BSA RER for each sub-period for each country by subtracting the log of its fitted BSA RER from the log of its actual real exchange rate as computed in step one. If the actual real exchange rate is lower than

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[4] We also tried GDP per capita at Purchasing Power Parity (as in Johnson, Ostry and Subramanian, 2007) as the regressor but this regression had a poorer fit than the regression using GDP per capita, so we used the results from the latter to derive the fitted Balassa-Samuelson adjusted real exchange rates.

the fitted BSA RER, the real exchange rate is under-valued, in that domestic prices, valued in US dollars at the official nominal exchange rate, are lower than what they would be expected to be given the country's per capita income. Conversely, a country's real exchange rate is over-valued if its real exchange rate is higher than its fitted BSA RER. Obviously, the mean of over- and under-valuations (in logs) for all 151 countries in each of the four sub-periods is zero.

Table 8   **Estimates of Balassa Samuelson Adjusted Real Exchange Rate Under (-) and Over (+) valuation in the Former Soviet Union Countries: Five year averages 2000-18**

	2000-4	2005-9	2010-14	2015-18
	%	%	%	%
Armenia	-17.5	-3.9	-8.4	-7.0
Azerbaijan	-61.9	-51.9	-28.4	-59.7
Georgia	-15.7	-6.0	-7.2	-13.6
Kazakhstan	-83.9	-44.2	-18.9	-39.7
Kyrgyz Republic	-33.9	-19.5	-8.4	-5.7
Tajikistan	-32.2	-13.1	-2.7	-23.2
Turkmenistan	21.9	23.1	-11.5	-23.7
Uzbekistan	-37.1	-38.3	-20.1	-14.1
Belarus	-52.2	-33.9	-37.9	-44.5
Moldova	-50.4	-31.0	-4.6	-3.9
Russian Federation	-33.0	-17.7	-13.8	-28.4
Ukraine	-55.6	-25.0	-20.7	-34.7
FSU countries*	-37.6	-21.8	-15.2	-24.9
Remittance receiving FSU countries	-30.0	-14.7	-6.3	-10.7
FSU Hydrocarbon exporters	-38.8	-25.8	-18.6	-33.1

*Excludes the three Baltic States

A positive number denotes an under-valuation of the RER, a negative number an over-valuation

Source: authors' calculations using data from WDI

The estimated BSA RER over or under-valuations for each of the eight FSU countries in CASC along with other FSU countries are reported in table 8.[5] Each of the four remittance receiving countries in CASC had an undervalued BSA RER in each of the four sub-periods. In all four countries, the undervaluation of the real exchange rate was at its largest during 2000-04, but the trends since then varied. The Kyrgyz Republic experienced a consistent decline in

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[5] We did not compute real exchange rates for the three Baltic states because of difficulties arising from a break in the data series when these countries adopted the euro.

undervaluation over the four sub periods but in Armenia and Georgia undervaluation was at its lowest during 2005-09 and then subsequently increased over the following decade. Tajikistan experienced a decline in undervaluation until 2010-14 but then a strong reversal in 2015-18. The average undervaluation for the five FSU countries with remittances larger than 10 percent of GDP (which includes Moldova) was 30 percent in 2000-04, it fell to 6 percent in 2010-14 and then rebounded to 11 percent in 2015-18.

If we compare the data in table 8 to that in table 4, there is some correlation between the scale of remittances as a share of GDP and the degree of BSA RER under-valuation for the Kyrgyz Republic and Tajikistan. In both countries, the BSA RER was at its most undervalued in 2000-04 when remittances to GDP were at their lowest out of the four sub-periods and the subsequent increase in remittances to GDP led to a reduction in this undervaluation (i.e. an appreciation). In Tajikistan remittances as a share of GDP were at their highest during 2010-14 when the actual RER was at its most appreciated relative to the fitted BSA RER and the subsequent fall in the ratio of remittances to GDP was accompanied by a depreciation of the BSA RER. In the Kyrgyz Republic, the ratio of remittances to GDP was at its highest in 2010-14 and 2015-18 and in these two sub-periods the under valuation of the BSA RER was at its lowest. Hence higher levels of remittances to GDP were correlated with a more appreciated BSA RER in both countries. It is more difficult to identify any correlation between remittances as a share of GDP and the extent of BSA RER undervaluation for Armenia and Georgia.

The remittance receiving countries of the FSU appear to have more undervalued Balassa Samuelson adjusted real exchange rates than other remittance receiving countries around the world. There are 21 countries in the world which received remittances greater than 10 percent of GDP in the 2010s, including the five in the FSU, for which we have estimates of the Balassa-Samuelson adjusted real exchange rates. The mean under/over valuation for the 16 non FSU remittance receiving countries was much higher than the mean for the five FSU countries, by between 11 and 28 percentage points, with the exception of the 2010-14 sub period when the means of the two groups were very similar, although there is huge variance among these countries.

Somewhat surprisingly, the major hydrocarbon producing economies in the FSU had even more undervalued BSA RERs than the remittance receiving countries, with the exception of Turkmenistan during the 2000s. Other FSU countries, Belarus and Ukraine, which are neither remittance receiving economies or hydrocarbon producers, also had undervalued BSA RERs, as shown in table 8. Hence it appears to be a general characteristic of the FSU economies that their BSA RERs have been consistently undervalued. Why this should be so and whether it actually confers a competitive advantage on their traded goods industries on global markets is not clear. One possible explanation is that price levels in the FSU countries were suppressed by price controls and subsidies, for example subsidies on fuel and housing. Whether this confers a competitive advantage on traded goods industries depends on how such subsidies are financed. If they are financed by taxes levied on traded goods producers, a competitive advantage gained from lower costs would be offset by higher taxes.

A second possible explanation is that the productivity differential between traded and non-traded goods industries, adjusted for per capita income levels, is lower in the FSU countries than elsewhere in the world, possibly because of historic patterns of investment: for example, a greater emphasis during the Soviet period on investment in utilities and housing rather than consumer goods industries. If this explanation has any validity, it would suggest that undervalued BSA RERs do not necessarily confer a competitive advantage on the traded goods industries of the FSU countries, because these industries would have lower productivity, adjusted for their per capita income levels, than competitors in other parts of the world.

What may be a concern for the remittance receiving economies of the FSU is that their BSA RERs have become over-valued relative to the two largest export markets in the region, Kazakhstan and Russia. This may impede their efforts to expand and diversify their exports on the regional markets.

6. Trade Performance

The data in section 4 indicated that the share of services, as a proxy for non-traded goods, had increased in the remittance receiving FSU countries of CASC and, by implication, that the share of traded goods production had fallen during the first two decades of this century. The shifts in the composition of production were largest in the Kyrgyz Republic and Tajikistan. This section examines whether the trade performance of these economies was adversely affected, in terms of the value and world market share of total merchandise exports along with manufactured exports and services exports. The latter two offer much better prospects than primary commodities for moving into higher productivity activities which would better enable exports to be an engine of growth.

Table 9 provides data on the export performance of the four remittance receiving FSU CASC countries as annual averages during four sub-periods since the start of the century. All four countries expanded the US dollar value if their total merchandise exports between 2000-04 and 2015-18 and three of them increased their share of the global merchandise export market; Georgia more than doubled its market share. However, the world market share of Tajikistan's merchandise exports fell by almost a half and while that of the Kyrgyz Republic increased, the scale of this increase was a very modest 22 percent.

Armenia, Georgia and the Kyrgyz Republic expanded the dollar value of their manufactured exports between 2000-04 and 2015-18. Georgia recorded an impressive increase in its global market share of manufactured exports of more than 250 percent, but the market share of Armenia fell by a third while the Kyrgyz Republic increased its market share by nearly 40 percent, albeit from a very low base. There are no data on manufactured exports for Tajikistan.

Table 9   **Total Merchandise Exports, Manufacturing Exports and Services Exports, US$ millions and percentage of world exports, Armenia, Georgia, Kyrgyz Republic and Tajikistan: 2000-18**

US Dollar millions annual averages	2000-04	2005-09	2010-14	2015-18*
Armenia				
Total merchandise exports	510	976	1,345	1,984
Manufactured exports	301	534	382	452
Services exports		644	1,373	1,777
Total Merchandise exports/world exports (%)	0.0069	0.0076	0.0074	0.0113
Manufactured exports/world manufactured exports (%)	0.0056	0.0062	0.0033	0.0039
Services exports/world services exports (%)		0.0198	0.0298	0.0333
Georgia				
Total Merchandise exports	419	1132.4	2,403	2,602
Manufactured exports	136	506	1387	1058
Services exports		1022	2449	3720
Total Merchandise exports/world exports (%)	0.0057	0.0086	0.0132	0.0148
Manufactured exports/world manufactured exports (%)	0.0025	0.0056	0.0120	0.0091
Services exports/world services exports (%)		0.0315	0.0528	0.0696
Kyrgyz Republic				
Total Merchandise exports	554.8	1282.6	1,917	1,636
Manufactured exports	155	277	441	414
Services exports		490	881	838
Total Merchandise exports/world exports (%)	0.0077	0.0096	0.0107	0.0094
Manufactured exports/world manufactured exports (%)	0.0025	0.0031	0.0038	0.0035
Services exports/world services exports (%)		0.0148	0.0192	0.0158
Tajikistan				
Total Merchandise exports	777	1239	1,190	1,049
Services exports		152	401	245
Total Merchandise exports/world exports (%)	0.0109	0.0095	0.0067	0.0060
Services exports/world services exports (%)		0.0048	0.0089	0.0046

*2015-17 for manufactured exports

Services export data are only available from 2005

Source: WTO

For services exports, a consistent data series using BOP Manual 6 definitions is only available from 2005 onwards. Armenia and Georgia have developed substantial services export sectors, with the value of the services exports of Georgia exceeding its merchandise exports during 2015-18 while the value of Armenian services exports was almost as great as that of its

merchandise exports. Both countries increased their market share of global services exports, with Georgia more than doubling its market share between 2005-09 and 2015-18. The services export performance of the Kyrgyz Republic and Tajikistan was much weaker. Both countries expanded the value of their services exports between 2005-09 and 2015-18 but the increase in their global market share was very small.

In summary, the export performance of the remittance receiving economies of the FSU in CASC varied considerably. Georgia performed well, achieving strong growth in services and especially manufactured exports and increasing its global market penetration for both types of exports. Armenia recorded a reasonably robust performance from its export services but not from its manufactured exports. The Kyrgyz Republic failed to achieve much growth in its global market of either merchandise exports or services exports and the performance of Tajikistan was even poorer as it incurred a loss of global market share of merchandise exports and a stagnation in its global market share of its (very small) services exports.

7. Conclusions

Four of the eight FSU countries in CASC incurred substantial net out-migration since the turn of this century. As a share of their 2018 labor forces, cumulative net out-migration from Georgia amounted to 37 percent, from Armenia 27 percent, from the Kyrgyz Republic 17 percent and from Tajikistan 12 percent. Although not every migrant is of working age, the majority of them are, hence these cumulative net migration flows imply a substantial contraction of the labor forces of these countries. Russia is the main destination for migrants, accounting for between 50 percent and 60 percent of migrants from Armenia and Georgia and between 75 percent and 80 percent of migrants from the Kyrgyz Republic and Tajikistan.

As a share of GDP, remittances amounted to around one-third on average during 2015-18 in both the Kyrgyz Republic and Tajikistan, 13 percent in Armenia and 11 percent in Georgia. Remittances to Armenia and Tajikistan (and also Uzbekistan) have fallen back from the peaks attained in the first five years of the current decade, because of the shock to the Russian economy caused by the end of the oil boom in 2014, but remittances to Georgia and the Kyrgyz Republic have been more stable since 2010.

The human capital of the labor forces of all the FSU countries is on average much higher than is typical of countries with similar levels of output per worker and this differential is particularly large for the Kyrgyz Republic and Georgia. This generates strong incentives for labor to migrate, to more fully capture the potential returns to its human capital. While these large differentials in cross-country returns to labor, for a given level of human capital, persist, it is difficult to envisage that the rate of migration from the FSU countries in CASC will slow down. Furthermore, given the large differentials in returns to labor across countries, it is unlikely that

marginal improvements in returns to labor in countries such as the Kyrgyz Republic and Tajikistan will be sufficient to discourage labor migration from these countries.

The large increase in remittances as a share of GDP in the Kyrgyz Republic and Tajikistan was accompanied by a similar rise in total expenditure to GDP and a shift in the structure of production towards services, which are a proxy for non-traded goods industries. Total expenditure rose by approximately 36 percentage points of GDP between 2000-04 and 2010-14 in these two countries and services expanded their share of GDP by 15 percentage points and 10 percentage points in the Kyrgyz Republic and Tajikistan respectively. As such, these two countries experienced effects analogous to those of the Dutch disease. In contrast, there was no significant increase in total expenditure to GDP in Armenia and Georgia since the beginning of this century and in the latter country the increase in the share of services in GDP was not much greater than the average for middle-income countries.

To measure external competitiveness arising from relative prices across countries, we estimated the Balassa-Samuelson adjusted real exchange rates, which adjust actual real exchange rates for per capita income levels. A common feature of all FSU countries is that most have consistently had undervalued BSA RERs, although it is not necessarily the case that this confers a competitive advantage on them against non FSU countries. The trends in the BSA RERs of the four remittance receiving countries of the FSU in CASC varied. That of the Kyrgyz Republic has steadily appreciated (i.e. it has become less under-valued) since the start of the century. The BSA RER of Tajikistan appreciated up to 2010-14 but then became more undervalued in 2015-18. Georgia's BSA RER followed a similar trend to that of Tajikistan but was less volatile while that of Armenia appreciated in the first decade of the century but then reversed the trend in the second decade. All four countries had less undervalued BSA RERs in 2015-18 than in 2000-04, although the change in that of Georgia was small. Furthermore, all four countries had less undervalued BSA RERs in 2015-18 than either the Russian Federation or Kazakhstan, which are important regional export markets. In summary, the estimates of the BSA RERs provide tentative evidence that the expansion of remittances to Armenia, Georgia, the Kyrgyz Republic and Tajikistan since the start of the century has been associated with a loss of external price competitiveness.

The trade performance of the remittance receiving FSU countries of CASC varied. The two countries which received the largest remittances as a share of GDP, the Kyrgyz Republic and Tajikistan, did not achieve a good trade performance. Tajikistan suffered a large fall in its global market share of merchandise exports and the Kyrgyz Republic recorded only a modest expansion of its global market share of merchandise exports and almost no increase in the share of its services exports. These trends are consistent with the other macroeconomic evidence that we have reviewed, notably the expansion of total expenditure as a share of GDP, the shift in the structure of their economies towards the production of non-traded goods, and the movements in the BSA RERs of these two countries. In contrast, the export performance of Armenia and especially Georgia was much better and both countries achieved strong growth in their services exports, although Armenia suffered a fall in the global market share of its manufactured exports.

It is notable that Georgia, among these four countries, incurred the smallest reduction in the undervaluation of the BSA RER between 2000-04 and 2015-18.

If we are to better understand the long-term macroeconomic consequences of large migration and remittances on the FSU countries of CASC, two directions for further research would be worth pursuing. First, we need better estimates of the Balassa-Samuelson adjusted real exchange rates which can more accurately incorporate cross-country productivity differences in the production of traded goods than is possible by using GDP per capita as a proxy. Better estimates of the BSA RERs would enable us to have a clearer understanding of whether the receipt of remittances has undermined the price competitiveness of traded goods industries and, in turn, contribute to understanding whether price competitiveness or some other factors are the binding constraints to improving trade performance in these countries.

Second, we need a better understanding of why relatively high levels of human capital in the FSU countries cannot be fully translated into GDP per worker. One approach to this issue would be to utilize the information in the annual Global Competitiveness Reports which provide cross-country data which score and rank countries on 12 different pillars which affect their international competitiveness. In the 2017-18 report, all four of the remittance receiving FSU countries in CASC had scores for the primary education and health pillar which were much higher than their overall competitiveness score but scored poorly on pillars such as market size, technological readiness, business sophistication and innovation (World Economic Forum, 2017).

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