

Forecasting the size and effects of emigration and remittances

Analysis of results for Serbia

1. Analysis of expert opinions

For the purpose of this analysis, we gathered the opinions of 10 experts on macroeconomics, statistics, labor market and migrations in Serbia. The group, in particular, comprehended: six university professors, two representatives of research institutes, one statistician from the National bank of the Republic of Serbia, and one representative of the World Bank in Serbia.

Table 1 presents the expert results of the survey between the two rounds of the survey. Experts expressed fairly strong consensus on all the issues within the Delphi survey even as of the first round: an average of 77% has been achieved. In this round, the consensus on all answers varies between 68.4% and 89.5%. Then, the second round brought even further consensus building on three out of six questions. The achieved consensus on two questions remained the same, whereas a slight drop of 5.8% occurred with regards to one question. However, the overall consensus in the survey increased to 80.8%, resulting in improved consensus between the rounds by 4.9%.

Table 1 – Consensus among experts

	Amount of remittances	Size of emigration	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market	Average consensus
I round	75.4%	70.3%	74.2%	84.2%	89.5%	68.4%	77.0%
II round	84.9%	78.2%	84.2%	79.3%	89.5%	68.4%	80.8%
Consensus improvement	12.6%	11.3%	13.5%	-5.8%	0.0%	0.0%	4.9%

Source: Authors' calculations.
Note: The consensus is based on the coefficient of variation.

Given the already high consensus in the first round and its further improvement in the second round, we decided to terminate the Delphi survey after the second round (i.e. conduct only a third cross-samples round, as we discuss in Section 3). Based on this decision, in Table 2 we present the expert-based forecast results obtained through the Delphi survey:

Table 2 – Results of the forecasting exercise - experts

	Amount of remittances (million USD)	Size of emigration (number of people)	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market
I round	4,200	34,700	60%	80%	90%	50%
Forecasted answer after round I	27.3% increase in remittances inflow in 5 years	15.7% increase of emigration in 5 years	Negative, because more educated depart, impairing the medium-term economic prospects	The effect of remittances for poverty reduction will remain as it is	Remittances will be further mainly used for current consumption, i.e. for food, bills and clothes	Remittances will support inactivity, because nobody is willing to work when there is a constant and stable source of money
II round	4,200	32,900	80%	70%	90%	50%
Forecasted answer after round II	27.3% increase in remittances inflow in 5 years	9.7% increase of emigration in 5 years	Negative, because more educated depart, impairing the medium-term economic prospects	The effect of remittances for poverty reduction will remain as it is	Remittances will be further mainly used for current consumption, i.e. for food, bills and clothes	Remittances will support inactivity, because nobody is willing to work when there is a constant and stable source of money

Source: Authors' calculations.

The table suggests that between the two rounds, experts' forecasts on the amount of remittances to be received in five years from now remained stable, resulting in overall forecast for 2021 accounting at 4.2 billion USD dollars to be received from emigration. The forecasted figure makes a remarkable increase of 27.3% when compared to the current level. In the same manner, experts forecasted increasing emigration in the next five years. However, the initial forecast (34,700 Serbs) was corrected downwards (32,900) in the subsequent round, resulting in overall increase of emigration by 9.7% in 2021 comparing it to current level (30,000).

The next four questions were categorical ones, so that we present the answer which got the largest share of responses. The share of respondents forecasting that the effect of emigration for the society will be negative as more educated emigrate was large, varying from 60% after the first round to 80% after the second round. When forecasting the effect of remittances on poverty, fairly strong consensus among experts remained between the two rounds, however dropping from 80% to 70% as one among them obviously changed his/her opinion in that the effect of remittances on poverty reduction will remain the same.

Respondents were quite in agreement that remittances will be further spent on every-day consumption: 90% expressed this opinion in each of the two rounds. Likewise, experts' individual opinions between the two rounds remained the same with regards to the effect of remittances on the labor market. However, it is hard to judge upon their broad consensus regarding this issue as only narrow majority of 50% was reached about inactivity that might be supported by remittances.

Therefore, one should note that in the case of experts, sufficient consensus has been achieved in each round, and their forecasts were maintained the same between the two rounds.

Table 3 presents some tests of stability of the responses between the two rounds. According to the t-test and the Wilcoxon test, means and proportions have not changed between rounds in a statistically meaningful manner, supporting results' stability. Similarly, shares of responses maintained between rounds is fairly satisfactory in four out of six cases.

Table 3 – Tests of results' stability – experts

	Amount of remittances (million USD)	Size of emigration (number of people)	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market
T-test of paired samples (H0: Sample means are the same / Sample proportions are the same)	1.000	0.503	1.000	0.591	1.000	0.555
Wilcoxon signed-rank test / Two-tailed test (H0: The two samples follow the same distribution)	1.000	0.831				
Share of individual responses maintained between rounds	80.0%	90.0%	80%	70%	100%	80%
<i>Source: Authors' calculations</i>						
<i>Note: The share of individual responses between the rounds is calculated as follows: i) for the continuous variable, by considering a maintained result to be if it falls within +/- one standard deviation of the mean in the previous round; ii) for the categorical variables, if the respondent answered the same option.</i>						

Overall, experts forecast that by 2021, remittances will rise more than 20%, while the emigration size will increase by almost 10%. They forecast that emigration will exert negative influence onto society and economy as more educated depart, but the effect on poverty will remain as it is. That this may likely be true is supported by experts' forecast that remittances will be further used for current consumption – food, clothes, bills – while also deterring people from active job search.

2. Analysis of remittance-receivers' opinion

We further gathered the opinions of 20 remittance receivers. Initially, the sample consisted of 21 respondent, but one of them became un-reachable after the first round. Receivers are living in at least three out of the 29 planning regions in Serbia, approximately four fifths live in urban settlement or are females.

Table 4 presents the receivers' results of the survey between the two rounds of the survey. Satisfactory consensus has been built even as of the first round. The average consensus has been 73.6%, ranging from 48.9% to even 87.6%. Then, in the second round, the consensus sees a sizeable increase of 8.3%, observed throughout all the questions. This suggests that remittance-receivers were more prone to revision and approximating the average result of the group, than experts were. However, it should also be noted that overall reached consensus after round II (79.7%) was very close to consensus achieved by the experts (80.8%, see Table 1).

Table 4 – Consensus among remittance-receivers

	Amount of remittances	Size of emigration	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market	Average consensus
I round	48.9%	66.6%	87.1%	72.6%	87.6%	78.9%	73.6%
II round	75.8%	67.9%	88.8%	75.3%	88.8%	81.7%	79.7%
Consensus improvement	55%	2%	2%	3.7%	1.4%	3.6%	8.3%
<i>Source: Authors' calculations.</i>							
<i>Note: The consensus is based on the coefficient of variation.</i>							

Table 5 gives the forecasts of the remittance receivers. During the first round, they forecasted a 28.8% increase of remittances in five-year period, which was then revised downward (though with more consensus, as argued in Table 4). Hence, the final forecast of receivers is that remittances would soar to above 3.8 billion USD in 2021, which is a sizeable increase of 16.7% for a five-year period, or assuming linear annual increase, an increase of about 3% per year. Similarly, receivers forecasted a boom of the emigration wave by 18% by 2021, which was then revised slightly further upward to 19.3% in the second round. As we observed in Table 4, the consensus between the rounds on both questions improved, in particular on the issue on the amount of remittances to be received. This likely confirms that remittance receivers are more prone to believe the average result and revise in the direction of the average result. On the contrary, experts' differently approached to two questions: the amount of remittances expected did not change while their revision was the opposite for the emigration level (downwards).

Similarly, we observe that remittance receivers increased shares on the categorical questions in the second round. In addition, there has been no case where they changed the majority opinion between the rounds. For example, the first-round majority of 75% thinking that emigration exerts negative societal effects as more educated leave, reached 80% in the second round. The 76% of first-round respondents thinking that remittances will be further used primarily for current consumption increased also to 80%. Similar share increases have been noted on the opinions for remittances' effect on poverty and on the labor-market outcomes.

Hence, compared to experts, the remittance-receivers forecasts are different in at least three veins: i) receivers tend to accept the average/majority opinion more easily; ii) they forecast a less sizeable increase of remittances, but more significant emigration increase in five-year period; and iii) there have been no switches among different answers between the two rounds.

Table 5 - Results of the forecasting exercise – receivers

	Amount of remittances (million USD)	Size of emigration (number of people)	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market
I round	4,250	35,400	75%	40%	76%	53%
Forecasted answer after round I	28.8% increase in remittances inflow in 5 years	18% increase of emigration in 5 years	Negative, because more educated depart, impairing the medium-term economic prospects	The effect of remittances for poverty reduction will fade out	Remittances will be further mainly used for current consumption, i.e. for food, bills and clothes	Employment may rise, because remittances may reduce or cease one day, so one must continue searching for a job
II round	3,850	35,800	80%	45%	80%	60%
Forecasted answer after round II	16.7% increase in remittances inflow in 5 years	19.3% increase of emigration in 5 years	Negative, because more educated depart, impairing the medium-term economic prospects	The effect of remittances for poverty reduction will fade out	Remittances will be further mainly used for current consumption, i.e. for food, bills and clothes	Employment may rise, because remittances may reduce or cease one day, so one must continue searching for a job
<i>Source: Authors' calculations.</i>						

Table 6 presents the stability tests for the receivers group. Stability can be statistically supported in the case of all questions.

Table 6 – Tests of results’ stability – remittance receivers

	Amount of remittances (million USD)	Size of emigration (number of people)	The emigration effects	The remittances’ effect on poverty	Remittances’ usage	Remittances’ effect on labor market
T-test of paired samples (H0: Sample means are the same / Sample proportions are the same)	0.442	0.891	0.425	0.776	0.577	0.853
Wilcoxon signed-rank test / Two-tailed test (H0: The two samples follow the same distribution)	0.550	1.000				
Share of individual responses maintained between rounds	45.0%	85.0%	80%	75%	95%	55%
<i>Source: Authors’ calculations</i>						
<i>Note: The share of individual responses between the rounds is calculated as follows: i) for the continuous variable, by considering a maintained result to be if it falls within +/- one standard deviation of the mean in the previous round; ii) for the categorical variables, if the respondent answered the same option.</i>						

Overall, remittance receivers forecast increases of both remittances and emigration in a five-year period. They are convinced that emigration will exert negative effect on society as more educated leave, while effect of remittances on poverty is forecasted to fade out over time. Remittances’ primary usage is forecasted to be daily consumption, while they are projected to work for increase of employment.

Therefore, in forecasting remittances, experts and remittance receivers are in agreement on the direction of remittances evolvement: both agree they will increase. Both agree that the effect of emigration for society will be negative due to departure of skilled labor, as well that remittances effect on poverty will remain as is or will fade out and that they will be further primarily used for everyday consumption. Both groups disagree on the size of increase in remittances: experts believe the increase will be larger than receivers do. Then, experts forecast lower emigration rate, while receivers expect more significant increase in emigration. Finally, experts forecast remittances will support inactivity, while receivers forecast they will spur employment.

Could both group reconcile their forecasts, and to what extent? We reveal this next.

3. Cross-analysis of changing patterns between the two samples of respondents

In the third final round, uncustomary to the most Delphi studies, we crossed the samples. We offered the second-round forecasts of each group to the other group, and asked them to revise if they wanted. We present results next.

Table 7 presents the results of the expert opinion in the third round when they were given the remittance-receivers consensual results of the second round. Results suggest that experts agreed with receivers’ opinion on five out of the six questions. Experts agreed that the amount of remittances in five years will be lower than they thought, but still higher than receivers’ opinion. Experts approached

to receivers' opinion on the size of emigration in five years, but not in the effect of remittances for the labor market. Namely, experts continue to forecast that the size of the emigration will increase but less than receivers do: in the third round, the consensual increase is 9.7%, instead of 15.7% in experts' second round. Experts changed their majority opinion that remittances will support inactivity into possible employment rising and establishment of own business. However, on both questions, consensus among experts is smaller not only when compared to receivers' consensus, but also compared to experts' previous own consensus, suggesting that while they maintained their distinct opinion on these issues, the results of the remittance receivers brought some noise and heterogeneity in addition to the ones experts already had.

Table 7 – Experts' opinion on receivers' consensual responses

	Amount of remittances	Size of emigration	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market
Consensus						
Round II, receivers	75.8%	67.9%	88.8%	75.3%	88.8%	81.7%
Round II, experts	84.9%	78.2%	84.2%	79.3%	89.5%	68.4%
Round III, experts	88.2%	68.9%	84.2%	79.3%	89.5%	61.3%
Does consensus increase?	YES	NO	NO	YES	YES	NO
Results						
Round II, receivers	+16.7%	+19.3%	Negative, educated depart	Will fade out	Mainly used for current consumption	Employment may rise
Round II, experts	+27.3%	+9.7%	Negative, educated depart	Will remain as it is	Mainly used for current consumption	Remittances will support inactivity
Round III, experts	+21.21%	+11.67%	Negative, educated depart	Will remain as it is	Mainly used for current consumption	Employment / Self-employment may rise
<i>Source: Authors' calculations.</i>						

Table 8 presents the results of the receivers' opinion in the third round when they were given the experts consensual results of the second round. Results suggest that receivers agreed with expert consensual opinion on five out of six questions. However, in spite of experts' forecasted increase of remittances in five years period (at 4.2 billion), receivers further reduced their initial forecasted figure at 3.75 US billion. Likewise, receivers agreed to revise downward their emigration-size figure thus coming closer to the figure forecasted by experts (34,600 vs. 33,500 individuals). Therefore, in contrast to overall remittance increase which receivers expect to be lower, they forecast a more significant emigration growth in comparison to experts. The consensus has been reconfirmed on the next three question. However, contrary to experts, remittance-receivers declined to lean towards expert opinion on remittances' effect for the labor market, therefore staying convinced that employment may rise.

Table 8 – Receivers’ opinion on experts’ consensual responses

	Amount of remittances	Size of emigration	The emigration effects	The remittances' effect on poverty	Remittances' usage	Remittances' effect on labor market
Consensus						
Round II, experts	84.9%	78.2%	84.2%	79.3%	89.5%	68.4%
Round II, receivers	75.8%	67.9%	88.8%	75.3%	88.8%	81.7%
Round III, receivers	80.9%	69.9%	88.8%	77.6%	90.6%	79.8%
Does consensus increase?	YES	YES	YES	YES	YES	NO
Results						
Round II, experts	+27.3%	+9.7%	Negative, educated depart	Will remain as it is	Mainly used for current consumption	Remittances will support inactivity
Round II, receivers	+16.7%	+19.3%	Negative, educated depart	Will fade out	Mainly used for current consumption	Employment may rise
Round III, receivers	+13.6%	+15.3%	Negative, educated depart	Will remain as it is	Mainly used for current consumption	Employment may rise

Source: Authors' calculations.

Overall, both groups finally agreed on five out of six forecasts on the size and effects of remittances and emigration in Serbia. According to the forecast, by 2021, the amount of remittances is projected to increase by 13.6% to 21.2% compared to the current level, which means that the current level of 3.3 billion USD per year may increase up to about 3.8-4 billion USD in 2021. Respondents forecasted that the emigration size will increase, i.e. will roam around the figure of about 33,500-34,600 individuals per year. Despite both groups have still slightly divergent results, over the subsequent rounds they were able to significantly reconcile their initial opinions. The forecasts suggest that emigration effect for society will be negative, as more educated depart, while the effect of remittances on poverty will remain as is. The latter corroborates with the forecasted remittances’ increase of up to 21.2% in five years, which implies a linear annual increase of about 4%, being sufficient to maintain the effect on poverty rather than to change it. Remittances are forecasted to be further used for everyday consumption only. With regards to the last question, consensus has been achieved only partially. Namely, the forecasts of the two groups converged around the two effects of remittances for the labor market, both of which project further labor market activity (search for jobs and business establishment). However, the consensus within the groups is moderate (i.e. 40% among experts vs. 55% among receivers).