Social Transfer and Remittances in Bosnia-Herzegovina: Exploring Dynamics of the “Crowding-Out” Effect

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Paper presented for the 14th Global Development Network Conference “Inequality, Social Protection and Inclusive Growth“, 19-21 June 2013, Manila, Philippines
ABSTRACT Bosnia-Herzegovina, as a country that relies on significant amount of remittances inflows, has experienced drop in these inflows as a consequence of the global economic crisis. This paper aims to analyse whether and how this decrease was related to the change in motives in sending remittances. The change in motives will be analysed by exploring the interaction between social transfers and remittances, using two dataset from the two Household Budget Surveys, conducted in 2007 (before the crisis) and 2011 (during the crisis). The analysis is based on the estimation of two model specifications, one that does and another that does not control for non-monotonicity of the motives. Compared to previous studies, this paper estimates the non-monotonic 'crowding out’ effect by an innovative empirical model specification. The findings suggest that the predominant motive for sending remittances to Bosnia-Herzegovina before the crisis was exchange, while during the crisis the senders of remittances are more altruistic. In addition, the results from the model on non-monotonicity of motives support the hypothesis that transfer motives are changing differently for poor and non-poor recipients of remittances as a consequence of the economic crisis.

Keywords: Crowding-out, social transfers, remittances, Bosnia, crisis

1. Introduction

Investigation of motives for sending remittances was so far commonly performed in the framework of analysis of the “crowding-out” effect between social transfers and remittances, where negative relationship was suggesting altruistic motives, whereas positive relationship was indicating other, non-altruistic motives, such as insurance, inheritance, or exchange\(^1\) of services.

\(^1\) In the “crowding-out” literature, it is common to name all the non-altruistic motives as “exchange”.
The ongoing global economic crisis has offered a unique opportunity to investigate whether and how the motives for remittances were changed by the crisis that affected both senders and receivers of remittances. The investigation will be conducted by using two Household Budget Surveys (HBS) from Bosnia-Herzegovina in 2007 (before the crisis) and 2011 (during the crisis) in order to estimate two models of relationship between receipts of social transfers and remittances by households. Comparison of results from the model using HBS 2007 data and the model using 2011 data will reveal the changes in the motives in sending remittances between two periods, characterized by crisis.

Bosnia-Herzegovina has recently gone through very dramatic periods of conflict and displacement. During the period of war in Bosnia-Herzegovina, about 5 per cent of population were killed, and more than a half of its population was displaced. Half of them, or 25 per cent of total population were displaced internally, while another 25 per cent of total population decided to flee from the country (Ibreljic et al., 2006). Even today, it is estimated that every tenth Bosnian lives abroad (Koser and Van Hear, 2002: 2). As a consequence, Bosnia-Herzegovina is among the leading country in terms of receiving remittances as a percentage of GDP (around 13 per cent, BiH Migration Profile, 2013). The impact of remittances on poverty and inequality has been heavily investigated so far (Milanovic, 1987; Stark et al., 1988; Adams, 1992; Russell, 1992; Taylor and Wyatt, 1996; Taylor 1999; Brown and Jimenez, 2007), but the available empirical evidence does not provide clear-cut answer about its sign. There is evidence supporting the idea that remittances are usually sent to richer families, who are more able to bear

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2 It would not be appropriate to conclude on the basis of these results that the change in motives was due to the crisis, since many other unobservable factors might have influenced the motives for sending remittances; however the comparison of the motives between two periods can provide useful insights.
the costs of migration, thus increasing inequality. On the other hand, the effect of remittances on poverty reduction still remains positive and should not be completely neglected. According to the simulation of the poverty rate with and without receipt of remittances, the relative poverty rate would increase from 18.6 to 20.1%, which is not large, but still larger than the impact of social transfers of poverty reduction.

The overall social transfers in Bosnia-Herzegovina amount to about 14 per cent of its GDP (UNDP, 2013), majority of which goes to pensions and health care services. But also, large proportion of these transfers goes to non-insurance based benefits. They include veterans-related benefits, child care allowance and social assistance. Veteran-related benefits are non-means tested, implying their limited impact on poverty reduction. A household, regardless of its income status, can be eligible for several transfers, based on different criteria. The main purpose of social transfers should be to reduce inequality and poverty. But, the evidence is mixed. Some social transfers, such as pensions or unemployment insurance, are designed in such a way that increases inequality, as these transfers are linked to the amount of contributory wage, resulting in larger percentage of benefits transferred to high income families (Feldstein, 1974, Browning and Browning, 1994). Besides that, studies from different countries reveal large ineffectiveness of social transfers in poverty and inequality reduction due to inappropriate eligibility criteria and poor targeting. As reported in World Bank (2009), pre-transfer poverty level in Bosnia-Herzegovina is 19.2, while after transfers it is reduced to 18.6 per cent, meaning that transfers contribute to the reduction of poverty by only 6 percentage points.

Before analysis of the overall effects of social transfers and/or remittances on poverty and inequality in a country with widespread receipts of both types of transfers, possible interaction between them should be taken
The link between the receipt of the social and private transfers is known as the ‘crowding out’ effect. Depending on the motives for sending remittances, the amount received by families may change once they begin receiving the social transfers. The sign of this effect is purely empirical question, as two competing hypotheses are in place. According to the first, remittances are driven by altruistic motives by senders, thus any increase in social transfers received by a household will decrease amount of remittances received. In contrary, remittances are exchange driven, so they will increase as a result of increase of social transfers. Accordingly, the sign of the ‘crowding out’ effect also reveals predominant motive for sending remittances.

This study investigates the presence of the ‘crowding out’ effect in Bosnia-Herzegovina and its change between the two periods, 2007 and 2011, in order to answer the question in which direction the motives for sending remittances change when senders are facing economic difficulties. The definition of social transfers to be analysed in this study is reduced to the non-contribution based social transfers, such as veteran-related benefits and child allowance. The reason for this is that contribution based benefits, such as unemployment benefits and pensions, cannot be considered as an exogenous source of income as non-contribution based transfers. As the key objective of this study is analysis of the ‘crowding out’ effect, then the contribution based benefits, which are received as an alternative to a wage, should not be considered as an exogenous source of income that increases overall income of recipient. In contrary, non-contribution based benefits can be considered as exogenous increase of the overall income.

In this paper, we estimated two different model specifications. In the first specification, the motives of remittances are assumed to be monomotistic. In the second specification, impact of social transfers on
remittances assuming that the motives for remittances are non-monotonic was estimated, based on Cox et al. (2004) theoretical description of the relationship. The poverty rate was chosen as a threshold point where the motives change. We can assume that remittances to lower income recipients may be more altruistically motivated, so they decrease after increase of social transfers and their poverty reduction goal may not necessarily be reached. Remittances to higher income recipients may be more exchange motivated and therefore change in the same direction with social transfers. In such relations, social transfers would increase poverty and inequality among households, particularly when the receipt of remittances by non-poor is matched with ineffective social transfers’ policies. There is evidence supporting these ideas, but most studies were based on the analysis of cross-sectional data, which does not assure appropriate capture of the dynamic effect. Therefore, it is necessary to test these ideas by using datasets from different time periods.

The paper is structured as follows. The next section presents review of the literature on the ‘crowding-out’ effect of social transfer on remittances. The section three briefly informs about the characteristics of social security system and inflows of remittances to Bosnia-Herzegovina. In the section four, the theoretical model of non-monotonic ‘crowding-out’ effect and the new specification of two empirical models one that does not and the ones that does control for such an effect, are presented. Also, method and data used for its estimation are described. Section five presents results of the estimation of different model specifications. Finally, section five concludes and explains policy implication of the results of this study.
2. Literature on the ‘crowding-out’ effect

Literature on the “crowding-out” effect of social transfer on remittances has so far been concerned with the investigation of its direction, linearity of motives, and the theory was therefore empirically tested in a cross-sectional settings. The ongoing global economic crisis has offered a unique opportunity to investigate whether and how the motives for remittances were changed by the crisis that affected both senders and receivers of remittances. This paper presents the finding of an empirical investigation conducted by using two different HBS surveys from Bosnia-Herzegovina, before and during the crisis.

The direction of this relationship between social transfers and remittances is determined by the motives for sending remittances. They can be motivated by altruism (Becker, 1974) or exchange (Bernheim et al., 1985). Becker's altruistic motives for transfers are based on the idea of interdependent preferences. According to this, parents have preferences regarding their children's consumption. With such preferences, their utility does not depend only on their own consumption, but also on the consumption of others. This is in line with the migration theories that explain migration decision motivated by the diversification of risk to the family income. Thus, migrants will increase their remittances to the family members left behind once their income is negatively affected by adverse conditions in a country, for example. The family income risk sharing strategy results in the same response of remittances to the changes in income as the hypothesis of altruistically motivated remittances would predict. If the motives for these transfers are based on altruism, increase in a recipient’s income as a result of public transfers will decrease amount of private transfers. This is interpreted as crowding-out of private by public transfers (Cox, 1987).
In the presence of the crowding-out effect, the positive effects of social transfers can be neutralized by the response of remittances, as the intended outcome of support to vulnerable groups will be at least partially transferred to senders of remittances (Altonji et al., 1997). The opposite effect is possible when remittances are based on the exchange motive and increase as a result of increase in social transfers, which means that public transfers crowd-in private ones (Cox, 1987, 1990; Altonji et al., 2000; Taylor, 2002).

If private transfers are predominantly motivated by exchange, where transfer is made as a payment for provision of certain services by recipient to a donor, then the sign of relationship between these two is not completely clear, but most authors argue that it is positive. Their explanation is that the rise in income of provider of services through the receipt of social transfers increases the ‘price’ of such services, implying increase in receipt of remittances. Moreover, if remittances are motivated by self-interested intention of sender to increase their inheritance claims, then increase in income of recipients increase potentially inherited wealth and, consequently, transfers of remittances. Therefore, the sign of the relationship between social transfers and remittances is purely empirical question.

Most of the empirical studies so far have failed to find strong crowding-out effect. For example, one of the first studies by Cox and Jakubson (1995) found that a one dollar increase in public transfers in the US would reduce private transfers by no more than 12 cents. Altonji et al. (1997) estimated that a dollar decrease in a child’s will increase parents’ transfers to a child by only 13 cents. Still, a possibility of non-monotonic relationship between public and private transfers was recognized recently, which might be one of the explanations of the failures of previous studies (Albarran and Attanasio, 2002). Increase in income may cause the motives of transfers to change, thus causing the sign of the relationship between public and private
transfers to be different at different levels of recipient’s income (Cox et al., 1997). Thus linear models would be misspecified and not capable to recognize the true crowding-out effect. Another reason for this failure of previous studies is that the empirical evidence from developed countries, with a long history of public transfers which might have already replaced private transfers, might be misleading. Therefore, recent studies have focused on collecting evidence from developing countries, allowing for non-monotonic relationship between public and private transfers. Cox et al. (2004) investigated this possibility by a threshold model and estimated the transfer derivatives to be -0.4 for the poorest households and almost zero for richer households in Philippines. In a study of relationship between public pensions for the elderly and private transfers in South Africa, Jensen (2003) estimates that for each rand increase in public pension income, transfers made by children reduce by 0.25-0.30 rand. Gibson et al. (2006) estimated transfer derivatives in four countries four developing countries - China, Indonesia, Papua New Guinea, and Vietnam – to be in a range between 0 and 0.08, concluding that non-monotonic crowding-out effect of public on private transfers is not important feature of transfer behaviour in developing countries.

3. Remittances and social security in Bosnia-Herzegovina

3.1. Overview of remittance flows

As a consequence of large forced migration outflows during the war period in 1990s, Bosnia is among the leading countries in terms of receiving remittances as a share of GDP. Annual inflows of international remittances,
through banking system only, are around EUR 2 billion (BiH Central Bank, 2011). These remittance inflows are significant source of income for a large proportion of BiH population. Moreover, they are six times larger than foreign direct investments (FDI) and three times larger than development assistance to this country. The data about remittance inflows in the period 2001-2009, based on both BiH Central Bank’s and the World Bank’s estimates are presented in the table below.

As we can see from the table, the World Bank generally estimates larger remittances inflows than BiH Central Bank. The main reason for this difference arises from the differences in estimated transfers through informal channels. According to the BiH Central Bank, they amount to 40% of total inflows, while de Zwager and Gressmann (2009, p.13) reported that only 22.5% of remittances is sent via formal channels. The World Network of Bosnian Diaspora estimates these inflows to be at least 3 billion, as they estimate that majority of these remittances are sent as cash transfers through informal channels.

Table 1. – Overview of remittances in Bosnia and Herzegovina

<table>
<thead>
<tr>
<th></th>
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<th></th>
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<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>BiH Central Bank</td>
<td>1,006</td>
<td>1,009</td>
<td>1,185</td>
<td>1,186</td>
<td>1,262</td>
<td>1,417</td>
<td>1,289</td>
<td>1,069</td>
<td>1,027</td>
<td>1,047</td>
</tr>
<tr>
<td>World Bank</td>
<td>1,131</td>
<td>1,297</td>
<td>1,536</td>
<td>1,514</td>
<td>1,645</td>
<td>2,001</td>
<td>2,028</td>
<td>1,950</td>
<td>1,697</td>
<td>1,524</td>
</tr>
</tbody>
</table>

*Source: HBS Survey (2007), World Bank*

There is limited evidence on the use of remittances in Bosnia. The evidence generally suggests that majority of remittances are being used for consumption. Lianos (2005) reported the results from the survey of return migrants, which show that they mainly used their repatriated savings for current consumption, although a large proportion of them are also used for education of children (22.3%). Also, 27.8% of them answered they used these for savings, which probably means that they will be used for other
purposes later. In another analysis, de Zwager and Gressmann (2010, p.66), based on data from the IOM/IASCI survey conducted in 2009, reported that majority of Bosnian migrants remit money back home (67.3% of migrants from the EU, 55.1% of migrants from ex-Yugoslavia, and 63.6% migrants in United States, Canada and Australia). Average annual amount of remittances that migrants from the EU send to BiH is €2,800, while migrants from ex-Yugoslavia send considerably less, only €1,200. On average, these remittances are transferred in 4.4 transfers. Majority of them (77%) are sent through informal channels. The most important purpose of remittances is to support parents (40%) and other family members (20%).

The analysis of micro data on remittances, available from the Household Budget Survey 2007 (HBS 2007), is presented below. As it can be seen from the table 1, it seems that remittances are largely under-reported; since they are only at 20% of the official macro figures.

Table 2. – Some facts about the remittance flows in 2007

<table>
<thead>
<tr>
<th>Average annual amount of remittances per receiving household (euro)</th>
<th>Percentage of households receiving remittances (%)</th>
<th>Estimated amount of total remittances (mil. euro)</th>
<th>World Bank data on total remittances (mil. euro)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1065.37</td>
<td>14.63</td>
<td>185.03</td>
<td>2,001</td>
</tr>
</tbody>
</table>

Source: HBS Survey (2007)

Table 2 shows that female headed households are more frequent among remittances receiving households (32% compared to 21.6 in all households), which suggests that female headed households are more likely

\[3\] Data from HBS 2011 are not available yet, they will be available in February. Then, we will use those data to compare them with the ones used now and to discuss the micro level effect of the crisis.
to be remittance receiving households. In total, 14.6% of households receive remittances, while 21.7 female headed households receive remittances.

Table 3 presents profile of households based on receipt of remittances. As we can see, remittances receiving households have more female headed households, more of them live in rural areas, are poorer, and have older, less educated and unemployed household head. All these figures suggest that remittances in BiH are pro-poor, since all these coincide with the profile of poor households.

Table 3. – Profile of households that receive remittances and households that do not

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Receiving households</th>
<th>Non-receiving households</th>
</tr>
</thead>
<tbody>
<tr>
<td>% of male-headed households</td>
<td>78.4</td>
<td>71.7</td>
<td>79.0</td>
</tr>
<tr>
<td>% of urban households</td>
<td>41.6</td>
<td>30.4</td>
<td>42.5</td>
</tr>
<tr>
<td>Average size of the household (people)</td>
<td>3.26</td>
<td>3.15</td>
<td>3.27</td>
</tr>
<tr>
<td>Average age of the household members (years)</td>
<td>38.4</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average age of the household head (years)</td>
<td>55.3</td>
<td>56.3</td>
<td>55.2</td>
</tr>
<tr>
<td>Highest education of head (years)</td>
<td>9.1</td>
<td>8</td>
<td>9.2</td>
</tr>
<tr>
<td>HH head employed (%)</td>
<td>44.9</td>
<td>35.9</td>
<td>45.6</td>
</tr>
<tr>
<td>Average household consumption (EUR)</td>
<td>783.59</td>
<td>740.6</td>
<td>787.3</td>
</tr>
</tbody>
</table>

Source: HBS Survey (2007)

Table 4 shows the poverty rates for different groups in BiH in 2007, disaggregated by remittance receipt. We can see from the table that households are more likely to be poor if they are female headed, from RS entity, and from rural areas. Still, poverty is more present among remittance
receiving households. However, incidence of poverty for female headed households, for households from FBiH and households from rural areas is more present among non-receiving households.

Table 4. – Poverty among surveyed households by different characteristics (%)

<table>
<thead>
<tr>
<th></th>
<th>All</th>
<th>Remittances’ receivers</th>
<th>Non-remittances’ receivers</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Before the crisis</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>All</td>
<td>24.1</td>
<td>25.8</td>
<td>23.9</td>
</tr>
<tr>
<td>Male-headed</td>
<td>18.4</td>
<td>18.3</td>
<td>19.0</td>
</tr>
<tr>
<td>Female-headed</td>
<td>44.8</td>
<td>43.2</td>
<td>45.0</td>
</tr>
<tr>
<td>FBiH</td>
<td>20.2</td>
<td>17.0</td>
<td>20.5</td>
</tr>
<tr>
<td>Urban</td>
<td>17.6</td>
<td>21.8</td>
<td>17.4</td>
</tr>
<tr>
<td>Rural</td>
<td>28.6</td>
<td>27.6</td>
<td>28.8</td>
</tr>
</tbody>
</table>

*Source: HBS Survey (2007)*

Table 5 shows some patterns in remittances for different groups in BiH.

Table 5. - Some patterns in remittances across different groups

<table>
<thead>
<tr>
<th></th>
<th>All HHs</th>
<th>Male headed</th>
<th>Female headed</th>
<th>Poor</th>
<th>Non poor</th>
<th>FBiH</th>
<th>Rural</th>
<th>Urban</th>
</tr>
</thead>
<tbody>
<tr>
<td>Average monthly consumption (euro)</td>
<td>783.59</td>
<td>840.18</td>
<td>578.36</td>
<td>260.97</td>
<td>949.34</td>
<td>843.50</td>
<td>777.38</td>
<td>922.86</td>
</tr>
<tr>
<td>Average monthly remittances (euro)</td>
<td>88.78</td>
<td>94.90</td>
<td>77.73</td>
<td>67.84</td>
<td>104.03</td>
<td>97.66</td>
<td>71.09</td>
<td>120.38</td>
</tr>
<tr>
<td>% of remittance in consumption (for HHs receiving)</td>
<td>10.77</td>
<td>9.58</td>
<td>13.27</td>
<td>18.73</td>
<td>6.59</td>
<td>10.37</td>
<td>9.65</td>
<td>12.97</td>
</tr>
</tbody>
</table>

*Source: HBS Survey (2007)*

It can be observed that female-headed households are more likely to receive remittances than male headed households, but on average receive lower value of remittances. Also, remittances have more important share in household’s consumption in female-headed households. Poor people on average are more likely to receive remittances than non-poor households, but on average receive lower value of remittances. Also, remittances have more important share in household’s consumption in poor than in non-poor households. The same applies for households living in RS entity and in rural areas, except that remittances have lower share in consumption among households living in rural areas.

### 3.2. Social transfers in BiH

The social security system in Bosnia-Herzegovina is consisted of: unemployment insurance; health insurance; pension insurance; child protection; and war-veterans protection. The system is based on the schemes of contributory social insurance financed through mandatory contributions by employers and employees, and schemes of social assistance funded from the budgets of governments from different levels. The system is extremely fragmented, being comprised of 13 almost completely independent systems with very low degree of coordination between them, which results in large inefficiencies of each of these systems. Contributory social insurance
schemes are established at the entity level, while social assistance schemes are, besides being financed from the entity level budgets, also financed from budgets of lower government levels, such as cantons or municipalities (EC, 2008). This fragmentation causes large territorial discrepancies in coverage, availability and accessibility of social protection and assistance, as well as in the level of the quality of services.

As already mentioned, Bosnia-Herzegovina experienced very destructive war, which resulted in displacement of about a half of total country’s population, destruction of almost 60% of all housing units (MHRR, 2005), about 200,000 killed, 100,000 war invalids, and 90,000 families of killed soldiers. In addition, slow post-war recovery and transition into the market economy caused very high levels of unemployment. These figures explain while the social assistance system is designed to deal with the burdens of war. It is mainly category based, without clear focus on most vulnerable groups. As a result, majority of people below the poverty line are not covered by social assistance (EC, 2008).

The fragmented and inefficient system of social assistance in Bosnia-Herzegovina, not capable to identify people in state of social need, causes inequality in access to resources between different groups and territories. For example, people with the same level of disabilities are treated differently, depending on whether they are civilian or war invalids. Also, different lower level governments have large differences in the budget available for these purposes and provide different amounts of money for the same target group, increasing territorial inequality. It is not surprising that such a social system has negligible impact on poverty reduction as well.

Bosnia-Herzegovina spends about 4% of its GDP on non-insurance social transfers and is one of the leading countries in the CEE region.

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4 Only Croatia spends slightly larger proportion of its GDP on these transfers.
(Lindert et al., 2008). This is significantly above the OECD countries average of 1.6%. Out of these transfers, about three quarters go to veterans-related benefits. Veteran-related benefits include Military Invalids’ Benefits, Survivor Dependents’ Benefits, Demobilized Soldiers’ Benefits, and Medal Holders’ Allowance. All these are non-means tested, or rights based, benefits. Out of total transfers to these categories, around 90% goes to military invalids and survivor dependents. Civilian benefits are Non-War Invalids’ Benefits, Civilian Victims of War Benefits, which are rights based, plus Social Assistance and Child Protection Allowance, which are means tested. Around 20% of total population reported to receive at least one of these benefits. They contribute to total consumption of all households by 11%.

Veteran–related benefits are most regressive, as about 75% of these benefits are received by non-poor 27%, and 75% of all these benefits go to those in the richest quintile, opposed to the 15% going to those in the poorest quintile. Only 18% of these transfers are received by those in the poorest quintile of the population.

Civilian benefits are somewhat better targeted, as 26% of Child Protection Allowance and 30% of Social Assistance Benefits reach those in the poorest quintile. In such a situation, it is not surprising that these benefits have very limited impact on poverty reduction. According to the BiH Household Budget Survey from 2007, it was estimated that poverty headcount ratio is 19.2% without, and 18% with transfers, meaning that transfers reduce poverty by only 6%.

The findings of the World Bank (2009) study suggest these transfers are largely ineffective, due to several reasons. First, fragmented political system, where social security policies are determined at the entity level and implemented at the canton and municipality level. The lack of coordination

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5 Here, quintiles are based on consumption ranking.
of policies, eligibility criteria and information about beneficiaries further contributes to the inefficiency of such system. Second, different regions experienced conflict and destruction of different severity, which increased inequality across regions. The social transfers policies implemented at lower level without transfers between regions do not contribute to reduction of inequality in different regions and have limited effectiveness. Third, due to the all above and the category approach applied to selection of beneficiaries, where some household are excluded and other receive transfers from several different programs, high under-coverage and leakage rates are present. The World Bank (2003), using the LSMS data, reported that only 4% of poor population is covered by some form of social assistance, whereas 75% of beneficiaries are not poor. The current ineffectiveness of social transfers and their sustainability in the long term require urgent reform of this sector. In that context, it is important to understand possible impacts of these transfers on the receipt of remittances and their ultimate impact on reduction poverty and inequality, once their correlation is taken into account.

4. Modelling the ‘crowding out’ effect

The main purpose of the empirical analysis in this paper is to analyse possible crowding-out effect of social transfers on remittances in order to find evidence on the sign of relationship between receipts of social transfers and remittances, as well as how these motives were changing over the period characterized by the global economic crisis. The findings would reveal possible predominant motives for remitting by Bosnians, both in Bosnia-Herzegovina and abroad, as well as their dynamics over time and possibly the effect of the economic crisis on these motives.
The key difference of this study compared to previous ones is that it uses a new approach to the problems of non-monotonic motives for sending remittances. The need to test for possible shift in transfer motive by a sender once recipient’s income reaches certain threshold is based on the hypothesis that motives for remittances can be different at different levels of income. According to this idea, remittances sent to poor are primarily altruistically motivated, while those sent to non-poor are more exchange driven. This relationship can be described by the figure below. In one of the main works on this issue, Cox et al. (2004) hypothesized that the relationship between social transfers and remittances should be negative at low levels of income, then starting to increase at some threshold level, such as poverty line, as motives for sending remittances switch from altruism to exchange. But, as the income increases, exchange motive causes remittances first to increase (up to recipient’s income level) and then to decrease and eventually cease, making the relationship between social transfer and remittances to be negative in the first part and have an inverse U shape in the second.

The Figure 1 in Cox et al. (2004) suggests that appropriate specification of the empirical model that will capture such a relationship needs to be nonlinear, as well as to account for non-monotonic motives by specifying a point where the break occurs. Moreover, the break at which remittances receipts cease needs to be identified. In terms of model specifications with alternative dependent variables, it should be notes that Cox et al. (2004) suggest the above relationship for amount of remittances received, but not necessarily for likelihood of remittances receipt, which means that the above presented theoretical discussion of non-monotonic and non-linear effect of social transfers on remittances should be only controlled for in models where dependent variable is amount of transfers.
3.2. Empirical specification and estimation methods

In the empirical analysis of this paper, the main research question is to be tested by estimation of six different models. The first set of three models (one pooled OLS for both periods, and to for each year separately) is the model specification where the relationship between social transfers and remittances is estimated by including only the variable on the amount of social transfers, assuming that motives for remittances are monotonic. Second set of models (using three different sets of data) is the model specification, where the amount of social transfers is interacted with poverty status in order to analyse non-monotonic transfers motives towards poor and non-poor households, as well as squared in order to test for non-linearity of the relationship between social transfers and remittances for non-poor receiving households. It is based on the assumption made in previous studies (for example, Cox, 1987) that the motives for remittances are primarily altruistic if sent to poor households, so we could expect the break point in the Figure 1 to be at the poverty line.

The model to be estimated in the first part of empirical analysis is presented by following equation:

\[ Y = \beta_0 + \beta_1 \text{incpens} + \beta_2 \text{tst} + \beta_i \Sigma hh + u_i \]  \hspace{1cm} (1)

where:

\( Y \) – dependent variable, expressed as an annual amount of remittances received by a household, in thousand BAM,

\( \text{incpens} \) – a variable on pre-transfer income, including pensions,
tst – average amount of annual social transfers received by household, in thousand BAM,

hh - set of household’s demographic characteristics which are hypothesized to influence receipt and amount of remittances, including household head’s gender (fhh) which takes value of 1 if household’s head is female, age (age), education level (primedu, secedu, tertedu) where primedu takes value of 1 if household head has primary education and so on, household size (hhsize), number of children in the household (numkids), marital status (marital) which takes value of 1 if a household head is married, and employment status (empl) which takes value of 1 if household head is employed.

In the second stage, two different model specifications will be used to control for non-monotonic and nonlinear effect of social transfers on the amount of remittances received by households. The first model to be estimated is:

\[ Y = \beta_0 + \beta_1 \text{incpens} + \beta_2 \text{tst} + \beta_3 \text{tst}^2 + \beta_4 \text{poor} + \beta_5 \text{tstpoor} + \beta_i \Sigma \text{hh} + u_i \]  

(2)

where:

- \( Y \), \( \text{incpens} \), \( \text{tst} \) and \( \text{hh} \) – as above, except that \( \text{tst} \) now shows the relationship between social transfers and remittances among the non-poor households,
- \( \text{poor} \) – a dummy variable taking value of 1 if a person is not poor, 0 otherwise,
- \( \text{tstpoor} \) – interaction variable between variables \( \text{tst} \) and \( \text{poor} \). This variable tests the hypothesis of non-monotonic motives for sending remittances, based on the poverty status of a household,
- \( \text{tstsq} \) – squared value of \( \text{TSTNP} \), in order to test nonlinear effect of social transfers on remittances among the non-poor,
ui – error term.

Some authors (Albarran and Attanasio, 2002; Amuedo-Dorantes and Pozo, 2006a) argue that the main problem with majority of studies of the crowding out effect suffer from an important endogeneity problem, as social transfers are typically targeted towards households that are in particular need of transfers. But, Bosnia-Herzegovina is an interesting case in that respect, as it is an exemption from this rule since, as we saw above, most of the transfers are targeting non-poor. Also, some studies (for example, Cox et al., 2004) suggest the possibility of reverse causality between the receipt of remittances and pre-transfer income, as remittances may affect individuals’ incentives to work. But, studies that controlled for this possibility did not find any significant change in the results.

The two datasets used for the purpose of empirical analysis in this study are the HBS surveys conducted by Statistical Agency of Bosnia-Herzegovina in 2007 and 2011. The surveys contain the comprehensive set of information necessary for this analysis. The samples for both surveys were around 8,000 households each.

5. Results

The results of the three models from specification (1) are presented in the Table 1 below. These results reveal the average influence of the social transfers on remittances, or the “average” (monotonic) motive for sending remittances, regardless of the poverty status.
Table 1. Estimated coefficients of the alternative models for monotonic motives for sending remittances

<table>
<thead>
<tr>
<th>Variables</th>
<th>Explanation</th>
<th>Period</th>
<th>Coef – 07/11</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Incpens1</strong></td>
<td>Pre-transfer income=Income*Pensions</td>
<td>2007-2011</td>
<td>6,945</td>
<td>2,48*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>-31,377</td>
<td>5,67**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>27,437</td>
<td>8,66**</td>
</tr>
<tr>
<td><strong>Tst1</strong></td>
<td>Total social transfers</td>
<td>2007-2011</td>
<td>511,697</td>
<td>5,40**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>606,725</td>
<td>5,32**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>-383,599</td>
<td>1,92</td>
</tr>
<tr>
<td><strong>Fhh_head</strong></td>
<td>Household head gender - dummy</td>
<td>2007-2011</td>
<td>741,507</td>
<td>6,60**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>344,890</td>
<td>1,95</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>1,049,608</td>
<td>7,54**</td>
</tr>
<tr>
<td><strong>Age_head</strong></td>
<td>Household head age</td>
<td>2007-2011</td>
<td>-7,308</td>
<td>3,25**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>-9,109</td>
<td>2,65**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>-3,884</td>
<td>1,35</td>
</tr>
<tr>
<td><strong>Married_head</strong></td>
<td>Household head marital status - dummy</td>
<td>2007-2011</td>
<td>486,825</td>
<td>4,59**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>432,441</td>
<td>2,58</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>527,561</td>
<td>4,02**</td>
</tr>
<tr>
<td><strong>No_income</strong></td>
<td>Without any income - dummy</td>
<td>2007-2011</td>
<td>-374,299</td>
<td>2,28*</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>-833,031</td>
<td>2,16</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>-75,964</td>
<td>0,45</td>
</tr>
<tr>
<td><strong>Urban</strong></td>
<td>Location of living - dummy</td>
<td>2007-2011</td>
<td>-331,150</td>
<td>5,29**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007</td>
<td>-397,740</td>
<td>4,16**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2011</td>
<td>-227,108</td>
<td>2,81**</td>
</tr>
</tbody>
</table>

The key demographic characteristics influencing receipt of remittances, according to the results of the models estimated, are place of living, as well as age, gender and marital status of a household’s head. Also, other variables that were used in previous studies, such as household’s size
and number of children in a household, were included in the initial specification of the model, but were statistically largely insignificant. These results are in line with the previous studies. Married household head receives more remittances. Female headed also households receive more remittances, which is also in line with most of previous studies (for example, Menezes, 2007). Households with older household head receive fewer remittances, other things being equal.

The coefficient of the key variable of interest in this study, the one on social transfers, is statistically significant and positive in the model estimated with both 2007 and 2011 data, as well as for 2007 data only. This suggests that the receipt of social transfers generally increases receipt of remittances, that is, that remittances are primarily driven by exchange motive. However, this direction changes in 2011, which suggest that the main motive for sending remittances is not exchange any more, but it is altruism.

The table 2 presents results of the estimation of three models that control for possible non-monotonic motives for remittances.

Table 2. Estimated coefficients of the alternative models for non-monotonic motives for sending remittances

<table>
<thead>
<tr>
<th>Variables</th>
<th>Explanation</th>
<th>Period</th>
<th>Coef.-2007/2011</th>
<th>t-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Incpens1</td>
<td>Pre-transfer income=Income*Pensions</td>
<td>2007-2011</td>
<td>6,433</td>
<td>2.23**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>-39,420</td>
<td>6.87**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>28,767</td>
<td>8.88**</td>
</tr>
<tr>
<td>Tst1</td>
<td>Total social transfers</td>
<td>2007-2011</td>
<td>454,985</td>
<td>2.82**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>232,713</td>
<td>1.05</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>-588,628</td>
<td>1.65</td>
</tr>
<tr>
<td>Tst1sq</td>
<td>Total social transfer squared</td>
<td>2007-2011</td>
<td>80,716</td>
<td>2.59**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>139,260</td>
<td>3.06**</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2007-2011</td>
<td>-27,145</td>
<td>0.39</td>
</tr>
<tr>
<td>Poor</td>
<td>Part of the sample</td>
<td>2007-2011</td>
<td>-38,529</td>
<td>0.48</td>
</tr>
</tbody>
</table>
In model 2, the benchmark category is non-poor household. Consequently, original coefficient for social transfers measures their effect on receipt of remittances by non-poor households. Its squared term test the possibility of nonlinearity of this effect among non-poor households. Coefficient for interaction term between social transfers and dummy variable for poor households measures the difference in the effect of social transfers...
on remittance receipts between poor and non-poor. As we can see from the table, the coefficient in front of the \( tst \) variable was positive in 2007 and became negative in 2011, which suggest that the main motive for sending remittances to non-poor households changed from exchange in 2007 to altruism in 2011. The squared term was statistically significant in 2007, but not any more in 2011, which shows that the exchange motive was non-linear, while the altruism motive is not. On the other hand, the coefficient in front of the interaction term between social transfers and poverty status of a household (\( tstpoor \)) changed its sign from 2007 to 2011, which suggests that the main motive for sending remittances to poor households changed from altruism to exchange.

The regression diagnostics tests do not reveal any significant problem that might affect validity of the estimated results.

6. Conclusions

The above empirical analysis of the existence of the dynamic of ‘crowding out’ effect is the first known research of this kind. Therefore, although there is much room for improvement, the results presented above should provide useful insight into the existence of relationship between these two types of transfers and its change over time, possibly as a consequence of the global economic crisis.

The results of the econometric estimation of the models of the relationship between remittances and social transfers suggest that the predominant motive for sending remittances to Bosnia-Herzegovina in 2007 was exchange, which changed to altruism in 2011. Remittance receipts now decrease as social transfers increase. This means that social transfers decrease
amount of remittances received, suggesting the existence of ‘crowd-out’
effect of social transfers on the amount of remittances.

The results of the test for possible non-monotonic pattern in the motives
for remittances support the hypothesis that remittances to poor people were
primarily altruistically motivated in 2007, which changed to exchange in
2011, while for non-poor households the motives and their change were
exactly the opposite.

The above results have important implications from a policy
perspective. In a country with large social transfers that are category based
and inefficient, inflows of remittances that are not pro-poor additionally
decrease efficiency of social transfers and deepen inequality between
recipients and non-recipients of either private or public transfers further.
Consequently, inflows of remittances cannot be considered as a remedy for
inefficient social transfer, but in contrary raise the importance of proper
targeting of social transfers.
References


