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Jennifer Waidler, Jessica Hagen-Zanker, Franziska Gassmann and Melissa Siegel

Maastricht Economic and social Research institute on Innovation and Technology (UNU-MERIT)

email: info@merit.unu.edu | website: <http://www.merit.unu.edu>

Maastricht Graduate School of Governance (MGSOG)

email: info-governance@maastrichtuniversity.nl | website: <http://mgsog.merit.unu.edu>

Keizer Karelplein 19, 6211 TC Maastricht, The Netherlands

Tel: (31) (43) 388 4400, Fax: (31) (43) 388 4499

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Do remittances and social assistance have different impacts on expenditure patterns of recipient households? The Moldovan Case

Jennifer Waidler, Maastricht Graduate School of Governance/UNU-MERIT, Maastricht University

Jessica Hagen-Zanker, Overseas Development Institute

Franziska Gassmann, Maastricht Graduate School of Governance/UNU-MERIT, Maastricht University

Melissa Siegel, Maastricht Graduate School of Governance/UNU-MERIT, Maastricht University

Abstract

Do remittances and social assistance have different impacts on household expenditure patterns? While two separate strands of literature have looked at how social assistance or remittances have been spent, few studies have compared them directly. Using data from a nationally representative household survey conducted in Moldova in 2011, this paper assesses the impact both types of transfers have on household expenditure patterns. Contrary to the common assumption that money is fungible, we find that social assistance and remittances have different impacts on expenditure patterns (having controlled for potential endogeneity). This research highlights that income source matters and that different incomes may have different poverty impacts. In our sample, the two types of transfers are received by different, but to some extent overlapping population groups. The fact that the two transfers are spent in different ways means that, to some extent, social assistance and remittances are complements rather than substitutes.

Key words: remittances, social assistance, expenditure patterns, Moldova

JEL codes: F22, F24, J18, I32, I38, E21, H50

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Introduction

Migration and social protection are tightly linked issues in many ways. Understanding the relationship and various linkages between migration and social protection is crucial for delivering successful policies in either domain. However, the relationship and the effective policy response are still poorly understood. For example, it is often assumed that receiving a public cash transfer (social assistance / cash transfer) is the same as receiving a private cash transfer (remittances). This implies that the two types of transfers are perfect substitutes. However, it is far from clear whether they are indeed fungible and have the same poverty or risk reducing impact on households and individuals. Transfers may be received by different family members (e.g. cash transfers are often paid to women, whereas remittances are received by both men and women, depending on who the migrant is), and the literature shows that which household member receives a transfer can potentially impact household outcomes (Duflo and Udry, 2004). Furthermore, social assistance and remittances may be spent differently (e.g. social assistance on consumption and remittances on investment).

While two separate strands of literature have looked at the effects of social assistance and remittances, a recent literature review (Hagen-Zanker and Himmelstine 2014) shows that only few studies have compared them directly. Ultimately, how social assistance and remittances are spent affects the poverty or risk reducing impacts they can have on households. By providing empirical evidence on the relative impacts of these transfers on household expenditure patterns, we provide further guidance on whether social assistance and remittances should be seen as complements or substitutes. This has important policy implications, as it can give insights into whether remittances can be seen as substitutes of social assistance (in terms of coverage or spending patterns) or, on the contrary, whether migration (through remittances) and social protection serve different purposes. The latter would imply that remittances are not substitutes of social assistance schemes.

Using data from a nationally representative household survey conducted in Moldova in 2011, covering a sample of 3,553 households, this paper investigates whether non-contributory social assistance provided by governments and remittances sent by family members and friends have the same impacts on household expenditure patterns. Moldova is a relevant case study because it has both a mature social protection system and high rates of emigration and remittance receipt – amongst the highest in the region. Migration rates are estimated to be around 17-25% of the population and a much larger share of the working age population (Siegel and Lücke 2013). Remittances have been steadily increasing since the onset of emigration from Moldova. Moldova regularly ranks as one of the highest countries in the world for remittance receipts as a percentage of GDP (World Bank, 2013). At the same time, the social assistance system in the Republic of Moldova provides 18 types of cash benefits, amounting to 2.6% of GDP in 2010 (World Bank 2011:2). In 2009, about 31% of the population lived in a household receiving a social assistance benefit.

This paper is structured as follows: section 2 gives a brief review on the existing literature on the comparative impact of social assistance and remittances on household wellbeing. The next section gives some background information on Moldova's social protection system and patterns of

migration and remittances in the country. Section 4 outlines the methodology and describes the data used. Section 5 presents and discusses the findings, before we conclude.

Review of the literature

Drawing on a rigorous, evidence-focused literature review (Hagen-Zanker and Himmelstine 2014) this section reviews the existing literature on the comparative impact of remittances and cash transfers on a broad range of household-level indicators of wellbeing. While two separate strands of literature have looked at the effects of government transfers or remittances, few studies have compared them directly. The review found 11 relevant studies that directly compared the impacts of cash transfers and remittances on household wellbeing and poverty (with outcome indicators ranging from financial poverty to school enrolment). Only one of these studies has ‘expenditure patterns’ as the dependent variable (Maitra and Ray 2003), as we do. In this study, the authors find that pensions and remittances have different impacts on expenditure patterns of recipient households.

These studies are highly diverse in terms of geographical coverage, type of cash transfer, outcome variables considered, data sources and analytical methods used. Hence, the evidence base is both small and highly context-specific. The review of the studies highlighted a number of methodological concerns, most of which are not adequately addressed in the studies. These are: not taking account of fungibility, crowding out of transfers, or other behavioural effects and a possible endogeneity bias between the transfer(s) and the dependent variable. These will be discussed more closely in Section 4.1.

Notwithstanding the methodological limitation, Hagen-Zanker and Himmelstine (2014) have synthesised the findings: in the majority of the 11 studies, both cash transfers and remittances are shown to have positive impacts on households’ wellbeing (10 of the studies show this for remittances; 8 of the studies show this for cash transfers). However, when we look at the magnitude of the impacts we start seeing some differences: in more than half of the studies, remittances are shown to have a bigger impact on poverty reduction, perhaps due to higher level of the transfer (more on this below) (Van den Berg and Viet Cuong 2011; Maitra and Ray 2003; McDade 2010, and Hernandez et al. 2012). Only one study finds that social protection transfers have a greater impact on poverty and inequality reduction than remittances (Gianetti et al. 2009). However, this study refers to four countries, Slovenia, Poland, the Czech Republic and Hungary, with well-established social protection systems.¹

The case studies indicate a number of factors that explain the differential impact of the transfer. These factors are closely linked to the specific case studies reviewed in the paper and the findings may be entirely different for other contexts. The factors are: (1) **Targeting of the transfer:** a number of studies included in the review suggest that the extremely poor or vulnerable are more likely to receive remittances than cash transfers. (2) **Coverage:** Many of the cash transfer

¹ Further, the data refers to 2004/2005, around the time when these countries had just joined the European Union and before migration outflows from these countries started intensifying.

programmes analysed in the studies in this review have low coverage and hence show lower impacts on poverty reduction. (3) **Amount of the transfer:** in three of the case studies included in this review, remittances received are significantly higher in value than cash transfers, hence explaining their stronger impact on poverty reduction. (4) **Timing of the transfer:** while the social protection literature shows that transfers should be regular and predictable to reduce poverty and vulnerability, a small number of studies reviewed in Hagen-Zanker and Himmelstine (2014) highlight the responsiveness of remittances to shocks. (5) **Use of the transfer:** there is some emerging evidence that remittances and cash transfers are not spent in the same way.

Finally, the only study that explores the differential impacts of remittances and cash transfers on expenditure patterns (Maitra and Ray 2003) acknowledges both the endogeneity of different resource flows and fungibility of financial transfers. To take this into account, they estimate an endogenous equation system between public transfers (social pensions), remittances and other income, before assessing their respective impacts on household expenditure patterns (in terms of expenditure shares on specific budget items) and poverty incidence. We follow the same approach (as outlined in Section 4.1 below). In addition to estimating the effect of the different transfer amounts on expenditure patterns, we also look at the effect of receiving the transfer (in this case social assistance or remittances) on expenditure shares. Moreover, instead of only looking at pensions, we include a number of non-contributory benefits in the social assistance variable, including means-tested benefits. Maitra and Ray (2003) find that both remittances and pensions reduce poverty. However, pensions do not have much of an impact on household expenditure patterns. Remittances, on the other hand, have a stronger positive impact on food expenditure shares. Hence, remittances and pension transfers have different impacts on expenditure patterns.

Our study adds to this literature by putting forward a new case study – the case of Moldova – and providing further evidence on the differential impacts of remittances and cash transfers on expenditure patterns. The next section describes our case study.

Background on Moldova

Migration trends

Moldova is a particularly interesting country to study with regard to migration and remittances due to its relatively new and high degree of emigration and high reliance on remittances. The fall of the Soviet Union in 1991 allowed Moldovans to move outside the country but it was not until the Russian financial crisis in 1998 when Moldovan migration really began to be significant. The predominant reason for migration from the beginning was the high level of poverty in Moldova. Estimates of migrants abroad vary – amongst other reasons due to seasonality – but it is usually estimated to be around 17-25% of the population and a much larger share of the working age population (Siegel and Lücke 2013). The main migrant destination countries are Russia and Italy but these flows are highly gendered and employment-specific. Men are more likely to have short-term movements to Russia to work in the construction sectors while women are more likely to move to

Europe (mainly Italy) to work in domestic and care work and are usually away for longer periods (Vanore and Siegel, forthcoming).

Remittances have been steadily increasing since the onset of emigration from Moldova. Moldova regularly ranks as one of the highest countries in the world for remittance receipts as a percentage of GDP (in 2011 this was estimated at 24%) (World Bank 2013). Remittances have become an important source of financing for many families in Moldova accounting for \$1561 million in 2011 (World Bank) which was higher than both FDI (\$274 million) and ODA (\$470 million) in 2010. Remittances were at a higher proportion of GDP (peaking at 35% in 2006); however, this has decreased recently due to increased economic growth in the country (Chistruga et al. 2013). In 2011, remittances account for 15% of disposable household income on average. For the poorest households (bottom quintile), the share of remittances in disposable income is 12%, while they account for 21% of income in households belonging to the richest quintile (NBS 2012).

The social protection system

The social protection system in Moldova includes both contributory (social insurance) and non-contributory (social assistance) schemes. The focus in this paper is on social assistance -type cash transfers aimed at the protection of households and individuals in need. The social assistance system in the Republic of Moldova provides 18 types of cash benefits, which can be grouped into three main categories: social allowances,² nominative compensations,³ and means-tested social aid.⁴ Social allowances and nominative compensations are allocated based on categorical criteria and cover a much larger group of beneficiaries than the newly introduced social aid.

In 2010 Moldova spent 2.6% of GDP on social assistance benefits of which social allowances account for the largest part (27%), followed by nominative compensations (20%) and social aid (15%), the latter only having been introduced in 2008 (World Bank 2011:2). In 2009, about 31% of the population lived in a household receiving a social assistance benefit. Nominative compensations covered 19% of the population and child benefits 11%. Coverage of targeted social aid has been increasing since its introduction in 2008. In 2010, 59,000 families (about 3% of the population according to UNICEF 2011) benefited from social aid and received on average MDL 740 per month (about \$56) (MLSPF 2011). In 2011, the Government introduced an additional means-tested flat rate benefit, the so-called ‘cold season benefit’, which is paid during the winter months (Ministry of Economy 2012).

Overall, social assistance benefits are slightly progressive. In 2010, 43% of the total allocated benefits reached the poorest 20% of the population. This is mainly due to the social aid program which has allocated more than 80% of the transfer to the poorest quintile. Nominative compensations and child benefits are only modestly progressive due to their categorical nature (World Bank 2011:77-78).

² State social allowance, allowance for care, guardianship allowance.

³ Nominative compensations include discounts on payments for gas, electricity, heating and community services.

⁴ Social aid (introduced in 2008), monthly allowance for child care, material and humanitarian aid.

Social assistance only account for 2.7% of total household income (UNDP 2011:159). Based on a qualitative study of households with children, social assistance is predominantly used to pay for utilities and to buy food (Otter and Vladicescu 2011). Other basic needs, such as clothes, are only satisfied if there is money left over. Although the transfers are small in value, recipients appreciate its regularity and the security this certainty provides.

Methodology and Data

In this paper we analyse the behavioural impacts of different income sources on expenditure patterns; to put it differently, assess whether remittances, social assistance and other income sources have different impacts on expenditure patterns. This can be the case if social assistance and remittances are accrued to different household members, if they are used for different purposes, or if they are received by different types of households.

Given that both transfers are provided in cash and have in essence similar functions, the relationship between social assistance and remittances needs to be taken into account. Among households receiving both remittances and social assistance there is likely to be some crowding out (Maitra and Ray 2003). Crowding out can occur in two ways. On the one hand, the receipt of social assistance can crowd out remittances as households will be less dependent on migrants. On the other hand, remittances can crowd out social assistance if eligibility for social assistance is based on household income (as is the case with some of the transfers in Moldova).

Furthermore, the receipt of both remittances and social assistance may depend on the level of household income and can therefore not be treated exogenously. Following Maitra and Ray (2003), we perform a three-stage least squares (3SLS) estimation to account for endogeneity of all income sources in determining expenditure patterns. We do this by predicting social assistance, remittances, and total expenditure based on a number of exogenous variables (mainly household and community characteristics).

Our system of equations consists of four stages: in the first stage we estimate total household expenditure (used as a proxy for income)⁵ based on the demographic and educational characteristics of household members (such as labour status of household head, age, sex, household composition, etc.) and on community characteristics, such as the district where the household resides.

In stage two we estimate non-contributory social assistance based on predicted expenditures from stage 1, money coming from remittances, and on housing and demographic characteristics (presence of children, number of inactive household members, etc.) as some benefits depend on the composition of the households.

In the third stage we estimate remittances based on predicted expenditures (stage 1), and predicted social assistance (stage 2), household characteristics, as above, and community characteristics which

⁵ Given the limitations of our survey data, total household expenditure provides a better representation of household welfare (for more details, see section 4.2).

are determinants of the decision of a household member to migrate and to send remittances. All income and expenditure variables are defined in per adult equivalent terms to account for the composition of the household and economies of scale within the household. In this paper we have used the OECD equivalence scales to deflate household income.⁶ We also use the logarithms of these variables to account for their non-linear distribution.

In the final stage, expenditure shares for food, clothing and utility bills are estimated, using predicted household expenditures, transfers and remittances as dependent variables and controlling for household composition and other household characteristics. A list of all the variables included in the model is presented in the appendix (see table 8). The set of equations is given by:

1. $Y = f_1(z_1, c_1) + u_1$
2. $T = f_2(\mathbf{Y}, \mathbf{R}, z_2, e_1, c_2) + u_2$
3. $R = f_3(\mathbf{Y}, \mathbf{T}, z_3, c_3) + u_3$
4. $S_i = f_4(\mathbf{Y}, \mathbf{T}, \mathbf{R}, z_4, c_4) + u_4$

where S_i refers to the share of expenditure on item i . Shares are calculated as the percentage of expenditure on a specific item (e.g. food) in total household expenditure. R , T , and Y denote, respectively, remittances, social assistance, and total expenditure. Symbols z , e , and c represent, respectively, the vectors of demographic/educational characteristics of household members, housing characteristics such as proper water or flooring, and community characteristics such as district of residence. Including district fixed effects allow us to account for common characteristics among districts that are unobserved (that is, to get rid of some confounding unobservables). Finally, u refers to the error term of the equation. Note that the variables considered endogenous have been highlighted in bold.

Our main analysis of interest is equation 4. This equation shows the relationship between income from social assistance and remittances and expenditure patterns. This equation also includes further variables that can influence household expenditure allocation, such as sex of the households head or percentage of females in the household. We analyse the effects of the income sources on expenditures in two ways. We first treat remittances and social assistance as binary variables to see whether expenditure patterns differ between recipients and non-recipients. As a second step, we use the continuous variables instead (i.e. the amount received) to see the effects of an increase in the amount of transfers on the shares of expenditures. As a robustness check, all equations have been estimated using bootstrapped standard errors (in addition to normal standard errors).⁷

⁶ The first adult counts for 1, all other adults count for 0.7 and children up to the age of 14 counts for 0.5. For more information on equivalence scales, see <http://www.oecd.org/eco/growth/OECD-Note-EquivalenceScales.pdf>.

⁷ Estimating structural equation models with robust standard error is not possible in STATA. To check for robustness, therefore, we use bootstrapped standard and try different numbers of replications (50, 100 and 200). In the paper we include the default one in STATA (50), but results do not change significantly with the other two.

Estimating expenditure patterns using a 3SLS methodology allows us to account for the simultaneity of the equations as well as the correlation between the error terms (Maitra and Ray 2003). As mentioned earlier, only a few studies have properly accounted for the endogeneity of the different income sources when estimating the effects of social assistance and remittances on poverty and expenditure patterns.

The data used for this analysis has been drawn from a nationally representative, large-scale household survey conducted between September 2011 and February 2012 as part of the project “The effects of migration on children and the elderly left behind in Moldova and Georgia”.⁸ The survey sampling frame was provided by the National Bureau of Statistics from the Moldovan Labour Force Survey (LFS) and only includes households with either elderly or children. It covers 3,553 households in all regions of Moldova except Transnistria. The survey includes a rich migration section with detailed information on the household migration history and remittances, as well as a comprehensive income section including different kinds of government transfers and other sources of individual and household income.

Total household expenditure has been calculated as the sum of all different items of expenditure covered in the survey. It includes expenditures on food, clothing, utility bills, phone and internet, alcohol, newspapers and magazines, and leisure. Social assistance includes all non-contributory benefits excluding old age pensions⁹, namely social allowances, allowances for child care, maternity allowances, nominative compensations, cash benefits, means tested subsistence and other households state benefits. While information on social assistance and expenditure was recorded monthly, in the case of remittances households were asked for the amount received in the last year. For remittances the monthly transfer has been calculated as the average of the last 12 months.

Due to the fact that the income data in this survey was found to be highly underestimated compared to the NBS data, as well as subject to important measurement error, expenditure has been used as a proxy for income as it gives a more accurate representation of the wellbeing of the Moldovan population.¹⁰ In contrast to standard measures of expenditures based on the survey module used by NBS, the expenditure module in our survey does not cover items like expenditure on dwelling equipment, transport, education, medical care and health, and some items of dwelling maintenance.¹¹

⁸ This project was financed by the European Commission and implemented by the Maastricht Graduate School of Governance/UNU-MERIT. For more information, see: http://mgsog.merit.unu.edu/research/moldova_georgia.php

⁹ We have decided to not include old age pensions in the measure of social assistance as it can be considered labour income replacement, rather than a social assistance.

¹⁰ The NBS data is the survey collected by the National Bureau of Statistics of the Republic of Moldova. The household budget survey called “Aspects of the Standard of Living of Population in 2011”. According to NBS, monthly disposable per capita income is, on average, 1444 Lei. In our survey, average income per adult equivalent is 1111.6 Lei. The average income distribution between our data and the NBS also differs: in our survey, income from employment is underestimated and income from social benefits is overestimated. This does not occur with expenditure shares, which have a similar distribution in the two datasets. Moreover, the high amount of zeros in our income data relative to NBS data, as well as the low correlation between our measure of income and expenditure (spearman correlation ratio of 0.52), make the use of expenditure instead of income a preferred measure of welfare.

¹¹ For this reason, and given the fact that our survey only covers households with children and elderly, the average per adult equivalent expenditure in the survey used in this study is 1045 Lei while, according to NBS, the average per capita expenditure in Moldova is 1534 Lei.

However, the distribution of expenditure shares has not been affected as a result of this. Hence, we consider the expenditure estimations to be reliable.¹²

Table 1 shows the percentage of households receiving only social assistance, only remittances, both social assistance and remittances, or no transfers. It provides the averages for total household expenditures per adult equivalent and the expenditure shares for food, clothing and utility bills. More than 22% of the households in the sample receive at least one type of social assistance and around 11% receive only remittances. Only 3% of the sample receives both transfers. The average amount received is almost ten times higher for remittance-receiving households, compared to households that receive social assistance.

Total household expenditure per adult equivalent is, on average, slightly higher in households receiving only remittances (1092 Lei), and similar to households that receive neither of the transfers (1071 Lei). For households receiving only social assistance and both transfers, total average household expenditure accounts to 973 Lei and 937 Lei, respectively. Households that only receive social assistance spend, on average, a higher percentage of their expenditure on food (53%), while households that receive remittances spend on average 48% on food. Remittance-recipient households and households receiving both transfers spend a higher share of expenditure on clothes than the other two types of households, and a lower share on utility bills. A Wald test comparing the means has been done to see whether the difference between only remittance recipients and only social assistance recipients are statistically significant. In all cases, the tests report significant differences in total expenditure and shares of expenditures between these two groups.

Table 1: Distribution of income sources and household shares of expenditures

	Receives only social assistance	Receives only remittances	Receives both	Receives none
Percentage of households	22.5	10.5	2.98	63.9
Average amount received PAE (in Lei)	148 (205)	1160 (1276)	846 (857)	-
Average total hh expenditure PAE (in Lei)***	973 (681)	1092 (756)	937 (535)	1071 (768)
Average share of food***	0.54 (0.006)	0.48 (0.008)	0.48 (0.01)	0.53 (0.004)
Average share of cloth*	0.17 (0.006)	0.21 (0.008)	0.22 (0.02)	0.16 (0.004)

¹²The distribution of shares of expenditure in our survey and according to NBS are very similar: while the share for food according to NBS is 0.43, for clothing 0.1, and for household maintenance (which includes utility bills, among others) 0.18, according to our survey households spend, on average, 0.52 of their total expenditure on food, 0.17 on clothing, and 0.22 on utility bills.

Average share of utility bills***	0.22 (0.005)	0.19 (0.006)	0.18 (0.01)	0.23 (0.003)
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Source: authors' calculations; Standard errors in brackets; Note: PAE is per adult-equivalent; stars denote statistically significant differences between only remittances recipient households and only social assistance recipient households based on a Wald test of means comparisons ($p < 0.1$, ** $p < 0.05$, *** $p < 0.01$)*

In table 2 it is clear that remittance recipient households differ in basic socio-demographic characteristics from social assistance recipient households. A higher percentage of households receiving remittances have a household head that has completed secondary education, while the percentage of households with higher education or only primary education is higher in social assistance recipient households. Not surprisingly, household heads from social assistance recipient households are, on average, older than those from remittance recipient households. Households receiving remittances are more numerous than those receiving social assistance. Finally, the regional distribution of remittance flows highly differs from that of social assistance. While a very small percentage of households in the capital receive remittances, and nearly 40 percent live in the south, the highest percentage of social assistance recipients live in the centre (34.1), followed by the north (29.4), the south (23.9) and the capital Chisinau (12.6). It is interesting to see how these two types of transfers reach different population groups. These differences between remittance and social assistance recipient households will most likely affect the way transfers are spent.

Table 2: Socio-demographic characteristics of social assistance and remittance recipient households

	Remittance recipient households	Social assistance recipient households
Education of household head		
No education/primary	8.5	17.6
Lower secondary	34.5	37.7
Upper secondary	50.9	34.9
Higher	6.0	9.7
Age of household head	49.6	56.3
Mean household size	4.5	3.8
Mean n° of children	1.2	1.15
Region		
Chisinau	2.5	12.6
Centre	34.1	34.1
North	24.2	29.4
South	39.3	23.9

Source: authors' calculations.

Tables 3 and 4 provide an overview of the distribution of transfers as well as the amount of transfers received across expenditure quintiles. From table 3 it is clear that a higher percentage of the poor receive social assistance although, on average, individuals living in richer households receive higher amounts. The highest amounts of transfers are received by households belonging to the 3rd and 5th quintiles, though the total distribution amongst quintiles is relatively equal. This can be also seen in

the last column, which shows that social assistance represents between 16 and 21 percent of total income across all quintiles.

Table 3: Coverage and amount of social assistance received

Quintiles of PAE hh expenditure	Coverage (in %)*	Average PAE amount received in recipient hh (in Lei)	Average PAE amount received in all hh (in Lei)	Percentage of social assistance out of total income in recipient hh
1	33	101.8 (131)	33.9 (90)	21
2	29	115.7 (149)	33.1 (95)	21
3	27	163.8 (231)	43.8 (140)	21
4	25	131.7 (148)	32.3 (93)	16
5	25	173.4 (256)	43.9 (149)	20

*Source: authors' calculations; standard errors in brackets. Note: PAE is per adult-equivalent; *differences in coverage across quintiles are significant at a 1% level based on a chi-squared test of independence*

With regard to remittances (table 4), coverage is higher among individuals from middle income households, confirming that migrants do not belong to the poorest households. Individuals living in richer households receive, on average, higher amounts of remittances; this is not surprising as the income between senders and receivers is usually positively correlated. Finally, the table also shows that remittances constitute a very important source of income in recipient households: on average remittances represent more than 50 percent of total income in the lowest quintile and more than 60 percent in the other 4 quintiles.

Table 4: Coverage and amount of remittances received

Quintiles of PAE expenditure	Coverage (in %)*	Average PAE amount received in recipient hh (in Lei)	Average PAE amount received in all hh (in Lei)	Percentage of remittances out of total income in recipient hh
1	15	502.1 (589)	74.7 (289)	53
2	16	880.5 (1040)	144.4 (532)	62
3	21	1031.5 (1040)	218.6(638)	65
4	19	1020.2 (1022)	192.4 (597)	61
5	17	1499.2 (1487)	254.4 (831)	65

*Source: authors' calculation; standard errors in brackets; Note: PAE is per adult-equivalent; *differences in coverage are significant at a 1% level based on a chi-squared test of independence*

The descriptive statistics presented confirm some of the findings of previous studies, including that the amount of remittances is usually higher than the amount of social assistance (see Hernandez et

al., 2012; Van den Berg and Viet Cuong 2011; Tesliuc and Lindert 2002; Gassmann 2011). Contrary to some other studies suggesting that the poorest households are more likely to receive remittances than social transfers (as shown in Tesliuc and Lindert 2002; Gassmann 2011; Van den Berg and Viet Cuong 2009), in the case of Moldova we find that the coverage of the poorest households is much higher in the case of social assistance than in the case of remittances. This might be due to the fact that our survey only includes households with children and/or elderly household members, groups with both a higher likelihood of receiving social assistance and being poor. Social transfers reach a larger number of households in Moldova, especially those belonging to the lowest expenditure quintile. However, remittances received are more than five times the size of social assistance in recipient households.

Findings and discussion

This section presents the results of the 3SLS estimation. After presenting tests on the validity of the model, we proceed by showing results of the estimations of the resource inflow (or endogenous) variables. We then show and discuss the 3SLS results for the shares of the 3 expenditure items analysed in this paper -share of food, share of clothes and share of utility bills.

To answer our question on whether social assistance and remittances have different impacts on expenditure patterns, we first test whether our empirical model is appropriate to use given the data at hand and whether there is indeed endogeneity between the different income sources. The use of the 3SLS technique is justified by the Lagrange Multiplier Test, which rejects the null hypothesis of no correlation between the error terms of the different equations. 3SLS is considered to be an appropriate estimation when the disturbances of a simultaneous set of equations appear to be correlated, as is the case in present analysis. A Hausman test comparing the three-stages least squares with the ordinary least squares (OLS) estimators rejects the exogeneity of the three income sources in the budget share equation of clothing and utility bills. In the equation of food, however, income sources appear to be exogenously determined, and this is confirmed by looking at the OLS regressions (see appendix, table 11), which shows that the coefficients behave in the same way as in the 3SLS estimation.

Table 5 presents the results of the estimations of the resource inflow (or endogenous) variables. The estimated coefficients generally have the expected signs. The first column shows that the number of household members is negatively correlated with the level of expenditure, that is, the larger the household the lower total household expenditure per adult equivalent. The same effect is found for the presence of a sick adult in the household, which is also negatively correlated with expenditure of the household. Having a male household head, a head who is employed (as compared to being a pensioner), and a head with a high level of education is positively associated with expenditure. Being ethnic Moldovan (as compared to other ethnicities) is negatively associated with total expenditure.

In the second column- showing the determinants of social assistance receipt - we observe that both expenditure and remittance receipt negatively affect the probability of receiving social assistance. The number of children in the household is positively associated with social assistance receipt, while

having bad quality flooring (defined as having a dwelling floor made from clay or cement) or lack of access to safe drinking water are positively associated with social assistance receipt. These results indicate that social assistance is targeted towards poor and vulnerable households.

In the remittances regression (the third column) we can observe that social assistance and total expenditures are negatively correlated with the probability of receiving remittances (although the coefficients are not statistically significant). On the other hand, the number of working-age adults is positively correlated with remittance receipt, while the number of children or elderly in a household does not seem to be associated with the dependent variable. Households with older household heads as well as male heads are less likely to receive remittances.

Looking at the remittance and social assistance equations allows us to analyse the relationship between these two transfers as well as their relationship with total expenditure. Receiving social assistance is negatively associated with receiving remittances and vice versa. At the same time, we see that an increase in expenditure is associated with a lower probability of receiving social assistance, while the relationship between total expenditure and the probability of receiving remittances is not significant. This confirms our descriptive statistics showing that, while poor households rely on social assistance, remittances are more likely to be received by wealthier households.

Table 5: Total expenditure, remittances, and social assistance equations

Variable	Logarithm of PAE expenditure (equation 1)	Receives social assistance (equation 2)	Receives remittances (equation 3)
Logarithm of PAE expenditure		-0.30* (0.18)	-0.13 (0.11)
Receives social assistance			-0.36
Receives remittances		-0.63+ (0.30)	(0.18)
N° of kids in the household	-0.06** (0.01)	0.06** (0.02)	0.00 (0.02)
N° 18-30 year old hh members	-0.10** (0.01)	0.05+ (0.03)	0.07** (0.01)
N° 30-40 year old hh members	-0.07** (0.02)	-0.01 (0.03)	0.06** (0.02)
N° 40-50 year old hh members	-0.07** (0.02)	-0.02 (0.02)	0.05* (0.02)
N° 50-60 year old hh members	-0.13** (0.02)	0.05 (0.03)	0.07** (0.02)
N° 60+ year old hh members	-0.11** (0.02)	0.04 (0.03)	0.02 (0.02)
HH head is male	0.09** (0.02)	-0.03 (0.03)	-0.01* (0.00)
Age of hh head	0.00 (0.00)	-0.01** (0.01)	-0.01* (0.00)
Age squared	-0.00+ (0.00)	0.00* (0.00)	0.00+ (0.00)
Moldovan	-0.14** (0.03)	-0.05 (0.04)	0.00 0.03
The hh has proper flooring		-0.05** (0.02)	
The hh has access to safe		-0.02	

drinking water		(0.06)	
The hh has a toilet		-0.05	
		(0.03)	
One member on maternity leave		0.17**	
		(0.05)	
Labour status of hh head (ref category: pensioner)			
Employed	0.21**		
	(0.04)		
Unemployed	0.01		
	(0.04)		
Sick	-0.14**		
	(0.05)		
Other	0.01		
	(0.09)		
Education of hh head (ref category: upper secondary)			
No education/ primary	0.17**	0.03	0.00
	(0.04)	(0.04)	(0.03)
Lower secondary	0.25**	0.08	0.05
	(0.03)	(0.05)	(0.03)
Higher	0.46**	0.19*	0.09
	(0.04)	(0.09)	(0.06)
Land	-0.03		
	(0.02)		
District fixed effects			
	Yes	Yes	Yes
Constant	7.27**	2.82*	1.20
	(0.13)	(1.34)	(1.02)

Source: author's calculations. Bootstrapped standard errors in parentheses $+p < 0.1$, $*p < 0.05$, $**p < 0.01$

Note: PAE is per adult-equivalent total household expenditure.

Table 6 presents the 3SLS results for the main variables of interest (equation 4), the shares of the three expenditure items analysed in this paper -share of food, share of cloths and share of utility bills- initially treating remittances and social assistance as binary variables.

We find that the level of income (as proxied by total household expenditure) is a strong predictor for the share of expenditures on food and utility bills. An increase in household income is associated with a decrease in the relative expenditure on food and an increase in expenditure on utility bills. The negative correlation between income and food shares is expected following Engel's Law. With respect to the share on utility bills, the positive association is not a priori expected. Although the share of expenditures related to housing and utility is slightly increasing across the welfare distribution in Moldova (NBS 2012:88), the differences are relatively small. Moreover, in many countries of the former Soviet Union, the share of utility expenditures is similar in poor and rich households (see, e.g., Lampietti et al. 2007; Gassmann, 2014). In the case of clothing, however, income appears to be uncorrelated with the share of expenditure on clothes. This is in line with findings from the Household Budget Survey where expenditures on clothing and footwear account for about 10% of total household consumption both in poor and rich households (NBS, 2012:88).

Coming to our main variables of interest, the receipt of social assistance is positively correlated with the share of food, which confirms our expectations given that social assistance are targeted at poor households, which spend a higher share of their income on food. This relationship is not significant

when we use bootstrapped standard errors, however. The receipt of remittances behaves in the same way as total expenditures (negatively correlated with food and positively correlated with utility bills, although this relationship is again not significant when using bootstrapped standard errors). Moreover, receiving social assistance is negatively associated with the share of expenditure on clothes as are remittances (although it turns out insignificant when we use bootstrapped standard errors). The latter finding is noteworthy, as one would expect a positive relationship between expenditures on clothes and remittance receipt. This adds to the growing evidence base that remittances are *not* spent on conspicuous consumption.

Other variables that significantly affect expenditure patterns are the sex of the household head, the percentage of women in the household and the number of household members (see tables 9 and 10 in the appendix). Having a male household head is negatively correlated with the share spent on food and positively correlated with the share spent on clothing. The coefficient of percentage of women in the household has a somewhat contradictory impact: the higher the number of women in the households, the lower the share spent on food and the higher the share spent on utility bills. Moreover, the higher the number of children and adults in the household, the lower the shares spent on food and utility bills, and the higher the expenditure on clothes. The number of elderly individuals in the household does not appear to have a significant effect on expenditure shares.

Hence, remittances and social assistance do have different impacts on expenditure patterns. The different impact of public and private transfers on expenditure shares can be explained by the fact that households receiving social assistance are, in general, poorer than households receiving remittances and so food expenditure is a priority. Further, as argued by Maitra and Ray (2003), social assistance may be received for specific purposes (such as caring for children) which explicitly or implicitly constrains the spending ability of the household.

Table 6: Impact of income and of receiving public and private transfers on expenditure patterns

	Share food		Share cloth		Share utility bills	
		With bootstrapped SE		With bootstrapped SE		With bootstrapped SE
Main equation						
Log of expenditure	-0.09** (0.01)	-0.09** (0.02)	0.00 (0.01)	0.00 (0.02)	0.08** (0.01)	0.08** (0.02)
Receives social assistance	0.09* (0.04)	0.09 (0.07)	-0.13** (0.03)	-0.13+ (0.07)	0.05+ (0.03)	0.05 (0.05)
Receives remittances	-0.07* (0.03)	-0.07 (0.06)	-0.05* (0.02)	-0.05 (0.05)	0.05* (0.02)	0.05 (0.06)
<i>Control variables omitted</i>						

Receives remittances

Receives social assistance	-0.36** (0.08)	-0.36 (0.23)	-0.40** (0.08)	-0.40+ (0.21)	-0.31** (0.08)	-0.31 (0.19)
Log of expenditure	-0.13** (0.04)	-0.13 (0.13)	-0.12** (0.04)	-0.12 (0.12)	-0.09* (0.04)	-0.09 (0.11)

Control variables omitted

Receives social assistance						
Receives remittances	-0.63** (0.08)	-0.63+ (0.36)	-0.63** (0.08)	-0.63+ (0.34)	-0.52** (0.08)	-0.52 (0.33)
Log of expenditure	-0.30** (0.11)	-0.30* (0.14)	-0.27* (0.11)	-0.27* (0.11)	-0.34** (0.11)	-0.34** (0.16)

Control variables omitted

Observations	3459	3459	3434	3434	3516	3516
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*Source: author's calculations. Full models are shown in the appendix. Standard errors in parentheses +p < 0.1, *p < 0.05, **p < 0.01*

Table 7 shows the same budget shares estimation by treating remittances and social assistance as continuous variables, i.e. using the amount of transfers. The results for the amount of transfers behave in a similar way as for the receipt of transfers: social assistance has a positive impact on the budget share on food (both using normal and bootstrapped standard errors) and a negative impact on the share of expenditure on clothing, while remittances are negatively correlated with expenditure share on food (only when we use normal standard errors). In conclusion, similar to Maitra and Ray (2003) we find that the receipt and the amount of social assistance and remittances have different impacts on budget shares.

We observe that social assistance and remittances are negatively correlated in both the remittances equation and the social assistance equation. This relationship, however, appears to be not significant when using bootstrapped standard errors. Furthermore, the relationship between the level of expenditures and social assistance is always negative, meaning that poor households are more likely to receive transfers from the government. We cannot reach the same conclusion in the case of remittances, however, as the negative relationship between these transfers and total expenditure is not robust (when using bootstrapped standard errors, the relationship turns out insignificant).

Table 7: Impact of income and of the amount of public and private transfers on expenditure patterns

	Share food		Share cloth		Share utility bills	
	With bootstrapped SE		With bootstrapped SE		With bootstrapped SE	
Main equation						
Log of expenditure	-0.09** (0.01)	-0.09** (0.02)	0.01 (0.01)	0.01 (0.02)	0.08** (0.01)	0.08** (0.02)
Receives social assistance	0.03** (0.00)	0.03* (0.01)	-0.03** (0.01)	-0.03* (0.13)	0.01 (0.01)	0.01 (0.01)

Receives remittances	-0.01* (0.00)	-0.01 (0.01)	-0.01* (0.00)	-0.01 (0.01)	0.01+ (0.00)	0.01 (0.01)
<i>Control variables omitted</i>						
Receives remittances						
Receives social assistance	-0.42** (0.11)	-0.42 (0.34)	-0.47** (0.12)	-0.47 (0.39)	-0.30* (0.12)	-0.30 (0.36)
Log of expenditure	-0.77** (0.25)	-0.77 (0.75)	-0.65* (0.26)	-0.65 (0.83)	-0.47+ (0.25)	-0.47 (0.69)
<i>Control variables omitted</i>						
Receives social assistance						
Receives remittances	-0.34** (0.05)	-0.34 (0.22)	-0.34** (0.05)	-0.34 (0.28)	-0.25** (0.05)	-0.25 (0.26)
Log of expenditure	-1.12* (0.49)	-1.12+ (0.63)	-1.08* (0.47)	-1.08* (0.53)	-1.36** (0.50)	-1.36* (0.66)
<i>Control variables omitted</i>						
Observations	3459	3459	3434	3434	3516	3516

*Source: author's calculations. Full models are shown in the appendix. Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$*

Conclusions

This paper investigated whether non-contributory social assistance provided by governments and remittances sent by family members and friends have the same impacts on household expenditure patterns (expenditure on food, clothes and utility bills). It contributes to the small body of evidence that directly compares the impact of social assistance and remittances on household wellbeing using data from a nationally representative household survey conducted in Moldova in 2011.

Due to the fact that both remittances and social assistance depend on overall household income and cannot be exogenously determined, we follow Maitra and Ray (2003) in performing a three-stage least squares (3SLS) estimation to account for endogeneity of all income sources in determining expenditure patterns. This estimation is the basis for our findings.

The findings show that social assistance, remittances and total income are indeed endogenous. In other words, the likelihood of receiving one, determines the likelihood of receiving another type of income. However, as only three percent of households receive both types of transfers, we cannot draw conclusions on crowding out at this stage. Further, when accounting for the endogeneity and the influence of other variables, we see that poorer households have a higher likelihood of receiving social assistance, while this is not necessarily the case with remittances.

We find that social assistance and remittances have different impacts on expenditure patterns. While remittances behave in the same way as total expenditures (negatively correlated with food and positively correlated with utility bills), social assistance is positively correlated with the share spent on food. Moreover, receiving social assistance is negatively associated with the share of expenditure on clothes, as are remittances, but not always significantly so. The latter finding is noteworthy, as

one would expect a positive relationship between the expenditure share on clothes and remittance receipt, given the often higher consumption behaviour of remittance receivers.

This research highlights the importance of income source in determining potential poverty impacts. In the case study at hand it appears that the two different transfers are not only received by different and overlapping population groups, but are also spent in different ways. This means that to some extent, remittances and social assistance are complements rather than substitutes.

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Appendix

Table 8: Descriptive statistics of variables used in the models

Variable	Description	mean	sd	min	max
Log of expenditure	Per adult equivalent log of expenditures	6.77	0.66	3.00	9.07
Log of social assistance	Per adult equivalent log of social assistance s	1.04	1.93	0	7.48
Log of remittances	Per adult equivalent log of remittances	0.90	2.27	0	8.94
PAE expenditure	Per adult equivalent expenditures	1059	758	20	8708
Social assistance	Per adult equivalent social assistance	36.6	118.5	0	1778
Remittances	Per adult equivalent remittances	444.4	1684	0	2148
Receives social assistance		0.25	0.44	0	1
Receives remittances		0.14	0.34	0	1
Hh head is male		0.62	0.49	0	1
per_fem	% of female hh members	0.56	0.25	0	1
N° of kids		0.94	1.03	0	7
N° 18-30 years old	N° of hh members who are 18-30 years old	0.65	0.90	0	6
N° 30-40 years old	N° of hh members who are 30-40 years old	0.50	0.74	0	4
N° 40-50 years old	N° of hh members who are 40-50 years old	0.40	0.68	0	2
N° 30-40 years old	N° of hh members who are 30-40 years old	0.33	0.61	0	2
N° 60 more	N° of hh members who are 60 or more years old	0.65	0.72	0	4
Age	age of hh head	55.7	15.8	18	99
Agesq	age squared	3353.3	1761.9	324	9801
Moldovan	Ethnicity of hh head	0.81	0.39	0	1
Floor	HH has proper flooring	0.74	0.44	0	1
Water	HH has safe drinking water available	0.97	0.17	0	1
Toilet	HH has a toiler inside	0.23	0.42	0	1
One member on maternity leave	At least one person in the HH is on maternity leave	0.04	0.20	0	1
Occupation of hh head: pensioner		0.40	0.49	0	1
Employed		0.26	0.44	0	1
Unemployed		0.19	0.39	0	1
Sick		0.06	0.24	0	1
Other		0.09	0.28	0	1
Land	HH owns land	0.63	0.48	0	1

Source: author's calculations

Table 9: Impact of income and of receiving public and private transfers on expenditure patterns. Full model

	Share food	Share food	Share cloth	Share cloth	Share bills	Share bills
		With bootstrapped se		With bootstrapped se		With bootstrapped se
Log of expenditure	-0.09** (0.01)	-0.09** (0.02)	0.00 (0.01)	0.00 (0.02)	0.08** (0.01)	0.08** (0.02)
Receives social assistance	0.09* (0.04)	0.09 (0.07)	-0.13** (0.03)	-0.13+ (0.07)	0.05+ (0.03)	0.05 (0.05)
Receives remittances	-0.07* (0.03)	-0.07 (0.06)	-0.05* (0.02)	-0.05 (0.05)	0.05* (0.02)	0.05 (0.06)
HH head is male	-0.01* (0.01)	-0.01+ (0.01)	0.02** (0.01)	0.02* (0.01)	-0.02* (0.01)	-0.02* (0.01)
Percentage of females	-0.03* (0.01)	-0.03* (0.01)	0.02 (0.01)	0.02 (0.01)	0.04** (0.01)	0.04** (0.01)
N° kids in the household	-0.02** (0.01)	-0.02** (0.01)	0.04** (0.00)	0.04** (0.00)	-0.02** (0.00)	-0.02** (0.00)
N° of 18-30 year old hh members	-0.02** (0.00)	-0.02** (0.01)	0.03** (0.00)	0.03** (0.01)	-0.01** (0.00)	-0.01* (0.01)
N° of 30-40 year old hh members	-0.02** (0.01)	-0.02** (0.01)	0.03** (0.01)	0.03** (0.01)	-0.01* (0.00)	-0.01 (0.01)
N° of 40-50 year old hh members	-0.02** (0.01)	-0.02** (0.01)	0.03** (0.01)	0.03** (0.01)	-0.01 (0.00)	-0.01 (0.01)
N° of 50-60 year old hh members	-0.02** (0.01)	-0.02** (0.01)	0.01 (0.01)	0.01 (0.01)	0.01* (0.00)	0.01+ (0.01)
N° of 60+ hh members	0.00 (0.01)	0.00 (0.01)	-0.01+ (0.01)	-0.01 (0.01)	0.01* (0.00)	0.01+ (0.01)
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.28** (0.09)	1.28** (0.12)	-0.01 (0.08)	-0.01 (0.12)	-0.25** (0.07)	-0.25* (0.13)

Source: author's calculations. Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Table 10: Impact of income and of the amount of public and private transfers on expenditure patterns. Full model

	Share food	Share food With bootstrapped d se	Share cloth	Share cloth With bootstrapped se	Share bills	Share bills With bootstrapped se
Log of expenditure	-0.09** (0.01)	-0.09** (0.02)	0.01 (0.01)	0.01 (0.01)	0.08** (0.01)	0.08** (0.01)
Log of social assistance	0.03** (0.01)	0.03* (0.01)	-0.03** (0.01)	-0.03* (0.01)	0.00 (0.01)	0.00 (0.01)
Log of remittances	-0.01* (0.00)	-0.01 (0.01)	-0.01* (0.00)	-0.01 (0.01)	0.01+ (0.00)	0.01 (0.01)
HH head is male	-0.01+ (0.01)	-0.01+ (0.01)	0.02** (0.01)	0.02* (0.01)	-0.02** (0.01)	-0.02* (0.01)
Percentage of females	-0.03* (0.01)	-0.03* (0.02)	0.02 (0.01)	0.02+ (0.01)	0.04** (0.01)	0.04** (0.01)
N° of kids in the household	-0.03** (0.01)	-0.03** (0.01)	0.04** (0.00)	0.04** (0.01)	-0.02** (0.00)	-0.02** (0.01)
N° of 18-30 year old hh members	-0.02** (0.00)	-0.02** (0.01)	0.03** (0.00)	0.03** (0.01)	-0.01** (0.00)	-0.01* (0.00)
N° of 30-40 year old hh members	-0.02** (0.01)	-0.02** (0.01)	0.02** (0.01)	0.02** (0.01)	-0.01* (0.01)	-0.01* (0.01)
N° of 40-50 year old hh members	-0.02* (0.01)	-0.02* (0.01)	0.02** (0.01)	0.02** (0.01)	-0.01 (0.01)	-0.01 (0.01)
N° of 50-60 year old hh members	-0.02** (0.01)	-0.02** (0.01)	0.00 (0.00)	0.00 (0.01)	0.01** (0.00)	0.01* (0.01)
N° of 60+ year old hh members	0.00 (0.01)	0.00 (0.01)	-0.01* (0.01)	-0.01+ (0.01)	0.01** (0.00)	0.01* (0.01)
District fixed effects	Yes	Yes	Yes	Yes	Yes	Yes
Constant	1.25** (0.09)	1.25** (0.12)	-0.01 (0.08)	-0.01 (0.10)	-0.23** (0.07)	-0.23* (0.11)

Source: author's calculations. Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

Table 11: OLS estimations of shares of expenditures

	Share food	Share cloth	Share bills
Log of expenditure	-0.03** (0.00)	0.05** (0.00)	-0.04** (0.00)
Receives social assistance	0.01* (0.01)	-0.00 (0.01)	0.00 (0.01)
Receives remittances	0.00 (0.01)	-0.02** (0.01)	-0.00 (0.01)
HH head is male	-0.03** (0.01)	0.01* (0.01)	0.00 (0.01)
Percentage of females	-0.03* (0.01)	0.01 (0.01)	0.04** (0.01)
N° kids in the household	-0.01** (0.00)	0.03** (0.00)	-0.02** (0.00)
N° of 18-30 year old hh members	-0.02** (0.00)	0.03** (0.00)	-0.02** (0.00)
N° of 30-40 year old hh members	-0.03** (0.01)	0.03** (0.00)	-0.01+ (0.00)
N° of 40-50 year old hh members	-0.03** (0.01)	0.03** (0.00)	-0.01+ (0.00)
N° of 50-60 year old hh members	-0.02** (0.01)	0.00 (0.00)	0.00 (0.00)
N° of 60+ year old hh members	0.02** (0.01)	-0.01* (0.00)	-0.01* (0.00)
District fixed effects	Yes	Yes	Yes
Constant	0.83** (0.04)	-0.39** (0.03)	0.64** (0.03)
Observations	3467	3442	3524

Source: author's calculations. Standard errors in parentheses + $p < 0.1$, * $p < 0.05$, ** $p < 0.01$

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