Remittances in Georgia: Correlates, Economic Impact, and Social Capital Formation*

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ABSTRACT. We use a new survey, "Georgia on the Move," to examine migrant-level, household-level, and contextual variables associated with the probability that a Georgian household receives remittances. We then apply propensity score matching to estimate more precisely than is usually possible how remittances affect particular types of household expenditures, savings, labor supply, health, and other measures of well being. Separate analysis of the sub-sample of households with a migrant currently abroad distinguishes the effects of remittances from the effects of migration as such. In Georgia remittances improve household economic well-being without, for the most part, producing the negative consequences often suggested in the literature. Remittances have a stronger impact in urban settings than in rural areas. We find evidence for a previously neglected and potentially important aspect of remittances: they foster the formation of social capital by increasing the amount of money that households give as gifts to other households.

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The economic impact of migrant remittances on the communities that receive them has been of the subject of long-standing interest and debate among scholars of international migration. One school of thought associates remittances with persistent dependence, increased inequality, conspicuous (and wasteful) consumption, and other negative outcomes. The alternative perspective sees remittances as a potential source of productive investment capital, insurance against uncertainty in local labor markets, and a means of ameliorating poverty, fostering positive spinoff effects, and providing foreign currency. Empirical studies of the impact of remittances at the community or national level abound, and they reach mixed conclusions. Yet there are few studies that directly assess how remittances affect the households that receive them. Moreover, although there is wide recognition that international labor migration and remittances play an important role in the economies and societies of the former Soviet Union, few empirical studies systematically analyze their impact (Korobkov 2007).

We use a new approach, propensity score matching, to measure the economic impact of remittances on households in the Republic of Georgia. Like other former Soviet republics in the South Caucasus and Central Asia, Georgia has experienced high levels of emigration since the demise of the Soviet Union in 1991 but the economic and consequences remain unclear due to the lack of solid empirical data. We analyze data from a household survey conducted in fall 2008, Georgia on the Move (GOTM), which was explicitly designed to assess patterns and consequences of international labor migration by Georgian residents. The GOTM data allow us to identify migrant-level, household-level, and contextual variables associated with the probability that a Georgian household receives remittances. We also estimate how remittances affect particular types of household expenditures, savings, labor supply, health, and other measures of well being more precisely than is usually possible, by matching households that

receive remittances with those that do not using propensity scores we estimate from our remittance receipt models. By conducting separate analyses for the subsample of households who currently have a migrant abroad, we are able to distinguish the effects of remittances from the effects of migration as such.

We find consistent evidence that in Georgia remittances improve household economic well-being without, for the most part, producing the negative consequences often suggested in the literature. The impact of remittances is especially pronounced in urban settings, less so in rural areas. We also find evidence for an aspect of remittances that has not been previously identified: they foster the formation of social capital because they increase the amount of money that households give as gifts to other households. Although the social science literature on international migration focuses on how migrant social networks promote migration streams, our findings from Georgia suggest that migrant remittances can also generate and sustain reciprocal ties among households in the origin country.

Background: Migration in Post-Soviet Georgia

Since the collapse of the Soviet Union in 1991, migration has played a formative role in the economic and social life of Georgia. Secessionist movements and military conflicts in Abkhazia, South Ossetia, and Adjara created a large population of internally displaced persons that persists today. The initial years after Georgia's independence saw a typical pattern of return migration to Russia and other former Soviet republics by Georgian residents of the respective titular ethnic groups who had moved to Georgia when it was part of the Soviet Union. But most significantly, the post-Soviet era has seen a massive wave of labor migration abroad by Georgian citizens driven by harsh economic conditions and frequent political uncertainty in Georgia.

Although it is hard to measure the volume out-migration, particularly in a setting like Georgia where the residential registration system broke down following the Soviet collapse and the quality of vital records is suspect, all careful observers agree that Georgia's net out-migration rate has been consistently among the highest in the world since the early 1990s. The United Nations' (2009, p.183) global migration assessment for 2006 put net emigration from Georgia between 1995 and 2005 at 598,000 people. According to Badurashvili (2004) of the Georgian Centre of Population Research, Georgia lost approximately one million citizens to emigration between 1989 and 2002. Mansoor and Quillin (2007, p.33) cite data indicating that from 1990 to 2003 about 20% of Georgia's 1989 population migrated abroad: among the 25 East European and former Soviet countries covered in their reported, only Albania and Kazakhstan lost a larger percentage of their populations to emigration. Only Albania and Armenia lost higher percentages to net out-migration in 2000-2003 (Mansoor and Quillin 2007, p.31).

Three distinct phases of Georgia's external migration can be distinguished. In the first phase (1990-1995), the Soviet collapse and ensuing political and military conflicts were the driving forces, producing large outflows of refugees and non-ethnic Georgians, as well as small-scale economic migration. Russia and other former Soviet republics were the main destinations by far. In the next period (1996-2004), economic motives became paramount: Georgian citizens increasingly went abroad seeking better labor market conditions, as Georgia experienced protracted economic crisis. Others migrated to pursue education. Outflows remained substantial and steady during this phase, if somewhat smaller in volume than in the initial phase. Western Europe (particularly Greece) and North America grew in importance as destination countries.

Less is known about the current and third phase (2004-present), which started with Georgia's Rose Revolution at the end of 2003, the rise of the Saakashvili administration, and a

series of sweeping liberalizing economic reforms starting in 2004. These developments may well have created a renewed sense of economic opportunity in Georgia that could have encouraged Georgian migrants abroad to return home and stemmed the outflows of labor migrants. The more favorable investment climate might have increased the volume of remittances and led to a larger of proportion of them devoted to productive investments. Georgia's geo-political re-alignment away from Russia toward the West during this period, which was encouraged by hostile Russian actions toward Georgia starting in 2004 and culminating in the August 2008 invasion, most likely furthered the shift toward Western European and North American destinations. At the same time, it is too soon to assess how the August 2008 and more recent waves of political instability within Georgia have shaped migration and remittance patterns.

Bank transfer data cited by Tchaidze and Torosyan (2009) suggest that the volume of remittances sent to Georgians from abroad increased substantially in the current period. Such remittances through official channels totaled $63 million (or 2.2% of GDP) in 2000 and grew to $197 million (4.9%) in 2003. Their surging growth during period 2004-2008 from $259 million to $1.002 billion outstripped the robust growth in Georgia's GDP, so that by 2008 remittances accounted for 7.8% of Georgia's national product, despite the August 2008 Russian invasion. Of course, these figures represent only official transfers; most likely, the true volume of remittances sent is substantially higher, as migrants often transmit money back to their home countries via unofficial means. Clearly, migrant remittances play a significant role in the Georgia's economy. However, as the social science literature on remittances suggests, the nature of that role depends to a large extent on how they are actually used by those who receive them, and whether they have negative consequences that outweigh their contributions to well-being.

Economic Impact of Remittances: The Debate

The social science literature on the impact of remittances contains both pessimistic and optimistic perspectives.[1] According to the pessimistic view, remittances perpetuate dependency on the part of migrant-sending communities in several ways (Lipton 1980; Reichert 1981; Rubinstein 1992). They are spent mainly on consumption – in particular, on "conspicuous" forms of consumption like the purchase of imported goods – rather than invested in productive activity. Remittance-driven consumption leads to inflationary pressures and creates a taste for a imported goods and a standard of living that is impossible to sustain without remittances, and thus encourages additional migration that ultimately deprives communities of their most capable and productive workers. Remittances foster inequality as households who do not receive remittances cannot keep up with those who do. The associated envy can destroy the traditional social fabric and ties that keep poor communities together in the face of material hardships. Remittances yield moral hazards, as households receiving remittances have lower incentives to work in the local labor market or in domestic businesses. Because remittances are an unreliable source of revenue in the long term, families who come to depend on them are exposed to considerable risk. Overall, the pessimistic outlook on remittances sees them as perpetuating a cycle of dependency and thwarting the positive development of communities that receive a large volume of remittances.

The optimistic perspective is often associated with the "new economics of labor migration," which departed from the neo-classical perspective (Todaro 1969) by emphasizing that the household rather than the individual is the appropriate unit for analyzing labor migration behavior (Lucas and Stark 1985; Stark and Bloom 1985; Stark 1991; Taylor 1999). In this view

[1] For more detailed summaries of the debate over the economic effects of remittances, see Taylor (1999); Massey et al. (2005); de Haas (2007).

sending one or more household members abroad to work is a rational strategy of income diversification for households facing uncertainty in local labor market and agricultural conditions in the absence of developed credit and insurance markets. Remittances reflect this motive for migration: they provide income to the household from a distant market that is not subject to the same constraints, shocks, and vicissitudes of the local market. They can potentially alleviate poverty simply by providing income to families toward the bottom of the income distribution. They can offset the lost labor and lost human capital effects of migration. Moreover, remittance-driven consumption can have a sizable multiplier effect as it represents increased demand for goods and services: to the extent these are locally produced, remittances benefit a much broader circle of producers and service providers in a community or country than the immediate households who receive them (Adelman and Taylor 1992). Even if remittance-driven consumption is geared mainly toward imports, it may spur entrepreneurial locals to initiate new production to meet the incipient demand. Furthermore, there are other uses of remittances besides consumption and productive investment that can have long term developmental benefits: they can be used to invest in education or improved health care for household members, As for inequality, the impact of remittances depends on which families receive them: if they go disproportionately to poorer households they actually reduce inequality.

Perhaps not surprisingly, empirical studies assessing the impact of remittances in specific national contexts arrive at mixed results. Apparently, the impact of remittances depends on who migrates, how the remittances are used, and whether they spur productive responses at the local level. These variables, in turn, depend on a host of local conditions, such as the development of local infrastructure and capital markets, the size and composition of the local workforce, the availability of investment opportunities, and local entrepreneurial culture. It is worth noting that

the majority of existing empirical studies focus on the case of Mexico (see, e.g., Durand et al. 1996; Durand, Parrado, and Massey 1996), while other studies examine countries in Africa or Asia. We have not found any systematic empirical analyses of the role of remittances in former Soviet countries, though there is growing recognition among scholars of the region that labor migration now plays an extremely important role in the economies of these countries, especially those in the Caucasus and Central Asia (Korobkov 2007; Mansoor and Quillin 2007). Lack of data has, no doubt, been the main reason for the lack of empirical attention to the region.

One possible aspect of remittance use that we examine but has not yet, to our knowledge, been considered in the literature is social capital formation. If households that receive remittances share them with other households through gifts or donate them to local community projects, remittances foster the production of social capital. These are other, more direct ways that remittances can contribute to collective well-being beyond the households that actually receive them. Alternatively, such gifts can be seen as a type of household "investment" in social capital, as they establish and reinforce ties of mutual obligation that can potentially be called upon in the future. Although there is much discussion of the role that migration networks play in facilitating the migration process (Massey et al. 2005), we have not seen any theoretical or empirical attention devoted to the role that remittances can, in principle, play in fostering and strengthening social networks in the origin communities.

Remittances in Georgia: Research Questions and Approach

Against the backdrop of uncertainty regarding the impact of remittances in Georgia and the broader controversy as to how remittances affect economic well-being, we investigate two broad questions: 1) What variables are associated with the probability that a Georgian household receives remittances? 2) What effects do remittances have on investment, consumption, gift

giving, labor market activity, and health of households in Georgia? We examine both questions on two levels. First, we analyze the entire sample of households in our data (whether or not they have members currently living abroad). The reason for this is that households can and often do receive remittances from friends and relatives who are not part of the household; therefore, the impact of remittances is not limited to absent migrant households, and it is worth analyzing the correlates and impact of remittances among all households to obtain a comprehensive picture. However, absent migrant households are far more likely to receive remittances for the simple reason that they have a household member living and (usually) working abroad. Unobserved household characteristics associated with having an absent migrant may also be related to the probability of receiving remittances and to the impact of remittances, thus potentially confounding estimates of the correlates and impact of remittances in the analysis of all households. Therefore, at the second level we also conduct both our analyses on the subsample of absent migrant households. In our models for the correlates of receiving remittances, this allows us to specify richer models that incorporate migrant characteristics and migrant destination, in addition to Georgian household characteristics and local context.

The absent-migrant household analysis also permits us to disentangle the economic impact of remittances as such from the impact of migration. We conceptualize the impact of remittances as the effect of receiving remittances on household economic outcomes. This approach differs from an analysis of how remittances are spent. As pointed out by Taylor (1999), studies of remittance use suffer from a logical flaw because money is fungible: it does not make sense to ask how funds from specific sources are used by households, because the use of remittance money on one purpose frees up money from other sources to be used for other purposes. If, for example, all remittance money is used to purchase food, then the funds that in

the absence of remittances would have been spent on food might be saved or invested or spent on travel instead. Due to this fungible quality of money, for understanding the impact of remittances it is largely irrelevant how the specific funds that come in the form of remittances are spent. The issue is how remittances affect overall expenditures, investment, and savings of households that receive them, as well as other relevant outcomes. Thus, our strategy is to explicitly model the effects of receiving remittances on a range of household-level outcomes.

One obvious problem this strategy encounters is that selection into migration is non-random and, among households with absent migrants, the probability of receiving remittances is systematically related to other variables that might affect economic and social outcomes within households. We can control for some variables that jointly affect the probability of having an absent migrant, the probability conditional on having an absent migrant that he or she sends remittances, and the outcomes of interest. However, we cannot rule out the possibility that unobserved variables have such joint effects and may therefore bias our estimates of the effects of remittances as such. We mitigate the problem somewhat by conducting the analysis of absent migrant households only and by matching remittance and non-remittance households on their estimated propensity to receive remittances. By eliminating one source of confounding unobserved variables – those that affect the probability of having an absent migrant and the outcome in question – we obtain a more precise measure of the specific impact of remittances.

Data: Georgia on the Move Survey

The Georgia on the Move Survey (GOTM) was conducted as part of a six-country study of the relationship between migration and development, the Development on the Move Project. Parallel surveys were conducted in Colombia, Fiji, Ghana, Macedonia, and Vietnam. The Development on the Move Project was funded by the Global Development Network. The main

general findings from the comparative study are reported in Chappell et al. (2010). The survey was designed and implemented (using face-to-face interviews) by the Caucasus Research Resource Centers (CRRC) and International School of Economics at Tbilisi State University (ISET), with a help of external advisors and the GDN's Project Management Team. A key advantage of the research design for this study was the sampling strategy, which divided households into three strata that were sampled in roughly equal proportions: absent migrant households (those with at least one household member currently living abroad), return migrant households (those with at least one member who had lived abroad for at least four months), and non-migrant households (with neither current nor return migrants).

In order to draw probability samples within each strata, primary sampling units (PSUs) consisting of voter precincts were randomly sampled within rural, urban, and Tbilisi strata with the number of PSUs in each proportionate to relative population size.[2] Then the researchers conducted complete block enumerations of households by migration status within each selected PSU. Households containing both absent and return migrants were randomly assigned to one or the other of the appropriate strata. The enumeration allows us to include a contextual variable, the composition of the household's voter precinct by migration status, in our analyses. More importantly, in contrast to many other migration surveys it permitted a random sampling of households within each migration-status stratum, which was conducted with the aim of producing roughly equal proportions of respondent households in each. In a small number of cases, the enumeration data turned out to be incorrect, and the response rate (overall, 70%)

[2] Military precincts, remote precincts in mountainous areas, precincts in territories occupied by the Russian military, and those with fewer than 50 voters were excluded at the PSU stage due to practical considerations. So were precincts where Armenians or Azeris comprise over 50% of the population, as there were insufficient funds to conduct the survey in languages other than Georgian. Overall, 7.7% of voting precincts containing only 3.7% of voters were excluded for these reasons.

varied somewhat by strata. Thus, the final sample included 493 absent migrant households (23.4%), 347 return migrant households (33.2%), and 645 non-migrant households (43.4%). The interviews were conducted in November and December 2008, after the invasion of Georgia by Russian troops in August of that year.

Two quality control measures, described in detail in Tchaidze and Torosyan (2009), were applied to check the validity of the GOTM survey data. First, sample distributions by categories of age, gender, household size, marital status, and education were compared to distributions of the same variables in two other large Georgian surveys: the Integrated Household Survey (IHS), a nationally representative survey implemented by the State Department for Statistics of Georgia, from the last quarter of 2007, and the 2007 Data Initiative study, an annual survey of approximately 6500 respondents conducted by the Caucasus Research and Resource Center of Tbilisi. Some statistically significant discrepancies emerged, but they were small in magnitude and could be explained by the different sampling frames and purposes of the two studies. Second, the response deviation score technique (Murphy et al. 2004) was used to check for interviewer misconduct (falsified interviews): deviation scores from the average values on four questions were computed for all 68 interviewers, and none exceeded the standard threshold of 50% that would have indicated misconduct. Based on these checks, we are confident that the GOTM survey was conducted in a responsible manner and achieved nationally representative results.

Methods, Variables, and Hypotheses

Modeling remittance receipt by households

We estimate bivariate probit regressions for the probability that a household receives migrant remittances in the last year. The dependent variable comes from straightforward

questions asking all households whether they have received any money or goods from migrants abroad who are not household members and asking absent migrant households whether they have received money from their absent migrant(s) and whether they have received other types of goods or products. All three questions explicitly refer to the last three months. Although the survey did ask additional questions about the amount of remittances received, how they were transferred, and how they were spent, we use a simple dummy variable as our sole measure of remittance receipt. There are a large number of missing observations regarding the amount received: 33% of the absent migrant households receiving remittances refused to answer and 23% said they do not know how much they received. The data are even sparser in regard to remittances from non-household members. We suspect that many who did answer this question did not do so accurately. Although would be useful to model the amount of remittances received and also incorporate some measure of their volume in measuring their impact, we think the data are unsuitable for this. As noted above, we do not think it is useful to examine how remittances are spent, because the fungible quality of money means that their impact on overall spending patterns must be assessed. We are not concerned here about how remittances are transferred, though it is worth noting that in most cases (87% when the remittances are from household members, 90% when they are from non-members) they are transferred via banks or licensed transfer agencies, which implies that the official bank transfer data do not underestimate the true volume of remittances by too much.

In order to model the probability of receiving remittances for all households and absent migrant households, we use information on the sex, age, main activity, education, self-reported religiosity, and prior migration experience of each household member currently living in Georgia that the GOTM survey collected. Because our unit of analysis for all our models is the

household, we constructed household-level measures for each of these variables using the individual-level data. We also include contextual variables: the type of locality (Tbilisi vs. other urban vs. rural area) and the percentages of absent migrant and return migrant households in the primary sampling unit (PSU). The latter measure the degree of "migration intensity" (e.g. Kanaiaupuni and Donato 1999), that is, the extent to which migration has penetrated the responding household's immediate locality (voting precinct) as well as the stage to which the migration process has progressed (with higher percentages of return migrants suggesting that the PSU is further along in the cycle of migration). In the models we estimate for absent migrant households only we use the following additional variables characterizing the absent migrant households: sex, age, education at departure, and employment status of the household head, size and age composition of the household, main reason for migrating, whether or not a job abroad had been arranged prior to departure, frequency of contact with Georgian household, duration abroad, and country of destination.

These variables allow us to estimate relatively rich models linking the probability of receiving remittances to characteristics of the Georgia-resident household, the absent migrants, and context variables. Based on studies of remittance behavior in other contexts (e.g. Semyonov and Gorodziesky 2005) and basic reasoning, we expected higher probabilities of receiving remittance to be positively associated with rural residence and the number of children and of retirement-age adults (both dependent groups) in the Georgian-resident household, the percentages of both absent and return migrants in the PSU (as both reflect a more entrenched process of migration in the area and, correspondingly, greater social pressure on migrants to remit), greater religiosity (a measure of traditional values and thus strong familial ties), and

frequency of contact with the absent migrants.[3] We expected negative associations of remittances with the number of working-age adults and with the average education of level in the Georgian-resident household, as both variables should be positively associated with greater income potential that might mitigate the need to rely on remittances, other things being equal. In our analyses of all households we naturally expected remittances to be more likely in absent migrant and return migrant households.

Our models for absent migrant households include additional variables that characterize the households (which in some cases consist of a single individual) living abroad. We generally expected variables associated with greater earning power would be positively associated with sending remittances: older, male, better educated, and currently employed household head, a job for him/her abroad arranged prior to migration, destination in West Europe or North America (where earnings are higher than in former Soviet republics and other typical destinations), economic motives for migration, and longer time living abroad (which could reflect greater earnings or positive selection, since at higher durations there will be fewer "failing" migrants).

Measuring the Impact of Remittances

We assess the economic impact on the households that receive them in two ways: first, we compare the unconditional means on a series of relevant outcomes for non-remittance and remittance households and determine whether the observed differences are statistically significant using standard t-tests. This provides an initial sense of the magnitude of the raw group differences between the two types of households. However, such unconditional comparisons are of limited use for assessing whether remittances have a *causal* impact due to

[3] We recognize that frequency of contact may be endogenous: the transfer of remittances could be an occasion for contact. However, since most remittances are sent via bank transfer, it seem reasonable to treat frequency of contact, which is measured with an eight-category variable, as a proxy for the strength of the ties between the Georgia-resident and absent migrant households.

non-random selection of remittance status. Observed group differences may well reflect group differences in variables that jointly influence the receipt of remittances and the outcomes in question. This is especially with regard to our analyses of all households, having an absent migrant is itself strongly associated receiving remittance and could also be directly associated with expenditures, business activity, labor supply etc. But it also holds in our analyses restricted to absent migrant households: those that receive remittances may be wealthier, have more human capital, or more working-age members than those that do not, and these variables in turn probably affect outcomes that may be linked to remittances. Therefore, we use propensity score matching as an initial strategy to account for non-randomness in which households receive remittances.

We estimate propensity scores from the results of our probit models for remittance receipt. Under the assumption that residual factors affecting treatment assignment net of treatment propensity are ignorable, we can interpret the estimated differences in mean outcomes across matched samples of treated and untreated as average treatment effects for the treated (ATTs).[4] We use the "kernel" matching technique, which has the advantage of making maximum use of all the observations. Essentially, kernel matching computes the effect of treatment for a particular treated observation as a weighted average its difference in outcome from all the untreated observations, where the weights assigned to each difference is proportionate to the difference in propensities between the treated observation and the corresponding untreated observation. The advantage of this technique is that in comparison to other matching procedures (such as nearest neighbor, caliper, or stratification matching) it makes

[4] The assumption of ignorability of residual factors affecting treatment is strong. In the next phase of our analysis we will assess how robust our findings are to relaxation of this assumption using recently developed sensitivity analysis procedures (e.g. DiPrete and Gangl 2004).

maximum use of the information available in the data. One slight disadvantage is that analytical standard errors cannot be computed using kernel matching, but this is easily handled by calculating bootstrapped standard errors.[5]

One advantage of the GOTM survey for our purposes is the large and diverse set of household-level outcomes potentially affected by migrant remittances that it included:

- total household expenditures on 22 categories in last 12 months;
- ownership of 8 common household items (television, DVD player, washing machine, refrigerator, air conditioner, car, cell phone, personal computer), currently and five years ago;
- presence of unemployed household members, household members in poor/very poor health, and school attendees (among households with at least one 17-25 year old);
- total household earnings (calculated by adding up the earnings of individual household members);
- whether any household members participated in their own business during last 12 months, the amount of land owned and number of rooms in the house currently and 5 years ago, and whether the household has internet access.

To reduce the number of analyses of expenditures, we combined some of the individual items into four broad categories of expenditures, as follows: school expenses (school fees, school supplies, and "other school expenses); leisure (holiday related expenses, leisure items, leisure activities), housing needs (water supply, cooking fuel, heating fuel, electricity), and household goods (clothes, kitchen appliances, electrical appliances, and furniture). In addition to

[5] We estimate all models using Stata 10.0. For a general introduction to propensity score matching, see Smith (1997) and Morgan (2001). For a more technical treatment of kernel matching and details about estimation, see Becker and Ichino (2002).

these four broad categories, we analyze expenditures eight specific categories: religious activities, personal services, medical care, rent, motor vehicle, savings, debt payments, and gifts to others. We also summed up expenditures across all twelve categories (total household budget) and across all items except savings, gifts, and debt payments (total expenditures).[6] We hypothesized that migrant remittances have either a positive effect or no effect on these forms of household expenditure. As implied by our earlier discussion, different positive effects have different implications for assessing the broader economic remittances: increased expenditures on consumption are likely to have positive multiplier effects only to the extent that the items consumed are domestically produced or the consumption spurs domestic producers to provide the items or services. Expenditures on health, human capital formation (education), and savings have clear-cut potential for long-term positive effects on development (at least to the extent that savings are used for investment via the credit system rather than stored "under the mattress.") By assessing the impact of remittances on the volume of expenditures on gifts given to others we directly test whether migration can have the positive impact on social capital formation that we hypothesized.

As for the eight specific consumer goods, here the appropriate question is whether remittances in the last year are associated with higher probability of having obtained these goods in the last five years.[7] To assess this, we analyze the subsamples of households who did not own

[6] Households may have spent money on categories not explicitly covered in the survey, so our measures of total budget and total expenditures surely contain errors and generally underestimate the true totals. Moreover, the expenditure data are likely to be error prone due to difficulties respondents may have in remembering and, perhaps in some cases, reluctance to reveal high levels of expenditures. However, we cannot think of a reason why the extent or direction of measurement error should vary by household remittance status, so we doubt that measurement error of this type unduly biases our findings.

[7] Ideally the period covered our remittance data and the acquisition period would be equal in length. But in general the difference in periods would tend to downwardly bias estimates of the

the goods five years before to see if remittances are associated with higher probabilities of owning them at the time of the survey.

We use dummy variables for the presence of at least one unemployed household member, at least one member in poor or very poor health, and at least one member aged 17-25 enrolled in school full time (among households with at least member in that age range) to examine possible effects of remittances on labor supply, health, and human capital formation. If skeptics about the development impact of remittances are correct, remittances provide a disincentive for those left behind to work. They might do so by providing easy alternative income or by raising the reservation wage. This reasoning implies that the probability of having an unemployed household member will be higher in households that receive remittances. Those more optimistic about the role of remittances point to their potential use to improve health (Kanaiaupuni and Donato 1999) and to foster human capital formation: if these scenarios hold in Georgia, we should observe that remittances are associated with lower probability that a household member has poor health and a higher probability that young adults are enrolled in school.

We also look for a possible negative effect of remittances on the adjusted logged earnings of household members left behind as another way to test the skeptical view of remittances. If remittances do act as a disincentive to work, then we should expect the sum of household earnings to be lower on average in remittance-receiving Georgian households.[8] Some might

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effects of remittances on the probability of acquiring these goods unless one can plausibly argue that the acquisition of these types of goods increases the probability of remitting in subsequent years. This could be the case if, for example, the acquisition of foreign-produced consumer goods spurs a greater "thirst" for remittances. However, all things considered we believe our estimates of these effects are probably, if anything, somewhat conservative.

[8] We adjust household earnings for household size in the standard fashion by dividing total household earnings by the square root of household size. The earnings data have a typically large number of missing entries. We ran our analyses separately on the subsample of households with complete data and found no substantive differences in conclusions.

argue that household earnings should be included in our models predicting receipt of remittances on the grounds that households with lower earnings from domestic sources have a greater need for remittances. Conceptually, we think it is more likely that earnings at the time of the survey are endogenous to receipt of remittances during the preceding 12 months than vice versa. In any event, we tried entering logged adjust earnings on the right hand side of our models for receipt of remittances, and found no effects.

The final set of outcomes (small business activity, land ownership, number of rooms, and internet access) are all relatively straightforward. If remittances are used to finance entrepreneurial activity in Georgia it will be a clear-cut case of their positive use for productive investment. If they are used to acquire land, the developmental impact is somewhat ambiguous (it depends on how the land is used), but most likely positive. Improved housing quality is often cited as an example of conspicuous consumption associated with remittances, but such consumption may benefit the local construction industry. Internet access might simply provide a means of entertainment and leisure, or it can be used to solidify social ties, obtain information about economic opportunities, and advance business purposes.

In the final step of our analysis, we check for differences in the impact of remittances on the outcomes in question in rural vs. urban areas. We do so by applying our matching procedure within the rural and urban subsamples.

Descriptive Statistics

Tables 2 displays the descriptive statistics on remittance status and the covariates we included in our probit models predicting receipt of remittances, for all households and for absent migrant households. Overall, 28.3% of households in the GOTM sample received remittances in the past year, while 72.2% of absent migrant households did. Clearly, having an absent migrant

abroad is a strong predictor of receiving remittances. Still, a non-trivial 8.5% of households without an absent migrant receive remittances. Comparing the full sample with the absent migrant sample we can see that absent migrant households tend to have lower average education. Otherwise, the differences in mean characteristics are modest (and, in most cases, not statistically significant). Several characteristics of absent migrant households are worth noting. The majority is male-headed (61.5%), but a substantial number are female-headed. Only 14.4% have been abroad for less than a year, while duration is missing for an additional 3.7%. The overwhelming majority migrated for economic reasons (83.6%) and in most of them the head is currently working full time or almost full time. They tend to have fewer kids and more adults than the households they have left behind in Georgia. The vast majority (94.6%) have completed at least secondary schooling, and only a small minority (18.2%). Finally, although Russia remains the most common single destination country (33.7% reside there), a substantial number of absent migrant households live in North America or Western European countries (39.9%).

Table 3 shows the descriptive statistics on the outcome variables we analyze for all households, overall and by remittance status. Because these data are more useful for gauging the magnitude of possible remittance effects on outcomes, we focus on them rather than the corresponding statistics for the absent migrant households (which are presented in Appendix Table A1). The most important expenditure categories for households in the GOTM data are household goods, housing necessities, and health care. Schooling expenses, savings, and gifts to others also take up substantial portions of average household budgets. Spending on religious and leisure activities and personal services is relatively low. Among families that did not own the items five years earlier, acquisition of TVs and cell phones is quite common, while acquisition of air conditioners, cars, and personal computers is infrequent. Fourteen percent of households

engaged in some kind of small business activity in the preceding year, while 12% have internet access. Roughly half of households with members in the 17-25 age range have at least one enrolled in school. Unemployment and poor health are widespread in contemporary Georgia: 40% of the GOTM households have at least one member unemployed and 43% have at least one member in poor or very poor health.[9]

Eyeballing the group differences in means, it is evident that households who receive remittances spend more, on average, in all the expenditure categories, have substantially higher total budgets and total expenditures, and have higher probabilities of acquiring seven of the eight specific goods (all except for cars) compared to those who do not. The differences regarding business activity, land ownership, number of rooms, internet access, and school enrolment of young adults are quite small. However, remittance households do have substantially lower earnings than non-remittance households. On the other hand, a lower proportion of them have a member with bad health. Below we systematically analyze the differences in means and conduct t-tests to determine which of them are statistically significant.

Results

Predicting Receipt of Remittances

The dependent variable in our probit model for remittance receipt among all households is a dummy variable denoting the receipt of any remittances, be they from household members (absent migrants) or from non-household members (Table 4).[10] The probability of receiving remittances is positively associated with rural residence (but the difference between Tbilisi and

[9] Throughout this paper we define unemployment as not working and looking for work. We conducted parallel analyses that included those not working and *not* looking among the unemployed and obtained very similar results.

[10] In optimizing our specifications for this model and the model estimated on the sample of absent migrant households, we omitted most non-significant covariates, though we retained some in order to satisfy the balancing condition necessary for the estimation of propensity scores.

other cities is not significant), with the household's level of religiosity, and (using a one-tailed test) with the number of young and school-age children. There is statistically ambiguous evidence of a positive association with the household's mean education level. Remittance receipt is negatively associated with the number of male adults and the number of retirees in the household. The sign of the latter effect is contrary to our expectations, and it is noteworthy that it is opposite to the sign for the effect of children. Perhaps Georgians living abroad see children in Georgia as worthy of support through remittances, but they view supporting elderly household members with remittances as a waste of resources. As expected, households with an absent migrant are much more likely to receive remittances; moreover, households with a return migrant are also substantially more likely to get them. Residents in voting precincts with higher numbers of absent migrants are also more likely to receive remittances, perhaps from neighboring households. Altogether, the model does a good job at predicting remittance receipt, with a pseudo-R-squared of .399.

Our model for remittance receipt among households that have an absent migrant has a richer set of variables, because we can include characteristics of the absent migrant groups (Table 5). An additional issue we had to deal for this analysis was how to treat the twenty households with multiple absent migrant groups. One approach (the first model reported) is to treat the unit of analysis as the migrant group rather than the Georgia-resident household. This approach maximizes our use of the data on absent migrant groups, but it comes at the cost of including non-independent observations (because households with multiple migrant groups appear in the sample multiple times). There are too few such households to merit an econometric adjustment for the correspondence of their residuals. Accordingly, we adopt a second approach: we treat the Georgia-resident households as the unit of analysis and select

only one migrant group for each household. For the households with multiple absent migrant groups, if only one of them remits we select that one. If they all remit or none remits, then we randomly choose one. We prefer this approach, even though it involves some loss of information, because it makes it easier to translate our probit model results into the propensity score matching analysis of the impact of remittances, where Georgia-resident households are the only logical unit of analysis. In any case, the probit model results are fairly similar, though there are some exceptions.

For the most part, our findings are consistent with expectations: migrant groups where the head is working full time or almost full time, who have been abroad for more than a year, who migrated due to economic motives, and who live in North America or Western Europe are all significantly more likely to remit. Frequency of contact with the Georgia-resident household has the expected positive effect. There is weak evidence that the older the head of the absent migrant group, the higher the probability of remitting (the log transform of head's age provided the best fit). In contrast to our expectations, the gender and education of the head of the absent migrant group do not affect the probability of remitting, nor do the number of kids in the absent migrant group (whose effect, counter-intuitively, has a positive sign). Also, the number of adults has a negative effect, while we expected a positive effect. Most likely the more adults in the migrant household the longer the household plans to stay in the destination country and thus the less oriented they are to supporting the household left behind. The effects of variables characterizing the Georgia-resident household and its context are similar to those we found in our analyses of all households, though for the absent migrant households we found that a reduced specification with more aggregated variables (e.g. total number of kids rather than separate

effects for young and school-age children) was optimal. The model also performs fairly well using the pseudo-Rsquare criterion.

Measuring the Impact of Remittances

The specifications of the probit models reported in Tables 4 and 5 satisfy the balancing condition necessary to apply propensity score matching. The results of the propensity score estimation procedures for both levels of analysis (all households and households with absent migrants) are shown in Table 6. In both analyses seven blocks were needed to ensure balanced covariate means across treated and non-treated groups within each block. The means, skewness, and distributions of propensity scores in the two samples reflect the starkly contrasting overall probabilities of receiving remittances in the two samples. Half of all GOTM households have propensities of .11 or lower, while only 10% of absent migrant households in the GOTM have propensities below .31. These differences point to another reason why it is worthwhile conducting our analyses on both the overall sample and the absent migrant subsample: because the relative proportions of treated and untreated observations differ in the two samples, if we find similar results we can be confident that they are not artifacts of disproportionate numbers of treated and/or untreated units.

The impact of remittances on the economic and social well-being of Georgian households is evident from the unconditional differences in mean outcomes across remittance and non-remittance households and the estimated average treatment effects for the treated (ATTs) obtained from our kernel matching procedure (Table 7). We view the ATTs as more accurate estimates of the effects of remittances, since the matching estimates account for non-random selection into remittance status. In addition, the ATTs among absent migrant households represent the purest measure of the effects of remittances as such as they effectively control for

other migration-related factors. Accordingly, we focus our attention on the ATTs and give particular weight to those estimated for absent migrant households.

The evidence is consistent across samples and methods that remittances increase total household budgets, total expenditures, purchases of household goods, savings, and gifts to others. These effects are of substantial magnitude, ranging from about one quarter to one third of a standard deviation of the variable in question (compare, for example, the ATTs to the standard deviations for the whole sample reported in Table 3). There is fairly strong evidence that remittances increase spending on personal services, medical care, and debt payments (in each case, the ATT is significant using a one-tailed test for the smaller absent migrant sample and clearly significant in the overall household sample.) Our inferences in regard to spending on religious activity and school expenses depend on which sample we consider. Finally, the evidence is consistent that there remittances do not affect spending on leisure pursuits, rent, housing-related needs (water, fuel, electricity), and vehicles. Remittances clearly play an important role in helping households acquire goods other than cars and personal computers. Their impact is particularly strong in regard to cell phones and refrigerators.

We find little or no evidence that remittances are associated with small business activity, land ownership or acquisition, number of rooms, or internet access. They also do not increase school enrolment rates of 17-25 year olds. On the other hand, they do not have the positive association with unemployment that remittance skeptics anticipate. But they do seem to be associated with diminished health risks (the negative effect on the probability of having a household member in bad health is significant using a one-tailed test in the absent migrant sample.) Another implication of the skeptical view of remittances is that they would lead to lower earnings for the households left behind: although the point estimates are all consistent

with this expectation, no of the differences are significant. In sum, our findings do not suggest that remittances provide disincentives to work at the household level, but they do seem to improve health.

When considering the pattern of effects, one readily suspects that differences in rural and urban economies and social structures may be relevant. For example, remittances may affect land acquisition more in the countryside than in the city due to the greater availability of land, while they might affect schooling expenses more in urban areas where a wider range of schooling options are available. The substantively important effects of remittance on gifts to others may also vary by type of locality given different family and social structures in the two types of environments.

To explore possible variations in effects across the urban/rural divide, we conducted parallel matching analyses to those reported in Table 7 separately for urban and rural samples (Table 8). Here it is appropriate to focus more on the point estimates than on t-values, due to the small sample sizes (particularly for the absent migrant household analyses). There are several notable differences between urban and rural areas. In general, remittances clearly have more pronounced effects in urban areas. For example, spending on both schooling and medical care is affected much more strongly by remittances in cities, which most likely this reflects the wider area of educational and medical providers there compared to the situation in villages. The same pattern holds for spending on household goods and for savings. It could also be that rural households have less access to banks. Most strikingly, remittances do not appear to have any effect at all on total expenditures or on the total budgets of rural households: in contrast, their effects in total expenditures and budgets are quite pronounced for urban households: the more

conservative estimates from the absent migrant sample amount to 37% and 47% of the whole-sample standard deviations, respectively.

At the same time, we find some evidence of a positive effect of remittances on small business activity in rural areas (for absent migrant households) and also more robust evidence of positive health effects (for both all households and absent migrant households) in the rural than in the urban areas. Also, the split analyses of absent migrant households reveal some support for the skeptical view of remittances: with regard to unemployment in the urban households and earnings in rural households. Finally, remittances have significant and positive effects on gifts to others among absent migrant households living in both urban and rural areas: this novel finding appears to hold in both contexts.

Otherwise, the different findings for urban and rural areas suggest it is important to conduct separate analyses of rural and urban households in assessing the effects of remittances. One possible explanation for the apparently greater impact that remittances have in urban areas is that urban migrants have higher earnings abroad and thus send larger sums when they remit. We will consider explanation this in a future study.

Conclusion

Our findings indicate that in Georgia migrant remittances from abroad positively affect the living standards of households that receive them. They are associated with increased expenditures on consumer goods. At least in urban areas, they increase savings and spending on education and health care. They foster social capital formation by increasing the volume of gifts given to others. They are associated with improved health, particularly in rural areas. For the most part they do not appear to provide disincentives for work or create downward pressure on the earnings of those left behind, though there is some evidence of the former among urban

households and the latter among rural households. All told, we find only limited evidence of a downside to migrant remittances (moral hazard), and we do not find they are typically "wasted" on leisure, religious activity, or particularly conspicuous forms of consumption. If they do not directly encourage small business activity, the acquisition of land, or sending young adults to school, they nonetheless appear to play a largely positive role in Georgia's longer-term economic development.

We believe our methodology represents a new and promising strategy for assessing the impact of remittances at the household level. Two features of our approach are noteworthy in this regard. First, we conduct parallel analyses on all households in our sample and of the subsample of households who have at least member currently residing abroad. The first analysis is necessary to provide estimates of the overall impact of remittances, because some households receive remittances from non-members living abroad. The second analysis, however, is better suited for disentangling the effects of remittances from the effects of migration as such and for controlling for unobserved variables that jointly affect the probability of sending a household member abroad (which is a strong predictor of receiving remittances) and the outcomes we analyze. Second, we use propensity score matching to estimate average treatment effects for the "treated" households (those that receive migration remittances). Because we have a relatively rich set of variables at our disposal for predicting remittance receipt, we can be reasonable confident that our estimated propensities represent the key variables related to remittance receipt. While remittance receipt net of propensity may still be partly endogenous to the outcomes we consider, the effects we measure are large enough in magnitude that we expect our sensitivity analyses will show they are robust to violations of the ignorability assumption regarding unobserved factors affecting remittance receipt.

Although our study provides new empirical insights into the economic and social roles of remittances in contemporary Georgia and points to a fruitful approach to measuring their effects that can readily be used in other contexts, we recognize that it nonetheless suffers from some important limitations. Most importantly, there are a number of steps we must take to check the robustness of our findings. First, we need to perform sensitivity analyses in order to assess how strong endogenous selection of remittance receipt net of propensity would have to be in order to undermine our findings that remittances have a causal relationship with the outcomes we analyze. Second, the distributions on some of our expenditure measures are rather skewed, and we will have to check for overly influential outliers. Third, some of the outcome measures have relatively large numbers of missing cases; we handle them using listwise deletion in the analyses reported above, and we will have to check how sensitive our results are to different approaches before we can conclude that our results are robust. Fourth, it may well be that there are other systematic sources of heterogeneity in remittance effects than the rural/urban distinction we explored here. For example, we should explore whether the effects vary across different points in the remittance propensity distribution and the income distribution. Finally, it will be useful to use an instrumental variables technique like endogenous switching regressions to supplement the propensity score matching approach and determine whether our substantive findings hold up.

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TABLE 1. Bank Transfer Dynamics, as Millions of US Dollars and Percent of GDP

Year	Bank transfers		GDP	Transfers, % of GDP	
	In	Out		In	Out
2000	63	10	3,059	2.1%	0.3%
2001	70	11	3,221	2.2%	0.4%
2002	97	17	3,398	2.8%	0.5%
2003	197	31	3,991	4.9%	0.8%
2004	259	46	5,125	5.1%	0.9%
2005	403	88	6,411	6.3%	1.4%
2006	553	133	7,762	7.1%	1.7%
2007	866	111	10,172	8.5%	1.1%
2008	1,002	84	12,797	7.8%	0.7%

Source: National Bank of Georgia http://www.nbg.gov.ge/ and calculations by Tchaidze and Torosyan (2009).
Transfers: Money transfers to/from foreign countries in millions of US dollars
GDP: Nominal Gross Domestic Product, annual, at current prices in millions of US dollars.

TABLE 2. Descriptive Statistics, Remittances and Covariates

	All households (N=1482)				*Absent migrant households (N=464)*			
	Mean	**SD**	**Min**	**Max**	**Mean**	**SD**	**Min**	**Max**
Receive remittances	0.283	0.451	0.000	1.000	0.722	0.449	0.000	1.000
Georgia-resident household characteristics:								
Number of kids 0 to 6	0.232	0.521	0.000	3.000	0.246	0.542	0.000	2.000
Number of kids 7 to 18	0.484	0.770	0.000	4.000	0.461	0.768	0.000	4.000
Total # of kids in HH	0.717	0.911	0.000	6.000	0.651	0.871	0.000	3.000
% AM HHs in PSU	0.095	0.061	0.000	0.209	0.117	0.059	0.000	0.209
% RM HHs in PSU	0.077	0.082	0.000	0.313	0.062	0.062	0.000	0.313
Capital dweller	0.188	0.391	0.000	1.000	0.164	0.370	0.000	1.000
Rural dweller	0.396	0.489	0.000	1.000	0.347	0.477	0.000	1.000
Religiosity	2.189	1.299	0.000	6.000	2.230	1.321	0.000	6.000
Average education	4.365	1.733	0.000	8.000	2.775	1.443	0.000	6.000
Number of retired HH members	0.524	0.789	0.000	7.000	0.657	0.969	0.000	7.000
Number of male adults	0.860	0.713	0.000	4.000	0.642	0.662	0.000	3.000
Number of female adults	0.989	0.651	0.000	4.000	0.888	0.634	0.000	3.000
Number of young adults (18-25)	0.428	0.709	0.000	4.000	0.377	0.622	0.000	3.000
Return migrant in HH	0.233	0.423	0.000	1.000				
Absent migrant from HH	0.313	0.464	0.000	1.000				
Frequency of AM contact					6.265	1.755	0.000	8.000
Absent migrant household characteristics:								
Male head					0.615	0.487	0.000	1.000
ln(Age) of head					3.633	0.276	2.890	4.263
Abroad < one year					0.144	0.352	0.000	1.000
Duration abroad missing					0.037	0.188	0.000	1.000
Economic migrant					0.836	0.370	0.000	1.000
Number of kids					0.244	0.491	0.000	2.000
Number of adults					1.496	0.749	1.000	5.000
Head educ, sec./tertiary					0.946	0.226	0.000	1.000
Head educ, missing					0.030	0.171	0.000	1.000
Head working, full time					0.305	0.461	0.000	1.000
Head working, almost full time					0.356	0.479	0.000	1.000
Head had job contract					0.182	0.386	0.000	1.000
Europe/North America					0.399	0.490	0.000	1.000

TABLE 3. Descriptive Statistics for Outcome Variables for All Households

	Total			*Non-remittance households*			*Remittance households*		
	mean	**sd**	**n**	**mean**	**sd**	**n**	**mean**	**sd**	**n**
Expenditures during last year on:									
Religious activity	**21.80**	54.81	886	**19.88**	55.98	635	**26.66**	51.54	251
Personal services	**43.98**	71.65	841	**41.76**	68.44	593	**49.28**	78.70	248
Rent	**65.90**	461.15	1022	**61.39**	449.63	722	**76.75**	488.39	300
Medical care	**294.02**	712.24	832	**253.32**	628.07	588	**392.08**	876.49	244
Vehicle	**50.78**	190.42	959	**45.12**	189.05	675	**64.23**	193.34	284
School expenses	**127.62**	386.36	1358	**120.86**	383.08	954	**143.58**	394.03	404
Leisure/holidays	**24.13**	175.19	1358	**20.07**	157.24	954	**33.72**	211.52	404
Housing items	**299.83**	368.08	1358	**287.09**	371.09	954	**329.93**	359.51	404
Household goods	**314.51**	848.47	1358	**269.50**	661.26	954	**420.78**	1172.16	404
Savings	**139.75**	454.26	911	**113.06**	386.83	634	**200.83**	576.01	277
Debt payments	**34.86**	208.32	953	**19.64**	128.84	668	**70.53**	323.51	285
Gifts to others	**120.07**	286.91	793	**107.12**	285.79	556	**150.46**	287.83	237
Total spending	**1073.13**	1652.75	1358	**971.23**	1481.67	954	**1313.78**	1980.84	404
Total budget	**1261.46**	1884.08	1358	**1122.55**	1666.26	954	**1589.49**	2287.75	404
Acquired in last 5 years (by households that did not have the item five years ago)									
TV	**0.64**	0.48	610	**0.60**	0.49	443	**0.75**	0.44	167
DVD player	**0.20**	0.40	1267	**0.15**	0.36	897	**0.30**	0.46	370
Washing machine	**0.23**	0.42	1191	**0.20**	0.40	835	**0.31**	0.46	356
Refrigerator	**0.34**	0.47	551	**0.30**	0.46	406	**0.46**	0.50	145
Air Conditioner	**0.03**	0.17	1316	**0.02**	0.15	922	**0.05**	0.21	394
Car	**0.10**	0.30	1136	**0.10**	0.30	790	**0.10**	0.29	346
Cell phone	**0.71**	0.46	831	**0.67**	0.47	599	**0.79**	0.41	232
Personal computer	**0.15**	0.35	1301	**0.13**	0.34	911	**0.18**	0.38	390
Other outcomes									
Own business in last yr.	**0.14**	0.35	1323	**0.15**	0.36	930	**0.12**	0.33	393
Internet access	**0.12**	0.32	1358	**0.11**	0.31	954	**0.13**	0.34	404
Land owned	**0.24**	0.46	1097	**0.26**	0.52	765	**0.18**	0.30	332
Change in land, 5 yrs.	**0.00**	0.08	1081	**0.00**	0.08	752	**0.00**	0.10	329
Number of rooms	**3.88**	2.02	1319	**3.83**	2.05	929	**4.00**	1.95	390
Change in rooms, 5 yrs.	**0.04**	0.81	1300	**0.02**	0.79	918	**0.10**	0.85	382
17-25 year olds in school	**0.48**	0.50	547	**0.47**	0.50	377	**0.49**	0.50	170
Anyone unemployed	**0.40**	0.50	1358	**0.41**	0.49	954	**0.39**	0.49	404
Anyone poor/very poor health	**0.43**	0.50	1358	**0.45**	0.50	954	**0.38**	0.49	404
Log adjusted earnings	**3.73**	2.09	1358	**3.83**	2.03	954	**3.48**	2.21	404

TABLE 4. Optimal probit regression for receiving remittances: All Households

	Coef.	se	p
Rural dweller	.305	.112	.006
Capital dweller	.176	.128	.169
Religiosity	.086	.036	.016
Average education	.072	.041	.079
Number of retired HH members	-.146	.063	.021
Number of kids 0 to 6	.152	.087	.079
Number of kids 7 to 18	.108	.060	.070
Number of male adults	-.184	.075	.014
Number of female adults	-.004	.083	.961
Number of young adults (18-25)	.087	.067	.194
Return migrant in HH	.497	.133	.000
Absent migrant from HH	2.405	.141	.000
Percent return migrants in PSU	.623	.588	.289
Percent current migrants in PSU	2.143	.826	.009
Constant	-2.200	.258	.000
N	1358		
log-likelihood	-496.673		
Pseudo-R2	.399		

TABLE 5. Probit Models for Probability of Remittances, Absent Migrant Households

	Absent Migrant Group-level model (all AMGs)			*P-score model (one AMG per HH)*		
	Coef.	Std. Err.	P>z	Coef.	Std. Err.	P>z
Absent migrant household characteristics:						
Male head	.268	.164	.102	.268	.170	.115
ln Age head	.328	.289	.257	.541	.306	.077
Abroad less than one year	-.886	.203	.000	-.946	.214	.000
Duration abroad missing	-.184	.406	.650	-.524	.425	.217
Head is an economic migrant	.604	.195	.002	.594	.201	.003
Number of kids	.295	.167	.077	.153	.176	.386
Number of adults	-.418	.109	.000	-.318	.118	.007
Head at least secondary educ.	.550	.442	.213	.493	.441	.264
Head educ, missing	.327	.643	.611	.806	.746	.280
Head working, full time	.666	.198	.001	.661	.205	.001
Head working, almost full time	.518	.169	.002	.634	.176	.000
Head had job contract	.303	.218	.165	.391	.229	.088
Europe/North America	.437	.161	.007	.430	.168	.010
Georgia household characteristics:						
Kids in household	.391	.106	.000	.358	.112	.001
Capital dweller	-.155	.204	.448	-.238	.213	.263
Rural dweller	.609	.179	.001	.618	.187	.001
% Absent Migrant HHs in PSU	1.123	1.323	.396	1.300	1.359	.339
% Return Migrant HHs in PSU	6.267	1.589	.000	6.219	1.746	.000
Frequency of contact with AM	.235	.045	.000	.242	.048	.000
Constant	-3.988	1.184	.001	-4.830	1.250	.000
N	480			460		
log-likelihood	-205.381			-187.729		
Pseudo-R2	.295			.307		

TABLE 6. Propensity Score Distributions and Blocks

A. All Households

Percentiles		*Smallest*	*Largest*	*Mean*	0.2981
1%	0.0123	0.0065	0.9181	*Std. Dev.*	0.3116
5%	0.0219	0.0082	0.9213	*Variance*	0.0971
10%	0.0294	0.0082	0.9257	*Skewness*	0.7414
25%	0.0515	0.0098	0.9283	*Kurtosis*	1.7678
50%	0.1191				
75%	0.6563				
90%	0.7880				
95%	0.8357				
99%	0.8841				

Inferior of block	*No remittances*	*Remittances*	*Total*
0	424	27	451
0.05	270	24	294
0.1	207	31	238
0.2	35	10	45
0.4	30	30	60
0.6	83	201	284
0.8	13	97	110
Total	1,062	420	1,482

B. Absent Migrant Households

Percentiles		*Smallest*	*Largest*	*Mean*	0.7239
1%	0.0204	0.0026	0.9985	*Std. Dev.*	0.2623
5%	0.1679	0.0053	0.9995	*Variance*	0.0688
10%	0.3095	0.0108	0.9998	*Skewness*	-1.0373
25%	0.5794	0.0134	0.9999	*Kurtosis*	3.0969
50%	0.8108				
75%	0.9416				
90%	0.9825				
95%	0.9924				
99%	0.9982				

Inferior of block	*No remittances*	*Remittances*	*Total*
0	28	5	33
0.2	30	12	42
0.4	22	25	47
0.6	29	79	108
0.8	14	66	80
0.9	4	49	53
0.95	2	99	101
Total	129	335	464

TABLE 7. Unconditional and Matching Estimators of Remittance Effects

	All households				*Absent migrant households*			
	Diff.	**t**	**ATT**	**t**	**Diff.**	**t**	**ATT**	**t**
Expenditures during last year on:								
Religious activity	6.78	1.66	**11.49**	**2.65**	**12.44**	**2.17**	10.28	1.49
Personal services	7.52	1.39	**16.61**	**2.62**	14.88	1.61	17.80	1.93
Rent	15.37	0.49	60.08	1.94	45.86	1.20	37.22	1.00
Medical care	**138.76**	**2.57**	**194.00**	**2.80**	**181.01**	**2.01**	143.20	1.80
Vehicle	19.11	1.42	**35.45**	**2.45**	29.68	1.62	27.77	1.56
School expenses	22.72	0.99	49.98	1.59	59.74	1.53	**71.59**	**2.52**
Leisure/holidays	13.65	1.31	3.72	0.25	-0.53	-0.03	-4.27	-0.20
Housing items	**42.84**	**1.96**	44.51	1.42	6.70	0.19	-81.39	-1.26
Household goods	**151.29**	**3.01**	**205.31**	**3.06**	185.71	1.68	**249.62**	**3.83**
Savings	**87.77**	**2.69**	**142.54**	**4.06**	**135.83**	**2.33**	**151.72**	**3.56**
Debt payments	**50.89**	**3.47**	**57.15**	**2.77**	54.67	1.63	49.09	1.93
Gifts to others	**43.33**	**1.95**	**61.32**	**2.18**	**75.60**	**2.18**	**94.36**	**4.06**
Total spending	**342.55**	**3.51**	**512.19**	**4.64**	**412.25**	**2.32**	**385.46**	**2.25**
Total budget	**466.94**	**4.20**	**692.07**	**4.98**	**587.54**	**2.85**	**579.60**	**3.20**
Acquired in last 5 years (by households that did not have the item five years ago):								
TV	**0.14**	**3.59**	**0.18**	**2.90**	**0.25**	**3.59**	0.23	1.60
DVD player	0.14	**5.87**	**0.20**	**6.35**	**0.21**	**4.73**	**0.21**	**3.21**
Washing machine	0.12	**4.41**	**0.17**	**3.81**	**0.16**	**3.44**	**0.20**	**4.18**
Refrigerator	0.15	**3.40**	**0.22**	**3.35**	**0.19**	**2.41**	**0.31**	**4.48**
Air Conditioner	0.02	**2.25**	0.03	1.44	0.03	1.48	**0.04**	**3.62**
Car	-0.01	0.31	0.02	0.83	0.01	0.49	0.03	0.99
Cell phone	0.12	**3.44**	**0.15**	**2.97**	**0.22**	**4.05**	**0.37**	**3.93**
Personal computer	0.05	**2.24**	0.03	0.88	0.05	1.43	0.08	1.38
Other outcomes:								
Own business in last yr.	-0.02	-1.18	0.02	0.68	-0.01	0.29	0.05	1.75
Internet access	0.03	1.35	-0.01	-0.15	0.01	0.17	0.01	0.29
Land owned	**-0.07**	**-2.45**	-0.01	-0.37	0.02	0.57	-0.07	-1.07
Change in land, 5 yrs.	-0.01	-1.03	0.00	-0.46	0.00	0.03	0.00	0.32
Number of rooms	0.17	1.42	**0.54**	**2.92**	**0.63**	**3.09**	0.45	1.01
Change in rooms, 5 yrs.	0.08	1.52	0.05	1.03	0.10	1.26	0.06	0.43
17-25 year olds in school	0.03	0.59	0.10	1.32	0.06	0.60	0.07	0.36
Anyone unemployed	-0.02	-0.64	-0.01	-0.12	0.05	1.08	0.00	0.03
Anyone poor/very poor health	**-0.07**	**-2.28**	**-0.13**	**-2.59**	**-0.15**	**-2.90**	-0.20	-1.89
Log adjusted earnings	**-0.36**	**-2.88**	-0.22	-1.13	**-0.54**	**-2.45**	-0.47	-1.10

Diff. is the difference between means for remittance and non-remittance HHs.
Statistically significant effects are in **bold.**

TABLE 8. Matching Estimators of Remittance Effects, by Locality Type

	All Urban households		*All Rural households*		*Urban AM households*		*Rural AM households*	
	ATT	**t**	**ATT**	**t**	**ATT**	**t**	**ATT**	**t**
Expenditures during last year on:								
Religious activity	**11.82**	**2.33**	10.65	1.43	11.29	1.54	12.67	1.55
Personal services	16.92	1.73	10.75	1.72	6.89	0.34	**16.07**	**1.96**
Rent	82.57	1.90	-4.58	-0.92	25.00	1.15	-11.18	-0.72
Medical care	**237.47**	**2.93**	82.26	0.73	**301.69**	**3.87**	71.41	0.36
Vehicle	**38.96**	**2.49**	**16.32**	**2.65**	11.05	0.21	13.70	1.70
School expenses	**89.39**	**2.13**	-18.67	-0.88	**119.58**	**2.48**	10.86	0.64
Leisure/holidays	14.63	0.84	-25.32	-0.59	-10.33	-0.19	-14.49	-0.29
Housing items	**102.65**	**2.47**	-60.02	-1.50	-91.24	-0.68	-119.74	-1.76
Household goods	**316.45**	**2.77**	**67.03**	**2.13**	**306.64**	**3.04**	**101.24**	**3.74**
Savings	**175.70**	**3.43**	71.64	1.30	**180.18**	**3.69**	78.09	1.38
Debt payments	**72.23**	**2.54**	17.76	1.74	59.02	1.69	8.60	0.50
Gifts to others	48.51	1.14	71.74	1.81	**86.68**	**2.42**	**90.33**	**1.97**
Total spending	**835.90**	**4.29**	-19.29	-0.18	**618.04**	**1.99**	-46.75	-0.36
Total budget	**1088.47**	**4.94**	15.64	0.14	**881.19**	**2.71**	-0.22	0.00
Other outcomes:								
Own business in last yr.	0.00	-0.08	0.04	0.63	0.01	0.39	**0.12**	**2.67**
Internet access	0.02	0.57	0.00	-1.47	-0.01	-0.07	0.01	0.26
Land owned	0.00	-0.02	-0.15	-1.74	0.03	1.62	-0.12	-1.17
Change in land, 5 yrs.	-0.01	-1.07	0.01	1.41	-0.02	-1.17	0.02	0.60
Number of rooms	0.25	1.57	0.21	0.47	0.15	0.73	1.18	1.43
Change in rooms, 5 yrs.	-0.02	-0.31	0.15	1.73	-0.15	-0.59	0.22	1.90
17-25 year olds in school	0.07	0.69	**0.45**	**3.43**	**-0.38**	**-2.72**	0.63	2.78
Anyone unemployed	0.03	0.59	-0.12	-1.34	**0.14**	**2.05**	-0.16	-0.83
Anyone poor/very poor health	-0.08	-1.81	**-0.28**	**-2.62**	0.16	1.33	**-0.50**	**-6.57**
Log adjusted earnings	-0.40	-2.18	0.36	1.08	0.23	0.42	**-0.72**	**-2.35**

Statistically significant effects are in **bold.**

TABLE A1. Descriptive Statistics for Outcome Variables for Absent Migrant Households

	Total			*Non-remittance households*			*Remittance households*		
	mean	**sd**	**n**	**mean**	**sd**	**n**	**mean**	**sd**	**n**
Expenditures during last year on:									
Religious activity	**21.06**	46.40	304	**12.43**	26.66	93	**24.87**	52.41	211
Personal services	**39.88**	69.98	286	**29.11**	51.67	79	**44.00**	75.52	207
Rent	**37.22**	325.25	350	**4.85**	29.30	103	**50.71**	386.14	247
Medical care	**319.58**	679.90	271	**192.00**	300.33	80	**373.01**	780.81	191
Vehicle	**44.59**	155.44	338	**24.04**	91.90	104	**53.72**	175.89	234
School expenses	**120.33**	375.24	460	**77.09**	238.15	127	**136.83**	414.91	333
Leisure/holidays	**28.20**	168.89	460	**28.58**	121.39	127	**28.05**	183.96	333
Housing items	**311.71**	338.63	460	**306.87**	338.03	127	**313.56**	339.35	333
Household goods	**318.06**	1060.98	460	**183.62**	472.32	127	**369.33**	1209.16	333
Savings	**146.49**	477.51	322	**49.89**	172.23	93	**185.72**	551.09	229
Debt payments	**50.30**	284.81	337	**12.50**	58.19	104	**67.17**	339.19	233
Gifts to others	**128.03**	259.54	280	**72.95**	120.70	76	**148.54**	292.64	204
Total spending	**1066.37**	1708.35	460	**767.94**	875.25	127	**1180.19**	1922.78	333
Total budget	**1283.69**	1994.16	460	**858.36**	956.97	127	**1445.90**	2248.26	333
Acquired in last 5 years (by households that did not have the item five years ago):									
TV	**0.68**	0.47	208	**0.50**	0.50	60	**0.75**	0.43	148
DVD player	**0.23**	0.42	423	**0.08**	0.27	116	**0.29**	0.45	307
Washing machine	**0.26**	0.44	410	**0.14**	0.35	113	**0.31**	0.46	297
Refrigerator	**0.38**	0.49	187	**0.25**	0.44	56	**0.44**	0.50	131
Air Conditioner	**0.04**	0.19	448	**0.02**	0.13	123	**0.05**	0.21	325
Car	**0.08**	0.27	400	**0.07**	0.26	115	**0.08**	0.28	285
Cell phone	**0.71**	0.45	292	**0.56**	0.50	93	**0.78**	0.41	199
Personal computer	**0.15**	0.36	446	**0.11**	0.32	122	**0.17**	0.38	324
Other outcomes:									
Own business in last yr.	**0.10**	0.30	452	**0.10**	0.30	127	**0.10**	0.29	325
Internet access	**0.12**	0.32	460	**0.11**	0.31	127	**0.12**	0.33	333
Land owned	**0.19**	0.33	383	**0.18**	0.35	109	**0.20**	0.32	274
Change in land, 5 yrs.	**0.00**	0.10	380	**0.00**	0.05	108	**0.00**	0.11	272
Number of rooms	**3.81**	1.94	445	**3.37**	1.81	126	**3.99**	1.97	319
Change in rooms, 5 yrs.	**0.09**	0.74	439	**0.02**	0.54	126	**0.12**	0.80	313
17-25 year olds in school	**0.46**	0.50	163	**0.41**	0.50	27	**0.47**	0.50	136
Anyone unemployed	**0.38**	0.49	460	**0.34**	0.48	127	**0.39**	0.49	333
Anyone poor/very poor health	**0.46**	0.50	460	**0.57**	0.50	127	**0.42**	0.49	333
Log adjusted earnings	**3.41**	2.12	460	**3.80**	1.86	127	**3.26**	2.20	333