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**Asia Research Institute
Working Paper Series No. 89**

**Citizenship Status and Remittances:
Evidence from German Micro Data**

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May 2007



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Citizenship Status and Remittances: Evidence from German Micro Data*

Florin-Petru Vadean

INTRODUCTION

The recent debates and reorientation of immigration policies of EU Member States towards the more active international recruitment of highly skilled immigrants and their more successful integration in the host countries (including through naturalisation) have given rise to concerns over a renewed brain drain. In the meantime, migrants' remittances – an important source of capital for developing countries and one of the main compensation mechanisms of brain drain – draw the attention of policy makers and scholars because of the dramatic increase of their international flows (Straubhaar and Vadean, 2006). This paper aims to be a contribution to the discussion about how naturalisation affects the remittance behaviour of households and what instruments migrant source and receiving countries could employ to foster remittance flows.

The literature on the remittance behaviour of households is substantial. In the 1970's Becker first argued that remittances represented a benevolent act which promoted well-being and equality across the extended family. Later, Lucas and Stark (1985) more broadly addressed the range of immigrant transfer motives and argued that remittances can be motivated by *pure altruism*, *pure self-interest* (i.e. chance of an inheritance or investment in assets at home, especially when the immigrant intends to return to his/her home country) or something in between which they called *tempered altruism or enlightened self-interest* (i.e. that remittances can be a result of a co-insurance or loan agreement between family members).

In the 1990's Glytsos (1997) highlighted the importance of the immigrant's return intentions in determining remittance behaviour by documenting that temporary migrants remit more than permanent ones. Shamsuddin and DeVoretz (1998) noted the substitute relation between remittances and investment savings (e.g. home ownership).

* Support from the Friedrich Naumann Foundation, the Migration Research Group/HWWI and the Asia Research Institute/NUS are noted with appreciation. This paper owes much to in-depth discussions on the topic with Don DeVoretz. Assistance from John P. Haisken-DeNew and Mathias Sinning for the extraction of data from the GSOEP and valuable comments from Katja Michaelowa and the University of Hamburg research seminar "Quantitative Economic Research" participants are gratefully acknowledged.

More recently, Semyonov and Gorodzeisky (2005) found gender differences in the remittance behaviour, with migrant-men sending more money than migrant-women to households in the Philippines, owing to greater male earnings. Finally, DeVoretz and Vadean (2006) with the aid of Canadian data, report ethnic group cultural differences in the remittance behaviour of households. Asian immigrant households in Canada are displaying significantly different remittance patterns compared to the other immigrant and Canadian households, due to the particularity that Asian households value more the ties to their extended family.

Concerning the effects of naturalisation, in a recent study on the Diaspora activities of Afghans, Egyptians and Serbs in Germany, Bommers *et al.* (2006) show that trans-national activities (i.e. networks of reciprocity among family members and co-villagers, or business connections between the country of settlement and the homeland) are particularly affected by the residence and citizenship status of the migrants in the host country. Holding German temporary or permanent visa restricts sojourns in the home country to six months durations¹. Acquiring German citizenship removes this impediment. However, it brings other obstacles in the home country commitment of migrants. In order to acquire German citizenship, those eligible must give-up their original citizenship. Under these circumstances these new German citizens may now require an entry visa for home visits or residence permits for long term stays, lose the right to buy or even own real property, and in the extreme they may experience discrimination in their erstwhile home country. Of course the best alternative to this outcome is dual-citizenship, status which provides rights in both the host and the home country.

Germany's foreign-born population in 2005 was of about 10.1 million immigrants (or 12.3% of its total population) and remitted a total estimated amount of US\$14.6 billion outside Germany (Münz *et al.*, 2006). Germany thus, being the second largest source country of international migrants' remittances after the United States (US\$43.5 billion).

From Germany's total foreign-born population about 3.4 million (or 34%) were naturalised in 2005. The naturalisation rate in Germany is low compared to 84% in Canada, 75% in Australia, 56% in the United Kingdom, and 40% in the United States (Tran *et al.*, 2005). However, it boosted after the changes to Germany's citizenship law in 2000. While the average number of naturalisations for the period 1997 to 1999 was about 111,000/year, it rose to over 173,000/year for the years 2000 to 2002 (Oezcan, 2003).

¹ Sojourns outside Germany for periods longer than six months lead to the expiration of the German residence permit.

One of the main reasons for this rapid increase in naturalisations is the reduction of the required period of habitual residence in Germany prior to application from 15 to 8 years². Moreover, children of foreign parents may acquire German citizenship by birth³. They must however decide between age 18 to 23 whether they want to retain their German nationality or the nationality of their parents (§ 29 StAG).

Under the new German Nationality Act (StAG) dual-citizenship is still not recognized. Those applying for naturalization must in principle give up their foreign nationality⁴. However, there are many exemptions from this rule, e.g. for elderly persons and victims of political persecution, if release from the foreign nationality is legally impossible or unacceptable due to high release fees or degrading methods of release, if the release from the foreign nationality would bring considerable disadvantages (i.e. economic disadvantages or problems related to property and assets). Furthermore, there are special facilities for retaining previous nationality for citizens of most EU countries⁵.

This paper extends the current remittance literature by assessing the motivations of immigrant households to remit within the context of the German immigration and naturalisation policy. In short, the study is an attempt to find answers to the question: How does naturalisation affect the remittance behaviour of immigrant households?

I shall start by outlining the theoretical model. Section 3 discusses the data and reports some descriptive statistics. Section 4 specifies the empirical model used to estimate the determinants of remittances. The results are presented in Section 5 and conclusions appear in the last section.

² If a foreigner is married with a German citizen, the minimum residence period is only 3 years. Ethnic Germans shall obtain German citizenship immediately after resettlement in Germany (§ 7 StAG).

³ If one parent is legally residing in Germany for at least 8 years or is a EU/EEA citizen legally residing in Germany (§ 4 StAG).

⁴ German citizens lose their citizenship when they acquire another nationality. This measure aims to discourage foreigners from applying for their former citizenship after they had been naturalized in Germany (Oezcan, 2003).

⁵ These applies for citizens from Belgium, Cyprus, Finland, France, Greece, Hungary, Ireland, Italy, Malta, Poland, Portugal, the Slovak Republic, Sweden, and the United Kingdom and certain population groups (e.g. spouses) in the case of the Netherlands and Slovenia.

THEORETICAL MODEL

This section presents a utility maximization model which describes the conditions under which positive or null household remittances arise. I theorize that migrant household members derive utility (u_m) from consumption of the migrant household (c_m), consumption of those left home (c_h), and the maintenance service (d_h) the family members in the home country provide for the assets (AS_m^A ; e.g. real estate, cattle, business) which the migrant household holds in the home country (A):

$$u_m = u[c_m(Y_m - R_m, n), c_h(Y_h + R_m, k), d_h(AS_m^A, R_m)] \quad (1.1)$$

where (R_m) are remittances to relatives and are assumed to be motivated by both altruism and self-interest (i.e. motivate relatives to take care of the assets held in the home country).

Consumption (net of remittances) of the migrant household is assumed to increase as the total income of the migrant household (Y_m) increases and decrease with the amount of remittances (R_m): $\partial c_m / \partial Y_m > 0$ and $\partial c_m / \partial R_m < 0$. Consumption may vary also with household size. However, the sign of $\partial c_m / \partial n$ is unrestricted, depending on the presence of economies or diseconomies of scale in consumption⁶.

Consumption of the household in the home country (c_h) is further assumed to be positively dependent on the total income of the foreign based household (Y_h), the remittances received (R_m) and the family size (k): $\partial c_h / \partial Y_h > 0$ and $\partial c_h / \partial R_m > 0$; the sign of $\partial c_h / \partial k$ depends on the presence of economies or diseconomies of scale in consumption.

The maintenance service the family members in the home country provide for the migrant household's assets in the home country are assumed to be positively dependent on the amount of assets the migrant household owns in the home country (AS_m^A) and the remittances received (R_m): $\partial d_h / \partial AS_m^A > 0$ and $\partial d_h / \partial R_m > 0$.

⁶ See Lucas and Stark (1985).

Further, the amount of assets which the migrant household holds in the home country (AS_m^A) depends positively on the migrant's total assets (AS_m), the difference of the gross return to capital in the home and the host country ($GPK^A - GPK^B$) and negatively on the difference in transaction costs of holding assets in the home and host country respectively ($T^A - T^B$):

$$AS_m^A = AS[AS_m, (GPK^A - GPK^B), (T^A - T^B)] \quad (1.2)$$

The migrant household's total assets are assumed, for simplicity, to be constant: $AS_m = const$ ⁷. Hence, the migrant household transfers assets between home and host country on the basis of the difference in net return to assets between the two countries⁸.

The transaction costs the migrant household must bear whilst owning assets in the host country are assumed, for simplicity, to be zero ($T^B = 0$). In the meantime, the transaction costs to be borne for the assets own in the home country are determined by the immigrant's residence status in the host country (B):

$$T^A = T(I_s^B) \quad (1.3)$$

where s denotes the migrant's residence status in the host country, which can be: V – temporary or permanent visa, C – citizenship, or DC – dual citizenship.

Case I: Temporary or Permanent Visa (i.e. foreign citizenship)

If the migrant household members hold a temporary or permanent visa of the host country (and implicitly the citizenship of the home country), the migrant household does not face restrictions on acquiring assets in its home country. However, transaction costs may be positive since the host country imposes limits on the periods of stay in the home country⁹: $T^A(I_V^B) > 0$.

Now, if differentiating (1) with respect to first c_m and then c_h and d_h , two possible equilibriums emerge:

$$(a) \frac{\partial u_m}{\partial c_m} = \frac{\partial u_m}{\partial c_h} \geq \frac{\partial u_m}{\partial d_h} \quad (1.4)$$

⁷ In other words $Y_m = C_m + R_m$ or there are no savings and no borrowing.

⁸ Implicitly this assumes no preference for holding assets neither in the home nor in the host country.

⁹ According to the German Immigration Act, the resident permit expires if the immigrant leaves the German territory and does not return within a period of 6 months (see German Immigration Act § 51).

Which states that the utility of the migrant's household is maximised if the marginal utility from own consumption equals the marginal utility derived from the consumption of the relatives back home, while the marginal utility from own consumption is higher or equal to the marginal utility derived from maintenance service for the assets held in the home country. This equilibrium is determined by altruism, since the decision about the last Euro remitted is based on the marginal utility obtained from the relatives' consumption.

$$(b) \frac{\partial u_m}{\partial c_m} = \frac{\partial u_m}{\partial d_h} \geq \frac{\partial u_m}{\partial c_h} \quad (1.5)$$

Or, the utility of the migrant's household is maximised if the marginal utility derived from own consumption equals the marginal utility derived from maintenance services, while the marginal utility from own consumption is greater or equal to the marginal utility derived from the consumption of goods by relatives back home. This equilibrium can be characterised by self-interest, since the decision about the last Euro remitted is based on the marginal utility obtained from services provided by the relatives.

Case II: Citizenship of the Host Country (only)

Choosing the host country's citizenship and being compelled to renounce the home country's citizenship may increase the transaction costs of holding assets in country A: $\partial T^A / \partial I_{V \rightarrow C}^B > 0$. This is the case if, for example, in country A citizenship is required to own real property, country B's nationals are required a visa for entry and stay in country A and/or emigrants that gave up country A's citizenship are perceived as disloyal and hence discriminated in the country A.

From $\partial T^A / \partial I_{V \rightarrow C}^B > 0$ and $\partial AS_m^A / \partial T^A < 0$ results $\partial AS_m^A / \partial I_{V \rightarrow C}^B < 0$ or, if the transaction costs of holding assets in the country of origin rise due to the loss of the origin country's citizenship, then the migrant household will reduce the amount of assets held there. By reducing the amount of these assets, their marginal utility from maintenance service will fall causing: $\partial u_m / \partial c_m > \partial u_m / \partial d_h$. Now, if $\partial u_m / \partial c_m = \partial u_m / \partial c_h$ (1.4), remittances to relatives will be held constant, since altruistic motives for remittances dominate. However, if $\partial u_m / \partial c_m > \partial u_m / \partial c_h$ (1.5), remittances to relatives will be reduced until one of the equilibrium conditions (1.4 or 1.5) is achieved. To conclude: $\partial R_m / \partial I_{V \rightarrow C}^B \leq 0$.

Case III: Dual Citizenship

Nevertheless, if the migrant household members have the possibility of holding dual citizenship, this will lower the transaction costs of holding assets in their country of birth, because all transnational activity obstacles are removed: $\partial T^A / \partial I_{V \rightarrow DC}^B < 0$.

From $\partial T^A / \partial I_{V \rightarrow DC}^B < 0$ and $\partial AS_m^A / \partial T^A < 0$ results $\partial AS_m^A / \partial I_{V \rightarrow DC}^B > 0$ or, acquiring dual citizenship will motivate the migrant household to increase the amount of assets held in the country of origin, due to the decrease in transaction costs. By increasing the amount of assets held there, its marginal utility derived from maintenance service will rise. Moreover, if the marginal utility from maintenance service now exceeds the marginal utility from own consumption and implicitly also the marginal utility from the consumption of the relatives ($\partial u_m / \partial d_h > \partial u_m / \partial c_m \geq \partial u_m / \partial c_h$), remittances to relatives will be increased in order to achieve the equilibrium condition (1.5). To conclude: $\partial R_m / \partial I_{V \rightarrow DC}^B \geq 0$.

Choosing a level of R_m to maximise (1.1) with respect to (1.2) and (1.3) provides¹⁰:

$$R_m = R(Y_m, Y_h, n, k, AS_m, GPK^A - GPK^B, I_s^B) \quad (1.6)$$

If the migrant household members care about the relatives in the home country and perceive them as trustworthy agents in managing and maintaining the assets held in the home country, and if the migrants household utility function, the home family utility function and the maintenance service utility function are well behaved, six proprieties of the remittance to relatives function are predicted: $\partial R_m / \partial Y_m > 0$, $\partial R_m / \partial Y_h < 0$, $\partial R_m / \partial AS_m > 0$, $\partial R_m / \partial (GPK^A - GPK^B) > 0$, $\partial R_m / \partial I_{V \rightarrow C}^B \leq 0$, and $\partial R_m / \partial I_{V \rightarrow DC}^B \geq 0$. The signs of $\partial R_m / \partial n$ and $\partial R_m / \partial k$ are uncertain, depending on the presence of economies or diseconomies of scale in consumption.

¹⁰ Implicitly, this treats Y_m and Y_n as exogenous. In particular, the migrant household members are assumed neither to work harder nor to accept worse working conditions with higher pay in order to remit, and no moral hazard is involved in the sense of the home group's reducing effort.

DATA AND DESCRIPTIVE STATISTICS

The data are drawn from the German Socio-Economic Panel (GSOEP)¹¹ for the years 1996-2005 which contain information on the citizenship and dual-citizenship status of the respondents¹². The analysis concentrates on West Germany, since less than 2% of the migrant population in the sample lives in East Germany and is performed at the household level, since remittances are made from the household's income and/or assets. The characteristics of the household head are introduced as socio-economic controls, assuming that the highest earner is the person who determines the household's expenditure patterns (including remittances).

The immigrant households¹³ are divided into six groups: immigrants from countries belonging to the EU-15/EEA and Switzerland, immigrants from the twelve new EU Member States, immigrants from Turkey, immigrants from the Western Balkans, immigrants from the Commonwealth of Independent States (CIS), and other immigrants¹⁴. The breakdown occurred on the basis of the different rights immigrants from these countries enjoy on the German labour market and the different entry, stay and property rights the naturalised foreign-born in Germany enjoy in their countries of origin.

After excluding all observations with missing values for the variables included in the estimations, the unbalanced panel data set contains 9,155 household-year-observations of 1,236 households.

Table 1 presents some descriptive statistics, in order to provide context. When looking at the descriptive statistics, first the heterogeneity among immigrant groups in terms of citizenship status is noted, most probably being a consequence of the German immigration and naturalisation policy. Immigrants of the first group enjoy full labour market access in Germany under the EU/EEA free movement of labour. It is therefore not surprising that only few of them have acquired German citizenship (4%), since they have no additional economic

¹¹ The data used in this paper were extracted using the Add-On package PanelWhiz v1.0 (Oct 2006) for Stata. PanelWhiz was written by Dr. John P. Haisken-DeNew (john@panelwhiz.eu). The following authors supplied PanelWhiz SOEP Plugins used to ensure longitudinal consistency, John P. Haisken-DeNew (3), Markus Hahn and John P. Haisken-DeNew (15), Mathias Sinning (11). The PanelWhiz generated DO file to retrieve the SOEP data used here and any Panelwhiz Plugins are available upon request. Any data or computational errors in this paper are my own. Haisken-DeNew and Hahn (2006) describes PanelWhiz in detail.

¹² Information on the dual-citizenship status is available for the years 2000-2005. However, we could extrapolate it for the years 1996-1999 by using the information on the year of receiving German citizenship.

¹³ Household having as head a person that immigrated to Germany after 1948.

¹⁴ The last immigrant group was excluded from the analysis since it was deemed too heterogeneous.

benefit from it. Furthermore, even if acquiring German citizenship (with or without giving up the citizenship of their country of origin)¹⁵, they hardly lose mobility or economic rights in their country of origin. Consequently, no effect of a change in the citizenship status on the remittance behaviour for immigrants in this group should be expected.

Immigrants from the new EU Member States have a high naturalisation rate (87%). Most probably due to the fact that many repatriated ethnic Germans, having a privileged status for naturalisation in Germany, originate from these countries. Moreover, this immigrant group has the highest dual citizenship rate (22%), may be as a result of the recognition of dual citizenship by many East European countries. Although it is illegal in Germany and might have as a consequence the loss of the German citizenship, it is not uncommon that immigrants re-acquire, the citizenship of their country of origin after they have given it up to obtain German citizenship. Furthermore, the twelve new EU Member States made in the last ten years significant progress in order to access the EU, e.g. free mobility of persons and free mobility of capital (including liberalisation of real estate markets). Thus, little influence should be expected, if any, of changes in the citizenship status on the remittance behaviour of immigrants in this group too.

The next two groups (i.e. immigrants from Turkey and the Western Balkans) have similar and pretty low naturalisation rates (15%). Most immigrants from these groups arrived in Germany at the beginning of the 1970s as guest-workers and did not return to their country of origin (even if over 60% of them express their intention to do so). However, due to the German restrictive immigration and naturalisation policy they also failed to integrate in the German society.

Contrarily to Turkey, the countries in the Western Balkans had until recently visa requirements for German citizens. Moreover, as a consequence of the break-up of the Yugoslav Republic in the 1990s and the war that followed, many of the newly emerged countries restricted the access of foreigners to the acquisition of real property (especially land; Akin, 2006). Therefore, in particular for the immigrants from the Western Balkans, a change in the citizenship status should have a significant impact on the remittance activity.

¹⁵ Citizens of many EU countries do not have to give up the citizenship of their country of origin when taking up German citizenship (see Footnote 5).

Finally, immigrants from the CIS have the highest naturalisation rates (96%), due to the fact that most immigrants in this group are ethnic Germans. The CIS have restrictive immigration policies towards Germany (i.e. entry visa). However, the two main migrant source countries from the CIS opened-up their real estate markets towards foreign investments (Heidemann, 2005). Hence, the citizenship effect on the remittance behaviour is uncertain.

In terms of acts of remittance, Western Balkan immigrants are the most prone to remit with 64% of them sending remittances at least in one year of panel, while EU-15/EEA immigrants are least active with only 23% of them sending remittances. However, from the remittance active households, EU-15/EEA immigrants remitted the highest average amounts (€946/year), while CIS immigrant households the lowest (€275/year).

Table 2 presents the structure of remittance data for the sample drawn. The most households in the panel (61%) do not remit to persons outside their household. Furthermore, even when a household remits, only a few (4%) remit each year they appear in the panel. Thus, it seems that most households do not remit regularly but rather save over several years and then transfer one large amount. This pattern of course reduces transfer costs.

EMPIRICAL MODEL

Given the fact that an unbalanced panel is used, non-randomly missing data may be a consequence of self-selection. For example, this occurs when households refuse to participate in a certain survey year or refuse to answer particular questions. In addition to non-response, households do leave the survey out of several reasons, e.g. refuse of participation in subsequent years, migration or death, causing attrition in the panel.

Verbeek and Nijman (1992) proposed a simple test for sample selection in panel data models. For the random effects model, they suggest including three simple variables in the regression. These are: a) the number of waves the i th household appears in the panel, T_i ; b) a dummy variable taking the value 1 if and only if the i th household is observed in all panel waves, $\prod_{r=1}^T s_{ir}$; and c) $s_{i,t-1}$ indicating whether the household was present in the last wave. The null hypothesis says that these variables should not be significant in our model if there are no sample selection problems. Another test is a Hausman-type test and compares the fixed effects estimator from the balanced sample as opposed to the unbalanced sample.

The basic specification of the linear panel data model is:

$$y_{it} = x'_{it}\beta + z'_i\alpha + \varepsilon_{it} \quad (2.1)$$

where y_{it} represents the log of remittances to persons abroad. x_{it} denotes the set of explanatory variables at time t that include characteristics of the household head (i.e. gender, age, education, number of relatives living abroad [differentiated as spouse and/or ex-spouse; sons, daughters, grandsons and/or daughters; parents, grandparents, parents in-law and/or grandparents in-law; brothers, sisters, brothers in-law and/or sister in-law; and other relatives], years since immigration to Germany, intention to return home, self-assessed attachment to the home country, and citizenship status [differentiated as foreign citizenship, German citizenship or dual citizenship]), characteristics of the household (i.e. number of adults [over age 16] in the household, number of children in the household [under age 16], house ownership, the log of net income, and the log of income from assets [as proxy for wealth]), the difference of the GDP growth rates between Germany and the home country, and the log of GDP per capita (PPP) in the home country (as a proxy for the income of the relatives)¹⁶. z_i are unobserved household specific effects.

The random effects (GLS/RE) model is based on the assumption that unobserved household specific effects are uncorrelated with the included variables x_{it} . Therefore, any OLS or GLS/RE estimators of this model is inconsistent when it contains variables that are correlated with z_i , i.e. are endogenous. For example, unobservable future inheritance might have strong effect on self-interest motivated remittances (Lucas and Stark, 1985) and the love and affection towards the relatives in the home country can affect the amount of altruistic remittances as well as the family reunification process in the host country and, thus, the immigrant household size and the number of relatives in the host country.

However, the GLS/RE model allows the inclusion of time invariant regressors, such as demographic characteristics, while the fixed effects model does not. According to Green (2002), a model that overcomes the correlation between z_i and x_{it} while accommodating the inclusion of time invariant regressors is the Hausman and Taylor (HT/IV-GLS) estimator. This is an instrumental variable estimator that uses as instruments only the information within the original GLS/RE model:

$$y_{it} = x'_{1it}\beta_1 + x'_{2it}\beta_2 + z'_{1i}\alpha_1 + z'_{2i}\alpha_2 + \varepsilon_{it} + u_i \quad (2.2)$$

¹⁶ Data on GDP growth rates and GDP per capita (PPP) are taken from the World Development Indicators 2005.

where z_{1i} and z_{2i} are both observed; the unobserved household effects are contained in the households specific random term u_i ; x_{1it} are time variant regressors uncorrelated with u_i ; z_{1i} are time invariant regressors uncorrelated with u_i ; x_{2it} are time variant regressors correlated with u_i ; and z_{2i} are time invariant regressors correlated with u_i . The assumptions about the random terms are:

$$\begin{aligned} E[u_i | x_{1it}, z_{1i}] &= 0 \text{ while } E[u_i | x_{2it}, z_{2i}] \neq 0, \text{ Var}[u_i | x_{1it}, z_{1i}, x_{2it}, z_{2i}] = \sigma_u^2, \\ \text{Cov}[\varepsilon_{it}, u_i | x_{1it}, z_{1i}, x_{2it}, z_{2i}] &= 0, \text{ Var}[\varepsilon_{it} + u_i | x_{1it}, z_{1i}, x_{2it}, z_{2i}] = \sigma^2 = \sigma_\varepsilon^2 + \sigma_u^2, \\ \text{Corr}[\varepsilon_{it} + u_i, \varepsilon_{is} + u_i | x_{1it}, z_{1i}, x_{2it}, z_{2i}] &= \rho = \sigma_u^2 / \sigma^2. \end{aligned}$$

Following Gardner (1998) and Green (2002), in the unbalanced panel setting and after transformation, the model has the form:

$$\begin{aligned} y_{it} - (1 - \hat{\theta}_i)\bar{y}_i &= [x'_{1it} - (1 - \hat{\theta}_i)\bar{x}'_{1i}]\beta_1 + [x'_{2it} - (1 - \hat{\theta}_i)\bar{x}'_{2i}]\beta_2 + \hat{\theta}_i z'_{1i} + \hat{\theta}_i z'_{2i} + \varepsilon_{it} - (1 - \hat{\theta}_i)\bar{\varepsilon}_i + \hat{\theta}_i u_i \\ &= (x_{1it} - \bar{x}_{1i})' \beta_1 + \hat{\theta}_i \bar{x}'_{1i} \beta_1 + (x_{2it} - \bar{x}_{2i})' \beta_2 + \hat{\theta}_i \bar{x}'_{2i} \beta_2 + \\ &\quad + \hat{\theta}_i z'_{1i} + \hat{\theta}_i z'_{2i} + (\varepsilon_{it} - \bar{\varepsilon}_i) + \hat{\theta}_i \bar{\varepsilon}_i + \hat{\theta}_i u_i \end{aligned} \quad (2.3)$$

with $(x_{1it} - \bar{x}_{1i})'$, $(x_{2it} - \bar{x}_{2i})'$, \bar{x}'_{1i} , and z'_{1i} as instrumental variables. $\hat{\theta}_i$ denotes the sample estimate of $\theta_i = \sqrt{\sigma_\varepsilon^2 / (\sigma_\varepsilon^2 + T_i \sigma_u^2)}$.

Because it removes from the model the part of the disturbance that is correlated with x_{2it} , σ_ε^2 is consistently obtained from the estimation of the fixed effects, least squares dummy variable estimator (LSDV):

$$y_{it} - \bar{y}_i = (x_{1it} - \bar{x}_{1i})' \beta_1 + (x_{2it} - \bar{x}_{2i})' \beta_2 + \varepsilon_{it} - \bar{\varepsilon}_i, \quad (2.4)$$

while σ_u^2 is obtained from the residual variance of the instrumental variable regression on z_{1i} , z_{2i} and $\bar{\varepsilon}_i - \bar{\varepsilon}_i$ (from the LSDV estimation) with instrumental variables z_{1i} and x_{1it} : $\sigma^{*2} = \sigma_u^2 + \sigma_\varepsilon^2 / T_i$. From this estimator and with σ_ε^2 from the LSDV the estimator of $\sigma_u^2 = \sigma^{*2} - \sigma_\varepsilon^2 / T_i$.

To take into account the censored nature of the dependent variable, we estimate also a panel tobit model:

$$y_{it} = x'_{it}\beta + z'_i\alpha + e_{it} \quad (2.5)$$

with $E[e_{it} | x_{it}, z_i] = 0$, $Var[e_{it} | x_{it}, z_i] = \sigma_e^2$ and

$$y_{it} = y_{it}^* \text{ if } y_{it}^* > 0 \text{ and} \quad (2.6)$$

$$y_{it} = 0 \text{ otherwise}$$

The conditional mean of an observation randomly drawn from the population, i.e. the expected value of remittances given the observable characteristics or the so called *unconditional expectation*, consists of the *probability of remittances being uncensored* and the expected value of positive remittances, i.e. the *conditional expectation* (Bauer and Sinning, 2005):

$$\begin{aligned} E[y_{it} | x_{it}] &= P[y_{it} > 0 | x_{it}] \times E[y_{it} | x_{it}, y_{it} > 0] \\ &= \Phi\left(\frac{x'_{it}\beta}{\sigma}\right) x'_{it}\beta + \phi\left(\frac{x'_{it}\beta}{\sigma}\right) \sigma \end{aligned} \quad (2.7)$$

where $\phi(\cdot)$ represents the standard normal density function and $\Phi(\cdot)$ is the cumulative standard normal density function. The marginal effect of the observed dependent variable y_{it} is:

$$\frac{\partial E[y_{it} | x_{it}]}{\partial x_{it}} = \Phi\left(\frac{x'_{it}\beta}{\sigma}\right) \beta \quad (2.8)$$

for which McDonald and Moffitt (1980) propose a useful decomposition into two components:

$$\frac{\partial E[y_{it} | x_{it}]}{\partial x_{it}} = P[y_{it} > 0 | x_{it}] \frac{\partial E[y_{it} | x_{it}, y_{it} > 0]}{\partial x_{it}} + E[y_{it} | x_{it}, y_{it} > 0] \frac{\partial P[y_{it} > 0 | x_{it}]}{\partial x_{it}} \quad (2.9)$$

The first term on the right hand side represents the change in the expected remittances of the households making remittances, weighted by the probability of making a positive remittance, and the second term gives the change in the probability of positive remittances, weighted by the expected value of positive remittances.

Like the GLS/RE model, the random-effects tobit model is based on the assumption that unobserved household specific effects are uncorrelated with the included variables x_{it} . If the model includes endogenous variables, the estimator is inconsistent. However, I could not find

in the literature a way to test or correct for this. Honoré (1992) has developed a semiparametric estimator for fixed-effect tobit models. But, it relies on the assumption of strict exogeneity of the regressors (Lee, 2002), which does not hold in for the model presented above.

EMPIRICAL RESULTS

I shall start the empirical analysis by testing for sample selection following Verbeek and Nijman (1992). One of the tests is to include variables measuring whether the household is observed in the previous wave, whether the household is observed in all waves included and the total number of waves the household is observed. According to the null hypothesis, these variables should not be significant in our model if there are no sample selection problems. Another test is Hausman-type and compares the fixed effects estimator of the unbalanced sample with the balanced sub-sample.

Both tests cannot reject the null hypothesis of no sample selection (see Table 3). The χ^2 -statistic with one degree of freedom of the F-test for the three included variables are 2.20, 1.88, and 0.21 respectively, which in all three cases is smaller than the 95% critical value. In the meanwhile, the reported value of the χ^2 -statistic with twenty six degrees of freedom of the Hausman test is 24.05, which is also smaller than the 95% critical value. Therefore, any sample selection bias due to non-response and/or attrition can be ignored.

The OLS and the random effects GLS results in the first two columns of Table 2 provide the benchmark for the rest of the study. There is a small but significant correlation between the predicted residuals of the GLS/RE estimation and some of the empirical model regressors, in particular the variables describing the immigrant household's relatives living abroad. As discussed in the previous section, even in the presence of correlation between measured and latent effects, the LSDV estimation of the time varying variables is consistent. Therefore, it can be used in a Hausman specification test for the correlation between the included regressors and the latent heterogeneity. The χ^2 -statistic with twenty seven degrees of freedom has the value of 37.23 and is smaller than the 95% critical value of 40.11. However, it is larger than the 90% level critical value of 36.70. The random effects model is slightly misspecified.

Accordingly, I shall proceed by estimating the remittance equation by using the Hausman and Taylor estimator with the household's relatives living abroad variables treated as endogenous. The results are presented in the fourth column of the Table 4. The null hypothesis of consistent estimates now cannot be rejected; the χ^2 value of 10.83 being much smaller than the 90% level critical value.

After controlling for endogeneity, the measured effect of the number of sons, daughters, grandsons and –daughters living abroad becomes nearly three times smaller and loses its significance. In the meantime, the effect of the number of brothers and sisters living abroad turns from positive into negative and significant at the 10% level. Finally, the coefficient of the log of GDP per capita in the home country becomes larger and significant at the 10% level and the only citizenship effects that remain significant are in the case of immigrants with foreign citizenship and dual citizenship originating from the Western Balkans.

Next, I would like to discuss the results of the panel tobit model (columns five to eight in Table 4) in which the censored nature of the remittance act is taken into account. These results are compared with the Hausman and Taylor estimation, which treats for endogeneity. Most of the model coefficients are significant and confirm the empirical results of previous studies and the predictions of our theoretical model.

The gender coefficient is negative and significant in both estimations, showing that households having a woman as head remit less compared to man-headed households, resembling the findings of Semyonov and Gorodzeisky (2005). The latter argue that this is due to the fact that migrant women have lower income. However, the present model controls for income and also for the households structure, another important factor of remittance behaviour if taking into account that when a household is separated children more often live with the mother. Still, after controlling for these factors, the estimation results suggest that the woman-headed households are about 5% less likely to remit and if remitting then about 29% less compared to the man-headed ones. One possible reason could be that, if living separated and because of the still extant discrimination in employment, the spouse of a woman (i.e. a man) is less income dependent compared with the spouse of a man (i.e. a woman)¹⁷.

¹⁷ For the simplicity of the argument, we disregard same sex marriages which we assume to be an exception.

The remittance pattern of immigrants to Germany has an inverse U-shape over lifetime, reaching a maximum shortly above age 50. This is an age when one's children reach maturity and get married. An event at which traditionally parents make also the largest bequests to the young couple, e.g. give them financial support to buy an own dwelling. Furthermore, the financial support of the parents (which we found to be very important for the households included) usually stops at this age, since they become old and pass away.

The number of adults and children in the household have a both negative and significant effect. One more child (under age 16) in the household decreases the probability to remit by 2.6% and the amount of remittances by 15.1%, while one more adult in the household decreases the probability to remit by 3.9% and the amount of remittances by 22.9%. On the one hand, the higher effect of the number of adults could be explained by the fact that, if a parent or parent-in-law of the household head is present, possible high elderly-care expenses now fall in Germany and are not remitted abroad. On the other hand, expenses for children over age 16 (here included in the adults group) might be higher than for those under age 16, due to higher schooling expenses (i.e. tuition fees).

There is no significant effect for being divorced or living separated from the spouse. In the meanwhile, the number of sons, daughters, grandsons and –daughters (of both the household head and his/hers spouse) is positive and significant in the OLS, GLS/RE, and tobit/RE estimations but turns insignificant in the LSDV and HT/IV-RE estimations, perhaps because the immigrant households in the GSOEP are more likely to be permanent ones. Therefore, the minor sons and daughters are likely to live with their parents in Germany, while adult sons and daughters chose to live in the home country if performing there well and are, therefore, not dependent on remittances from their parents.

One very robust finding is the effect of the number of parents and/or grandparents abroad. The coefficient is positive and significant in all estimations suggesting that the financial support of the elderly was the main reason for remittances abroad for the average immigrant household in Germany. One more parent or grandparent abroad increased the probability to remit by 3.7% and the amount remitted by 21.9%. It is not straightforward if these are done out of altruism or self-interest (i.e. future inheritance). More probably, as argued by Lucas and Stark (1985), the motivation is mixed.

As mentioned before, the number of brothers and sisters in the home country has a positive effect in the tobit/RE estimation but turns negative in the HV/IV-GLS estimation¹⁸. One more brother or sister living in the home country reduces the amount remitted by about 5%. This makes sense if one takes into account that the presence of brothers and/or sisters splits the responsibility for the financial support of the elderly (i.e. parents and grandparents) among more persons/households. Furthermore, when one has more brothers and sisters the chance to inherit is also lower and, therefore, remittances motivated by self-interest should be smaller as well.

Finally, the number of other relatives in the home country has no effect on the remittance activity, implying that remittances to an extended family member is rather an exception for the average immigrant household in Germany.

As predicted by a longstanding literature, a positive change in the income level of the relatives living in the home country has a negative effect on remittances. An one percent increase in the GDP per capita of the home country reduces the propensity to remit by 3.5% and the amount remitted by 20.7%. Similarly, remittances are positively affected by a positive change in the immigrant households' net income. A 1% increase in income increases the probability of remitting by 12.1% and the amount of remittances with 71.7%¹⁹.

In line with the results of Shamsuddin and DeVoretz (1998) there is a significant substitution effect between home ownership and remittances. The results suggest that the integration in the host country's society has a negative effect on the remittance activity. The ownership of a dwelling in Germany decreases with 3% the probability of making remittances and with 18.2% the amount remitted. Similarly, each additional year of residence in Germany reduces the probability to remit by 0.3% and the amount remitted by 1.7%.

Conversely, the return intention has a positive and significant effect on the remittance activity, confirming the hypothesis and empirical findings of Glytsos (1997). According to him, temporary migrants remit more than permanent ones. The "return illusion" increases the

¹⁸ In both estimations the coefficient's significance level is at 10%.

¹⁹ The HT/IV-GLS estimation gives, however, a slope effect of 33.2% which we believe to be due to large proportions of zero remittances of households with lower incomes. Therefore, we regard the results of the tobit/RE estimation as appropriate.

probability to remit by 5.5% and the amount remitted by 32.7%. Furthermore, the effect is three times as large as that of the self-assessed attachment to the home country.

A positive change in wealth and the difference in growth rates have a pretty small positive effect on the remittance activity (0.3% and 0.1% respectively on the probability to remit and 1.8% and 0.7% respectively on the amount remitted), significant at a 10% level in the tobit/RE and insignificant in the HT/IV-GLS estimation. This is pointing to the fact that the remittances to persons abroad are made rather out of altruistic motives and/or there are other factors that are more important in the determination of remittances motivated by self-interest.

One of these could be education. Contrarily to the results of Faini (2006) the education level has a positive effect on remittances, with immigrants with completed high-school being 2.3% and those with university studies even 3.2% more likely to remit compared to those with no high-school completed. Similarly, the effect on the amount remitted is +13.3% for the medium skilled and +19.0% for the high-skilled. On the one hand, in the classical remittance theory this effect would be interpreted as a confirmation of the *implicit family loan agreement* hypothesis, according to which remittances are assumed to be the repayment of an informal and implicit loan contracted by the migrant for investment in his/her education and migration costs²⁰. On the other hand, following Vadean (2007) higher skilled migrants are also more likely to make investments in the home country, because of better business abilities. There is no information in the GSOEP on the amounts invested in the home country. However, such investments are argued to be accompanied by remittances to relatives which might be particularly trustworthy agents in maintaining the assets on the migrant's behalf and/or administrating his/her business (Lucas and Stark, 1985).

According to the theoretical model presented before, another factor affecting remittances motivated by self-interest is the citizenship status of the migrant. And I hypothesise that the holding of only foreign citizenship or only citizenship of the host country is associated with transaction costs (i.e. mobility restrictions and/or rights to buy real estate) that might reduce the motivation of doing investments in assets (e.g. real estate) and business in the home country.

²⁰ For details see Straubhaar and Vadean (2006).

The citizenship effect is robust (i.e. significant both in the tobit/RE and HT/IV-GLS estimation) only in the case of immigrants from the Western Balkans. As expected, in the case of immigrants from EEA and Switzerland, the twelve new EU Member States and Turkey the citizenship effect is insignificant or not robust. This is due to the fact that in the process of economic integration between Germany and these countries, mobility restrictions were removed and real estate markets gradually opened.

Surprisingly, the effect is insignificant in the case of immigrants from the CIS as well. However, this is presumably due to the composition of this immigrant group of resettles of German origin, whose assimilation and family reunification is highly promoted by the German immigration and naturalisation policy. With a return intention rate of only 5% they most probably save and invest in Germany. But even if they buy real estate in their home country they hardly have any relatives abroad to take care of their assets and, thus, would probably pay real estate agents for that (payments we do not have information about). Other reasons for the absence of a citizenship effect on the remittance activity of migrants from the CIS could be the real estate market openness in Russia and the Ukraine and/or the dominance of altruistic motives to remit.

As predicted by the theoretical model, in the presence of real estate market restrictions in the home country with regard to foreigners, holding only the German citizenship has a small negative effect on the remittances activity while holding dual citizenship a positive effect. Giving up the citizenship of the home country caused immigrants from the Western Balkans to be 0.7% less likely to remit and remitting 4.2% lower amounts. The F-test shows, however, that the remittance behaviour of the immigrants holding foreign citizenship and those holding German citizenship is significantly similar (χ^2 -statistic: 0.69; p-value: 0.406).

Conversely, immigrants holding dual citizenship were 21.8% more likely to remit and remitted about 130% more compared to those holding foreign citizenship and the hypothesis that the coefficients are similar is rejected at the 99% level (χ^2 -statistic: 7.46; p-value: 0.006). Hence, as predicted, in the presence of real estate market restrictions in the home country, holding only foreign or only German citizenship is associated with transaction costs that negatively affect the remittance activity. Dual citizenship confers to migrants the best ability to engage transnationally and, thus, encourages remittances.

Moreover, it should be mentioned that the remittances observed here do not include repatriated savings and investments but only payments to the relatives, e.g. for the maintenance of the assets acquired and held in the home country. If taking into account also the remittances for the acquisition of assets, the citizenship effect would probably be much stronger.

Finally, we have to rise the question of the direction of causality: does transnational investment in assets and/or business in the home country affect the decision of an immigrant to change his/her citizenship status or not? In order to tackle this problem, I would like to proceed by distinguishing between the citizenship effect before and after the change in citizenship status. In order to capture this effect, each immigrant group is split into five subgroups: 1) foreign citizenship – contains the observation of all households that keep their foreign citizenship in all panel waves; 2) German citizenship (before) – include all observations of the households that change their citizenship status to German citizenship in the years waiting for naturalisation in Germany (i.e. while still holding foreign citizenship); 3) German citizenship (after) – include all observations of the households that change their citizenship status to German citizenship after this event already occurred; 4) dual citizenship (before) – include all observations of the households that change their citizenship status to dual citizenship in the years waiting for naturalisation (i.e. while still holding foreign citizenship); 5) dual citizenship (after) – include all observations of the households that change their citizenship status to dual citizenship after they received German citizenship.

I argue that if the remittance activity has an effect on the decision to change one's citizenship status, then the coefficient of the “before” variable should be significantly similar to that of the “after” variable, because the remittance activity should not change after a change in the citizenship status. However, if the two coefficients are different, then the change in the remittance activity might be due to the change in the citizenship status. The results are given in Table 5. The OLS estimation results and the estimation results of most demographic controls are not presented, due to similarity to the results contained in Table 4²¹.

As expected from the results of the previous model and confirmed by the F-test (χ^2 -statistic: 3.17; p-value: 0.074), the single significant outcome for a different remittance behaviour before and after a change in citizenship status occurs in the case of immigrants from the

²¹ All estimation results are available upon request.

Western Balkans. Before taking up German citizenship (and implicitly holding foreign citizenship), the remittance behaviour of these households was similar to those of immigrant households from the Western Balkans that did not change their citizenship status during the years observed (χ^2 -statistic: 0.02; p-value: 0.884). However, after holding dual citizenship, the probability to remit of those households increased by 19.8% and the amount remitted by about 116%, reconfirming that in the presence of real estate market restrictions in the home country, dual citizenship is an important determinant of the remittance activity of migrants.

CONCLUSIONS

This paper examines the remittance behaviour of immigrants in the framework of the German immigration and naturalization policy by focusing on the effect of the changes in the citizenship status.

The remittances to persons abroad are modelled in an utility maximization model. Following Lucas and Stark (1985), I argue that remittances to relatives living in the home country are made out of both altruism (i.e. the migrant derives utility from his/her relatives consumption) and self-interest (i.e. payments to the relatives for the maintenance of assets and/or administrating the business owned by the migrant in the home country). Moreover, I hypothesise that giving up the citizenship of the home country is associated with transaction costs (i.e. restrictions to the home country's real estate market and/or visa requirements when travelling to the home country) that might reduce the motivation of doing investments in assets (e.g. real estate) and business in the country of origin. In this case, remittances to relatives motivated by self-interest might be reduced accordingly.

Conversely, dual citizenship gives the migrant the best capacity to act transnationally, i.e. full access to the markets of both the host and home country and mobility between the two, status that could stimulate investments in the home country and the related remittances to relatives.

The empirical results confirm the hypothesis that the citizenship status is an important factor for the determination of international household to household remittance flows if the country of origin restricts the acquisition of real estate by foreigners. Giving up the citizenship of the home country caused immigrants from the Western Balkans to be 0.7% less likely to remit and remitting 4.2% lower amounts compared to those holding foreign citizenship. Conversely,

immigrants holding dual citizenship were 21.8% more likely to remit and remitted about 130% more. Moreover, by comparing the households' remittance activity before and after the change in citizenship status, revealed that the change from foreign to dual citizenship increased the probability to remit by 19.8% and the amount remitted by about 116%.

To conclude, in order to keep remittance inflows at higher levels, it seems to be an appropriate strategy for migrant sending countries to open up real estate markets to foreigners, at least in relation to countries that host large groups of its Diaspora. Alternatively, migrant sending countries might increase efforts to accede to bilateral agreements with the latter, for the mutual recognition of dual citizenship. On their part, industrial countries could incorporate in their development aid policies the recognition of dual citizenship, in order to promote circular migration, the transnational activity of migrants and remittances.

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Table 1: Descriptive Statistics 1996-2005

Variable	EU15/EEA + CH ⁽ⁱ⁾		EU new ⁽ⁱⁱ⁾		Turkey		Western Balkan ⁽ⁱⁱⁱ⁾		CIS ^(iv)	
	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Woman as HH head (prop.)	0.23	0.42	0.29	0.46	0.16	0.37	0.32	0.47	0.27	0.45
Age	50.63	13.14	45.80	13.80	44.55	13.31	50.23	11.75	46.12	15.18
Education: high school (prop.)	0.27	0.44	0.48	0.50	0.31	0.46	0.33	0.47	0.33	0.47
Education: more than high school (prop.)	0.15	0.36	0.33	0.47	0.09	0.29	0.19	0.39	0.29	0.45
Nr. of adults in HH	2.29	0.88	2.03	0.76	2.38	0.93	2.20	0.90	2.21	0.80
Nr. of children (age <16) in HH	0.66	0.97	0.75	1.02	1.32	1.25	0.54	0.97	1.02	1.36
Married (prop.)	0.78	0.41	0.69	0.46	0.88	0.33	0.74	0.44	0.82	0.38
Spouse lives abroad (prop.)	0.01	0.07	0.00	0.00	0.01	0.10	0.02	0.14	0.00	0.00
Nr. of children and grandchildren abroad	0.24	0.86	0.06	0.35	0.37	1.69	0.62	1.86	0.05	0.39
Nr. of parents and grandparents abroad	0.68	0.91	0.64	0.97	0.67	0.96	0.55	0.82	0.15	0.51
Nr. of brothers/sisters abroad	1.44	1.92	0.82	1.45	1.44	2.18	1.52	2.03	0.28	0.78
Nr. of other relatives abroad	5.54	12.08	1.69	5.05	4.85	11.11	4.48	8.36	0.38	3.24
Home ownership (prop.)	0.32	0.47	0.21	0.41	0.17	0.38	0.17	0.37	0.25	0.44
HH yearly net income	21,248.91	15,162.24	19,532.24	14,025.73	18,543.59	12,697.70	18,425.42	12,422.19	18,311.35	11,378.53
HH yearly gross income from assets	1,115.78	6,802.97	526.78	2,246.70	608.09	4,012.78	439.71	1,133.00	325.06	2,480.21
GDP per capita in home country	22,216.05	4,693.74	9,240.89	2,536.98	6,074.12	248.69	6,302.85	2,181.33	5,701.83	1,923.71
Years since immigration	30.80	9.34	15.84	7.54	26.36	7.59	27.65	8.85	10.88	5.14
Return intention (prop.)	0.70	0.46	0.16	0.36	0.64	0.48	0.62	0.48	0.05	0.21
Connected to country of origin ^(v)	3.28	1.07	2.87	0.97	3.13	1.03	3.13	0.91	2.56	1.15
Foreign citizenship (prop.)	0.96	0.20	0.13	0.34	0.85	0.36	0.85	0.35	0.04	0.20
German citizenship (prop.)	0.03	0.18	0.65	0.48	0.13	0.34	0.13	0.33	0.87	0.33
Dual citizenship (prop.)	0.01	0.10	0.22	0.41	0.02	0.14	0.02	0.14	0.09	0.28
Remittance active HH (prop.)	0.23	0.42	0.49	0.50	0.44	0.50	0.64	0.48	0.39	0.49
Average amount remitted	217.77	1,193.67	180.17	572.64	300.55	1,248.63	579.18	1,638.27	107.54	489.40
Average amount remitted (if remittances >0)	946.37	2,347.25	370.95	777.70	675.67	1,803.64	905.62	1,975.44	275.12	753.13
Observations		2,464		1,363		2,392		1,401		1,535
Nr. of Households		327		194		308		179		231

Notes:

- (i) Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxemburg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.
- (ii) Bulgaria, Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Romania, Slovakia and Slovenia.
- (iii) Bosnia and Herzegovina, Croatia, Macedonia, Serbia and Montenegro.
- (iv) Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Kyrgyz Republic, Moldova, Russia, Tajikistan, Turkmenistan, Uzbekistan and Ukraine.
- (v) From 1 = “not at all” to 5 = “very strongly”.

Table 2: Remittance Activity of Households in the Panel

	Number of years in panel										Total	%
	1	2	3	4	5	6	7	8	9	10		
Non-remitters	11	37	39	55	42	180	41	48	47	256	756	61%
Remitters	1	12	20	22	22	87	19	43	33	221	480	39%
Total	12	49	59	77	64	267	60	91	80	477	1236	100%

Number of years with positive remittances	Number of years in panel										Total
	1	2	3	4	5	6	7	8	9	10	
1	1	8	11	10	9	27	5	16	11	57	155
2		4	6	7	8	29	3	5	6	36	104
3			3	3	4	19	2	8	3	33	75
4				2	1	3	3	6	4	22	41
5					0	4	4	2	2	16	28
6						5	2	3	1	16	27
7							0	3	4	15	22
8								0	1	9	10
9									1	13	14
10										4	4
Total	1	12	20	22	22	87	19	43	33	221	480

Table 3: Sample Selection Test

Cond. Uncens.	Prob. Uncens.	Cond. Uncens.	Prob. Uncens.
Gender (female=1)	-0.285 [0.104]***	-0.282 [0.229]	-0.254 [0.295]
Age	0.092 [0.019]***	0.096 [0.035]***	0.099 [0.047]**
Age squared x 100	-0.091 [0.019]***	-0.094 [0.030]***	-0.096 [0.040]**
Education level: high school	0.192 [0.077]**	0.183 [0.103]*	0.111 [0.134]
Education level: more than high school	0.271 [0.105]***	0.206 [0.156]	0.041 [0.206]
Number of Adults in HH (age >16)	-0.140 [0.042]***	-0.048 [0.053]	-0.055 [0.071]
Number of Children in HH (age <16)	-0.123 [0.035]***	-0.031 [0.051]	-0.039 [0.069]
Spouse and/or Ex-Spouse Abroad	-0.189 [0.182]	-0.357 [0.247]	-0.255 [0.285]
Nr. of Sons, Daughters/ Grandsons, -daughters Abroad	0.171 [0.030]***	0.043 [0.047]	0.101 [0.060]*
Nr. of Parents/Grandparents Abroad	0.201 [0.046]***	0.149 [0.066]**	0.151 [0.080]*
Nr. of Brothers/Sisters Abroad	0.016 [0.021]	-0.048 [0.030]	-0.053 [0.036]
Nr. of Other Relatives Abroad	-0.001 [0.004]	-0.007 [0.005]	-0.003 [0.005]
Home Ownership	-0.149 [0.086]*	-0.270 [0.114]**	-0.270 [0.149]*
Log of Income from Assets	0.014 [0.011]	0.008 [0.012]	0.007 [0.017]
Log of Net Income	0.384 [0.061]***	0.271 [0.069]***	0.457 [0.127]***
Difference Growth Rates: DE – Home Country	0.008 [0.004]*	0.005 [0.004]	0.007 [0.005]
Log of GDP per Capita (PPP) in Home Country	-0.173 [0.136]	-0.204 [0.212]	-0.533 [0.281]*

Cond. Uncens.	Cond. Uncens.	Prob. Uncens.	Cond. Uncens.
Years Since Immigration	-0.012 [0.007]*	-0.063 [0.024]***	-0.065 [0.030]**
Return Home Intended	0.281 [0.110]**		
Connected to Country of Origin	0.135 [0.044]***		
Turkish immigrant: German citizenship	-0.114 [0.176]		
Turkish immigrant: dual citizenship	0.064 [0.411]		
Immigrant from the Western Balkans: foreign citizenship	0.532 [0.159]***		
Immigrant from the Western Balkans: German citizenship	0.277 [0.309]		
Immigrant from the Western Balkans: dual citizenship	2.161 [0.512]***		
Immigrant from the CIS: foreign citizenship	-0.130 [0.437]		
Immigrant from the CIS: German citizenship	-0.100 [0.198]		
Immigrant from the CIS: dual citizenship	0.219 [0.311]		
Immigrant from a EU new Member State: foreign citizenship	-0.208 [0.305]		
Immigrant from a EU new Member State: German citizenship	0.180 [0.196]		
Immigrant from a EU new Member State: dual citizenship	0.339 [0.245]		
Immigrant from EEA+CH: foreign citizenship	-0.465 [0.216]**		
Immigrant from EEA+CH: German citizenship	-0.294 [0.432]		
Immigrant from EEA+CH: dual citizenship	-0.307 [0.655]		
Household present in the last wave (s _{i,t-1})	0.147 [0.099]		

Cond. Uncens.	Cond. Uncens.	Prob. Uncens.	Cond. Uncens.
Household observed in all panel waves (Prod(S_ir))	0.211 [0.154]		
Number of waves in the panel (T_i)	-0.015 [0.032]		
Constant	-3.184 [1.344]**	-0.651 [2.127]	0.847 [2.984]
Observations	9,155	9,155	4,770
Number of Households	1,236	1,236	477
Wald chi-squared/ R-squared	375.92	0.01	0.02
F-test of significance (p-value):			
Household present in the last wave (s _{i,t-1})	2.20 (0.138)		
Household observed in all panel waves (Prod(S_ir))	1.88 (0.170)		
Number of waves in the panel (T_i)	0.21 (0.643)		
Hausman test: chi-squared (p-value)		24.05 (0.573)	
Standard errors in brackets			
* significant at 10%; ** significant at 5%; *** significant at 1%			

Table 4: Estimation Results of Log of Remittances Abroad

	OLS	GLS/RE	LSDV	HT/IV-GLS	Tobit/RE	Marginal Effects after Tobit/RE		
						Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Gender (female=1)	-0.322 [0.060]***	-0.280 [0.104]***	-0.270 [0.211]	-0.287 [0.124]**	-1.388 [0.365]***	-0.250 [0.062]***	-0.291 [0.074]***	-0.049 [0.012]***
Age	0.083 [0.012]***	0.095 [0.019]***	0.097 [0.033]***	0.108 [0.022]***	0.574 [0.080]***	0.111 [0.016]***	0.124 [0.017]***	0.021 [0.003]***
Age squared x 100	-0.083 [0.012]***	-0.094 [0.019]***	-0.095 [0.028]***	-0.104 [0.022]***	-0.560 [0.080]***	-0.108 [0.016]***	-0.121 [0.017]***	-0.020 [0.003]***
Education level: high school	0.147 [0.062]**	0.197 [0.076]**	0.196 [0.095]**	0.205 [0.082]**	0.615 [0.307]**	0.121 [0.062]*	0.133 [0.067]**	0.023 [0.011]**
Education level: more than high school	0.287 [0.077]***	0.282 [0.105]***	0.232 [0.143]	0.283 [0.116]**	0.864 [0.386]**	0.175 [0.083]**	0.190 [0.087]**	0.032 [0.015]**
Number of Adults in HH (age >16)	-0.238 [0.039]***	-0.140 [0.042]***	-0.050 [0.049]	-0.117 [0.045]***	-1.065 [0.184]***	-0.205 [0.036]***	-0.229 [0.039]***	-0.039 [0.007]***
Number of Children in HH (age <16)	-0.161 [0.025]***	-0.118 [0.035]***	-0.032 [0.047]	-0.101 [0.039]***	-0.701 [0.136]***	-0.135 [0.026]***	-0.151 [0.029]***	-0.026 [0.005]***
<i>Spouse and/or Ex-Spouse Abroad</i>	-0.067 [0.151]	-0.181 [0.182]	-0.359 [0.230]	-0.384 [0.238]	-0.060 [0.676]	-0.012 [0.130]	-0.013 [0.146]	-0.002 [0.025]
Nr. of Sons, Daughters/ Grandsons, -daughters Abroad	0.231 [0.034]***	0.168 [0.030]***	0.042 [0.044]	0.053 [0.046]	0.570 [0.091]***	0.110 [0.018]***	0.123 [0.020]***	0.021 [0.003]***
Nr. of Parents/Grandparents Abroad	0.248 [0.035]***	0.208 [0.045]***	0.149 [0.062]**	0.168 [0.063]***	1.016 [0.163]***	0.196 [0.032]***	0.219 [0.035]***	0.037 [0.006]***
Nr. of Brothers/Sisters Abroad	0.052 [0.016]***	0.016 [0.021]	-0.048 [0.027]*	-0.050 [0.028]*	0.127 [0.074]*	0.024 [0.014]*	0.027 [0.016]*	0.005 [0.003]*
Nr. of Other Relatives Abroad	0.005 [0.003]	-0.001 [0.004]	-0.007 [0.004]*	-0.007 [0.004]	0.013 [0.013]	0.003 [0.003]	0.003 [0.003]	0.001 [0.001]
Home Ownership	-0.080 [0.066]	-0.148 [0.086]*	-0.266 [0.106]**	-0.180 [0.093]*	-0.859 [0.344]**	-0.159 [0.061]***	-0.182 [0.071]**	-0.030 [0.012]**
Log of Income from Assets	0.016 [0.010]	0.014 [0.011]	0.008 [0.011]	0.012 [0.011]	0.083 [0.050]*	0.016 [0.010]*	0.018 [0.011]*	0.003 [0.002]*
Log of Net Income	0.554 [0.063]***	0.390 [0.061]***	0.267 [0.062]***	0.332 [0.063]***	3.329 [0.351]***	0.642 [0.069]***	0.717 [0.075]***	0.121 [0.013]***
Difference Growth Rates: DE – Home Country	0.015 [0.006]**	0.008 [0.004]*	0.005 [0.004]	0.006 [0.004]	0.031 [0.017]*	0.006 [0.003]*	0.007 [0.004]*	0.001 [0.001]*

	Marginal Effects after Tobit/RE							
	OLS	GLS/RE	LSDV	HT/IV-GLS	Tobit/RE	Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Log of GDP per Capita (PPP) in Home Country	-0.127	-0.177	-0.192	-0.278	-0.962	-0.186	-0.207	-0.035
	[0.095]	[0.136]	[0.195]	[0.169]*	[0.481]**	[0.093]**	[0.104]**	[0.018]**
Years Since Immigration	-0.008	-0.011	-0.056	-0.016	-0.079	-0.015	-0.017	-0.003
	[0.00374]**	[0.007]*	[0.019]***	[0.008]**	[0.022]***	[0.004]***	[0.005]***	[0.001]***
Return Home Intended	0.268	0.300		0.367	1.514	0.294	0.327	0.055
	[0.062]***	[0.109]***		[0.140]***	[0.345]***	[0.068]***	[0.075]***	[0.013]***
Connected to Country of Origin	0.125	0.132		0.142	0.480	0.093	0.103	0.018
	[0.025]***	[0.044]***		[0.056]**	[0.133]***	[0.026]***	[0.029]***	[0.005]***
Turkish immigrant: German citizenship	0.305	-0.113		-0.212	0.599	0.122	0.132	0.023
	[0.154]**	[0.176]		[0.184]	[0.694]	[0.148]	[0.156]	[0.027]
Turkish immigrant: dual citizenship	0.322	0.042		-0.101	1.698	0.383	0.391	0.068
	[0.396]	[0.411]		[0.424]	[1.557]	[0.404]	[0.383]	[0.067]
Immigrant from the Western Balkans: foreign citizenship	0.614	0.532		0.557	1.395	0.296	0.313	0.054
	[0.107]***	[0.159]***		[0.202]***	[0.459]***	[0.106]***	[0.107]***	[0.019]***
Immigrant from the Western Balkans: German citizenship	0.472	0.282		0.268	1.201	0.258	0.271	0.047
	[0.218]**	[0.309]		[0.360]	[1.003]	[0.238]	[0.237]	[0.041]
Immigrant from the Western Balkans: dual citizenship	2.689	2.174		1.984	5.861	1.875	1.609	0.272
	[0.564]***	[0.512]***		[0.541]***	[1.593]***	[0.736]**	[0.546]***	[0.084]***
Immigrant from the CIS: foreign citizenship	0.205	-0.173		-0.403	-0.678	-0.123	-0.142	-0.024
	[0.324]	[0.436]		[0.506]	[1.550]	[0.263]	[0.317]	[0.052]
Immigrant from the CIS: German citizenship	0.070	-0.104		-0.310	-0.508	-0.095	-0.108	-0.018
	[0.116]	[0.198]		[0.251]	[0.647]	[0.117]	[0.135]	[0.023]
Immigrant from the CIS: dual citizenship	0.522	0.192		-0.078	1.657	0.371	0.381	0.066
	[0.247]**	[0.310]		[0.355]	[1.119]	[0.287]	[0.274]	[0.048]
Immigrant from a EU new Member State: foreign citizenship	-0.308	-0.233		-0.173	-1.454	-0.245	-0.296	-0.049
	[0.196]	[0.304]		[0.364]	[1.035]	[0.152]	[0.200]	[0.032]
Immigrant from a EU new Member state: German citizenship	0.321	0.190		0.131	0.658	0.133	0.145	0.025
	[0.121]***	[0.195]		[0.243]	[0.633]	[0.134]	[0.142]	[0.024]
Immigrant from a EU new Member state: dual citizenship	0.623	0.342		0.282	1.906	0.434	0.441	0.076
	[0.183]***	[0.245]		[0.290]	[0.797]**	[0.210]**	[0.197]**	[0.035]**
Immigrant from EEA+CH: foreign citizenship	-0.497	-0.471		-0.326	-3.006	-0.508	-0.613	-0.100
	[0.142]***	[0.215]**		[0.269]	[0.734]***	[0.109]***	[0.142]***	[0.022]***
Immigrant from EEA+CH: German citizenship	-0.242	-0.296		-0.219	-2.124	-0.335	-0.422	-0.068
	[0.250]	[0.432]		[0.485]	[1.974]	[0.249]	[0.361]	[0.054]
Immigrant from EEA+CH: dual citizenship	-0.319	-0.279		-0.169	-0.601	-0.110	-0.126	-0.021

	OLS	GLS/RE	LSDV	HT/IV- GLS	Marginal Effects after Tobit/RE			
					Tobit/RE	Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Constant	[0.457] -4.889 [0.967]***	[0.654] -3.370 [1.330]**	-0.239 [0.089]***	[0.707] -2.149 [1.676]	[2.602] -40.676 [5.253]***	[0.447]	[0.534]	[0.088]
Observations	9,155	9,155	9,155	9,155	9,155			
Number of Households		1,236	1,236	1,236	1,236			
Left censored observations (=0)					7,704			
R-squared / Wald chi-squared	0.11	370.82	118.92	245.59	566.12			
rho		0.33		0.49	0.27			
Hausman specif. test: chi-squared (p-value)		37.23 (0.091) 10.83 (0.998)						

Standard errors in brackets (robust for OLS)
 * significant at 10%; ** significant at 5%; *** significant at 1%
 Variables in bold face are treated as endogenous in HT/IV-GLS

Table 5: Estimation Results of Log of Remittances Abroad (Citizenship Effect Before and After Change in Citizenship Status)

	Marginal Effects after Tobit/RE						
	GLS/RE	LSDV	HT/IV-GLS	Tobit/RE	Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Gender (female=1)	-0.265 [0.105]**	-0.270 [0.21096]	-0.273 [0.12847]**	-1.277 [0.37096]***	-0.230 [0.06294]***	-0.267 [0.07553]***	-0.045 [0.01237]***
Age	0.097 [0.019]***	0.097 [0.03298]***	0.110 [0.02264]***	0.606 [0.08076]***	0.116 [0.01595]***	0.130 [0.01732]***	0.022 [0.00292]***
Age squared x 100	-0.095 [0.019]***	-0.095 [0.028]***	-0.105 [0.022]***	-0.590 [0.081]***	-0.113 [0.016]***	-0.127 [0.017]***	-0.021 [0.003]***
Return Home Intended	0.312 [0.111]***		0.387 [0.149]***	1.620 [0.353]***	0.313 [0.069]***	0.349 [0.076]***	0.059 [0.013]***
Connected to Country of Origin	0.133 [0.044]***		0.141 [0.059]**	0.487 [0.133]***	0.093 [0.026]***	0.105 [0.029]***	0.018 [0.005]***
Turkish immigrant: German citizenship - before	0.351 [0.269]		0.405 [0.341]	1.758 [0.862]**	0.394 [0.223]*	0.404 [0.212]*	0.070 [0.037]*
Turkish immigrant: German citizenship - after	0.109 [0.252]		0.116 [0.328]	0.877 [0.795]	0.181 [0.177]	0.194 [0.182]	0.033 [0.032]
Turkish immigrant: dual citizenship - before	0.594 [0.559]		0.645 [0.670]	3.050 [1.832]*	0.771 [0.586]	0.741 [0.501]	0.129 [0.087]
Turkish immigrant: dual citizenship - after	0.210 [0.433]		0.123 [0.571]	2.344 [1.223]*	0.555 [0.349]	0.552 [0.315]*	0.096 [0.055]*
Immigrant from the Western Balkans: foreign citizenship	0.601 [0.170]***		0.633 [0.226]***	1.623 [0.481]***	0.349 [0.115]***	0.366 [0.113]***	0.063 [0.020]***
Immigrant from the Western Balkans: German citizenship - before	0.361 [0.583]		0.572 [0.663]	0.787 [2.063]	0.162 [0.456]	0.174 [0.471]	0.030 [0.082]
Immigrant from the Western Balkans: German citizenship - after	0.278 [0.352]		0.301 [0.457]	1.313 [1.061]	0.283 [0.255]	0.297 [0.252]	0.051 [0.044]
Immigrant from the Western Balkans: dual citizenship - before	0.623 [0.648]		0.752 [0.805]	0.996 [2.001]	0.209 [0.459]	0.222 [0.465]	0.038 [0.081]
Immigrant from the Western Balkans: dual citizenship - after	1.861 [0.580]***		1.795 [0.750]**	5.186 [1.520]***	1.564 [0.645]**	1.378 [0.492]***	0.236 [0.079]***
Immigrant from the CIS: foreign citizenship	0.137 [0.544]		0.042 [0.710]	0.326 [1.697]	0.064 [0.345]	0.071 [0.374]	0.012 [0.064]

	GLS/RE	LSDV	HT/IV-GLS	Tobit/RE	Marginal Effects after Tobit/RE		
					Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Immigrant from the CIS: German citizenship - before	-0.447 [0.671]		-0.654 [0.696]	-3.436 [3.929]	-0.473 [0.363]	-0.647 [0.647]	-0.100 [0.086]
Immigrant from the CIS: German citizenship - after	-0.010 [0.209]		-0.208 [0.277]	-0.021 [0.671]	-0.004 [0.128]	-0.004 [0.144]	-0.001 [0.024]
Immigrant from the CIS: dual citizenship - before	(dropped due to collinearity)						
Immigrant from the CIS: dual citizenship - after	0.007 [0.307]		-0.213 [0.406]	0.346 [0.997]	0.068 [0.203]	0.075 [0.220]	0.013 [0.038]
Immigrant from a EU new Member State: foreign citizenship	-0.206 [0.349]		-0.086 [0.454]	-2.085 [1.174]*	-0.329 [0.150]**	-0.414 [0.216]*	-0.067 [0.033]**
Immigrant from a EU new Member State: German citizenship - before	-0.161 [0.652]		-0.278 [0.689]	2.279 [2.172]	0.538 [0.617]	0.536 [0.559]	0.093 [0.098]
Immigrant from a EU new Member State: German citizenship - after	0.139 [0.220]		0.070 [0.289]	0.356 [0.699]	0.070 [0.142]	0.077 [0.154]	0.013 [0.026]
Immigrant from a EU new Member State: dual citizenship - before	0.252 [0.949]		0.397 [1.000]	0.222 [4.538]	0.043 [0.906]	0.048 [0.992]	0.008 [0.169]
Immigrant from a EU new Member State: dual citizenship - after	0.583 [0.250]**		0.588 [0.331]*	2.657 [0.734]***	0.635 [0.212]***	0.629 [0.190]***	0.109 [0.033]***
Immigrant from EEA+CH: foreign citizenship	-0.394 [0.222]*		-0.240 [0.285]	-2.613 [0.749]***	-0.444 [0.113]***	-0.534 [0.146]***	-0.088 [0.023]***
Immigrant from EEA+CH: German citizenship - before	-0.541 [0.508]		-0.300 [0.634]	-6.762 [2.954]**	-0.686 [0.122]***	-1.136 [0.384]***	-0.154 [0.034]***
Immigrant from EEA+CH: German citizenship - after	-0.336 [0.520]		-0.249 [0.650]	-1.762 [2.047]	-0.286 [0.277]	-0.354 [0.384]	-0.057 [0.059]
Immigrant from EEA+CH: dual citizenship - before	-0.504 [1.060]		-0.395 [1.229]	-1.709 [4.103]	-0.278 [0.558]	-0.343 [0.771]	-0.056 [0.119]
Immigrant from EEA+CH: dual citizenship - after	-0.142 [0.701]		0.010 [0.924]	-1.148 [2.504]	-0.197 [0.383]	-0.236 [0.492]	-0.039 [0.079]
Constant	-3.426 [1.343]**	-0.239 [0.089]***	-2.264 [1.712]	-41.217 [5.301]***			

	GLS/RE	LSDV	HT/IV-GLS	Tobit/RE	Marginal Effects after Tobit/RE		
					Unc. Expect.	Cond. Uncens.	Prob. Uncens.
Observations	9,155	9,155	9,155	9,155			
Number of Households	1,236	1,236	1,236	1,236			
Left censored observations (=0)				7,704			
R-squared / Wald chi-squared	368.72	118.92	234.96	577.19			
ρ	0.34		0.52	0.27			
Hausman specif. test: chi-squared (p-value)	39.59 (0.056)	13.76 (0.983)					

Standard errors in brackets (robust for OLS)
* significant at 10%; ** significant at 5%; *** significant at 1%
Variables in bold face are treated as endogenous in HT/IV-GLS