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## Migration and Money: What Determines Remittances? Evidence from Germany

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Discussion Papers

566

Elke Holst  
Mechthild Schrooten

Migration and Money – What Determines  
Remittances?  
Evidence from Germany

Berlin, March 2006



**DIW** Berlin

German Institute  
for Economic Research

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**Discussion Papers 566**

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**Migration and Money - What determines Remittances?  
Evidence from Germany**

Berlin, March 2006

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# **Migration and Money - What determines Remittances? Evidence from Germany\***

## **Abstract**

The determinants of migrants' remittances are the subject of this study based on German SOEP data. For our analysis of the probability and amount of remittances, we do not restrict ourselves on immigrants with a foreign citizenship, but focus on all individuals with a migration background. Major findings are: first, the degree of integration into German society matters. Second, the probability to remit is not dominated by income. Third, foreigners living in Germany are not a homogenous group concerning their remittance behavior: people with Turkish and former Yugoslavian citizenship, who are facing a comparable strong pressure for return migration, remit significantly more than others. The study points to potentially interesting directions for future research: (a) deeper investigations of the extent to which the legal status of the migrant influences cross-border transfer behavior and (b) reconsidering the theoretical arguments since the motive for remittances might have changed during the ongoing globalization process. (151 words)

**JEL-classification:** J61, F22, D64

**Keywords:** remittances, international migration, altruism

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## 1 Introduction

In 2004, remittances from Germany amounted to more than five billion euro, making Germany one of the top ten countries worldwide in remittances. Given the huge sums of money in question and the equally significant potential economic impacts, remittances are currently considered to be the driving force behind migration (World Bank 2005, IMF 2005).

Remittances are usually examined from the theoretical perspective of international labor economics and the economics of migration. Seminal work was done by Lucas and Stark (1981; 1985; Stark 1991), who looked at remittances in the context of the new economics of labor migration (NELM). In recent years, two strands of literature have emerged. The first is a set of theoretical models focusing on the personal motives of the remitter. These models are based on the factors of altruism, inheritance perspectives, and strategic motives (Stark 1995). The second is a set of models that consider the decision to migrate and to remit as a part of an intra-family loan arrangement. This idea is supported by the fact that migration costs often exceed the financial resources of the migrant and in many cases can only be financed by the family (Rosenzweig 1988). Some authors argue that the intra-family loan actually takes the place of an efficient domestic financial sector (Poirine 1997). In this context, migration offers the possibility for portfolio diversification, and the intra-family arrangement also offers insurance against income uncertainty. More recent theoretical models combine different motives, for example, altruism and insurance (Foster/Rosenzweig 2001).

Germany is one of the major immigration countries in the European Union. However, there have been only a few studies, concentrating mainly on the 1980s and 1990s, that address the determinants of remittances from Germany. One important finding of these studies is that remittances of guest workers (immigrants with foreign citizenship) depend on their remigration plans (Merkle/Zimmermann 1992; Oser 1995). Since it can be assumed that naturalized migrants have no plans for remigration their remittances behavior might differ. Furthermore, remigration plans can be influenced by the legal and institutional framework for migration. This framework changed tremendously in Germany. On the one hand, new legal regulations concerning the acquisition of German citizenship (“naturalization”) have been introduced.<sup>1</sup> On the other, new migration patterns have emerged due to various factors including the end of

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<sup>1</sup> The legal framework changed on January 1, 2000.



Socialism, the opening of borders, the migration of German “(Spaet-) Aussiedler”<sup>2</sup>, the Balkan war, the increasing integration within the European Union, and the country’s internal demographic problems. In this context more people are becoming “transnationals”, settling down in the host country but often keeping social and economic ties to the country of origin.

The purpose of this study is to analyze remittance behavior in this new institutional setting. We raise the following core questions: Which factors influence the probability to remit? What determines the amount of remittances? Can migrants<sup>3</sup> be considered a homogenous group concerning their remittance behavior? In addressing these questions, we seek to fill at least three analytical gaps. First, and in contrast to existing studies, we analyze the determinants of cross-border transfers focusing on the broad group of persons with a migration background. Second, we compare these findings to the determinants of cross-border transfers made only by foreigners. Third, since migration is often discussed in the context of social transfers in the host country, we investigate whether the amount of remittances is influenced by the fact that the migrant receives social welfare.

The paper is based on the data provided by the German Socio-Economic Panel for 2004 (SOEP)<sup>4</sup>. Our findings deliver new insights concerning integration policy and remittance behavior. Important results are: first, the degree of integration into German society matters. Second, the probability to remit is not dominated by income. Third, foreigners living in Germany are not a homogenous group concerning remittance behavior. People with Turkish and former Yugoslavian citizenship remit significantly more than all others.

The paper is organized as follows. Chapter 2 presents a short overview of the major theoretical arguments concerning remittances. Chapter 3 presents some insights into the data, the general estimation approach, and the variables employed. In Chapter 4, the results of the econometric models are discussed. The conclusions (Chapter 5) present not only policy recommendations but also potentially fruitful directions for further research.

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<sup>2</sup> “(Spaet-)Aussiedler” are ethnic Germans born in mostly in Eastern Europe who want to migrate to Germany. People belonging to this group who immigrated after 1992 are called “Spaetaussiedler”. “Aussiedler” and “Spaetaussiedler” acquire German citizenship upon entering the country.

<sup>3</sup> Migrants are persons who did not receive the German citizenship at birth.

<sup>4</sup> Information about the SOEP is provided by SOEP Group (2001); for the immigration subgroups see especially Burkhauser et al. (1997).

## 2 Remittances: Altruism, Investment, or Insurance?

Seminal work on remittances was done by Lucas/Stark (1985), who developed microeconomic models based on extensive field work and data collection. This study's central empirical findings were that migrants send remittances home mainly to support their relatives and to accumulate savings in their country of origin. Stark embedded the analysis of remittances in the framework of the New Economics of Labor and Migration (NELM). Today, the microeconomic literature on remittances emphasizes different motives, such as altruism, investment and saving, payment for services (exchange), inheritance, strategic behavior and insurance.<sup>5</sup>

In general, two types of economic models can be distinguished. First, there are models that focus on the migrant's utility function and thus on individual decisions. Second, there are models that argue on the basis of an intra-family contract, taking the migrant's household of origin as the important decision-making unit. In the first group, the basic model relies on altruism. With altruism, the utility function of the migrant depends not only on her own consumption, but also on the utility of the relatives left behind (Stark 1995). Their utility again is a function of consumption, which depends on the income either generated at home or received in the form of remittances, as well as their degree of altruism. Within this model, the transfer increases with the migrant's income and degree of altruism, and decreases with the recipient's income and degree of altruism. Since the degree of altruism cannot be measured empirically, income inequality between the migrant and the relatives at home is taken as the central parameter.<sup>6</sup> The income-conditional form of altruism can be expressed by the migrants' utility function ( $U^i$  with  $C^m, C^h$  as the consumption of the migrant and the people left at home)

$$(1) \quad U^m(C^m, C^h) = (1 - \gamma^m)V(I^m - T) + \gamma^m V(I^h + T)$$

<sup>5</sup> Since Rapport and Docquier (2005) have already contributed a well-written, sophisticated overview of the recent work on remittances, we only briefly summarize the main arguments here.

<sup>6</sup> In technical terms, "unconditional altruism" is reflected in the fact that the first partial derivate of the utility function of an individual with respect to the resources given to other persons is always strictly positive. In other words, an altruist is willing to spend his or her own resources on the well-being and happiness of other people. This unconditional form of altruism is independent of the income situation of the individual. In contrast to this, conditional altruism occurs if, for example, the migrant takes his or her own relative income situation into account (Fehr/Schmidt 2005). In the standard theoretical analysis of remittances mentioned above, only conditional altruism is analyzed, since the relative income of the migrant with respect to the recipient plays an important role in all these models.

$V(\cdot)$  is the felicity derived from the migrant's own and the others' consumption and  $\gamma^m, \gamma^h$  the degree of altruism, with  $0 \leq \gamma^i \leq 1/2$ ,  $i = m, h$ ,  $T$  the transfer of the migrant and  $I^i$ ,  $i = m, h$  the income of the migrant and the people left at home respectively.

Maximizing the migrant's utility in respect of  $T$  leads to

$$(2) \quad T^* = \text{Max}\{\gamma^m I^m - (1 - \gamma^m) I^h, 0\}$$

with  $\delta T^* / \delta I^m > 0$ ,  $\delta T^* / \delta I^h < 0$ ,  $\delta T^* / \delta \gamma^m > 0$  and  $\delta T^* / \delta \gamma^h < 0$ . One important implication is that the transfer cannot increase with the recipient's income. In practice, of course, the strength of personal ties between the remitter and the recipient also plays a large role within the altruism model, as VanWey (2004) indicates.

Other models focusing on the individual utility function of the migrant underscore the argument of payment for services at home (exchange) or strategic behavior. While the exchange argument (Cox 1987) is covered relatively well by the standard model – the amount of remittances increases with increasing demand for services at home – arguments based on strategic behavior require a more sophisticated approach. The general assumption that migrants compensate non-migrants for staying at home is interesting (Stark 1995; Stark/Wang 2002). Within this model, remittances increase with the income of the migrant and her education, and with low income at home. The strategic model shows a stronger transfer response than the altruistic approach to the level of pre-remittance income equality between the remitter and the recipient.

While the above-mentioned models argue on the basis of the utility function of the remitter and therefore focus on the decision of the migrant/remitter, a second class of models emphasizes this individual's family as the important decision-making unit. Within this context, migration and remittances are considered to result from social interactions. The most important approaches take the insurance motive or investment motive into account (see for overview Rapport/Docquier (2005)). The basic argument is the existence of an intra-family contract, either to reduce uncertainty or finance investment. Usually a family with two members living for two periods is assumed. For each member the income  $I_1^i$  with  $i = m, h$  in period 1 is given,

the income in period 2 is random and amounts to  $\underline{I}^h$  with probability  $p$  and  $\bar{I}^h$  with probability  $1-p$ . This leads to the formulation of a function of expected utility  $E(V)$  which depends not only on the income and the probability to realize a certain income but also on the degree of risk aversion  $\nu(\cdot)$  with  $\nu' > 0$ ,  $\nu'' < 0$

$$(3) \quad E(V) = I^0 + p * \nu(\underline{I}^h) + (1 - p)\nu(\bar{I}^h).$$

It is assumed that migration leads to a certain income  $I_2^m$ , but also causes specific transaction costs ( $t$ ), which are assumed to range between

$$(4) \quad I_1 < t < 2 * I_1.$$

Since  $t$  has to be shared by the potential migrant and the non-migrant there exists a set Pareto-efficient contracts which have to fulfill the following condition

$$(5) \quad \text{Max} E(V^m) + \lambda [E(V^h) - \bar{V}^h].$$

Important factors are the share of migration costs covered by the migrant and  $\lambda$ , the relative bargaining power of the non-migrant.

In general, these kinds of models consider the family to reduce uncertainty and therefore to be a substitute for a smoothly functioning insurance and financial sector in the remitter's home country. Models using the insurance motive point out that the risks at home and the risks in the foreign country are not correlated.<sup>7</sup> Models relying on the investment motive argue that migration costs related to the creation of human capital and education are covered by the family through an intra-family loan (Poirine 1997). Within this model, better educated mi-

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<sup>7</sup> Migration and remittances are considered to be a component of intra-family allocation decisions, mainly compensating weaknesses in the domestic social security system and financial sector.

grants transfer more than low-skilled migrants because of their more demanding responsibilities.

Altruism, insurance and investment may indeed play a crucial role in remittances. Nevertheless, there is one important factor behind these different motives: the personal attachment of the migrant to the home and the hosting country. This fact also explains that despite huge differences among the models, the general impact of the explanatory variable on the size of remittances is often the same. Consequently it is difficult to empirically test the different models against each other. Furthermore, it can be assumed that remittances are not driven by a single motive. Recent theoretical models therefore combine different motives, for example, altruism and insurance (Foster/Rosenzweig 2001). Nevertheless, these models often suffer from the fact that the different motives cannot be discriminated completely. Furthermore, remittances made out of altruistic motives might induce “spillover effects”, given that some services or investment opportunities are offered specifically to migrants. All in all, these models seem to focus on a particular kind of migrant: the short-term, target-oriented worker who has a strong personal identification with her family of origin and who expects to return rather than settle in the host country. During the last decade, however, patterns of migration have changed dramatically (Massey/Sana 2005). Many migrants have settled in the host country, and many have still maintained strong ties to their former home countries. Members of this group are often considered as “transnationals” (transnational persons), living in a host country but maintaining social and economic ties to home (Glick/Schiller 1999). Remittances may be one component of the economics of this kind of transnational life (Guarnizo 2003). In this context, not only the degree of attachment and integration into both societies, the one of the hosting and the one of the home country might be important. In addition the institutional framework concerning naturalization as well as concerning the pressure for return migration might matter.

### 3 Data and Variables

The German Socio-Economic Panel Study (SOEP) provides data on private households and individuals. In our analysis we use cross-sectional data from the year 2004 on the individual level. The SOEP is the most important data source for the study of individual remittances and transfer behavior in Germany. In this survey, participants answer a broad range of questions concerning their socio-economic status and demographic characteristics. Since we focus on the determinants of remittances, which are defined as personal cross-border transfers by migrants, retrospective question 143 in the SOEP 2004 questionnaire is crucial:

*“Have you personally given payments or support during the last year (2003) to relatives or other persons outside of your household?*

*How much in the year as a whole? Where does the recipient live? Germany – Abroad”<sup>8</sup>*

In our analysis, the dependent variable is “remittances”. However remittances are not only made by foreigners. Furthermore, many migrants with German citizenship send money back to their country of origin. In 2000, the general conditions for the acquisition of German citizenship for foreigners changed (Box 1). This new setting produced an increase in the number of naturalizations (figure 1), and thus in the number of “transnationals” living in Germany. Fortunately, the structure of the SOEP data set enables us to analyze the remittance behavior of both foreigners and naturalized migrants. In general, the acquisition of host country citizenship can be interpreted as an indicator for integration and personal attachment to the country. Consequently, the remittance behavior of “transnationals” and foreigners may differ.

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<sup>8</sup> For details on the SOEP questionnaire 2004 see:  
[http://www.diw.de/deutsch/sop/service/fragen/fr2004/personen\\_en\\_2004.pdf](http://www.diw.de/deutsch/sop/service/fragen/fr2004/personen_en_2004.pdf).

Box 1:

**Migration and German citizenship**

**Long term migrants and German citizenship**

“Children who have at least one parent with German citizenship, regardless whether it is the mother or father, are automatically German citizens from birth onwards. If both parents are foreign nationals, the child only has German citizenship automatically from birth if one or more of the parents has been legally living in Germany for a period of 8 years and has a settlement permit ("Niederlassungserlaubnis") or is an EU citizen entitled to freedom of movement” [http://www.handbuch-deutschland.de/book\\_en.html](http://www.handbuch-deutschland.de/book_en.html)

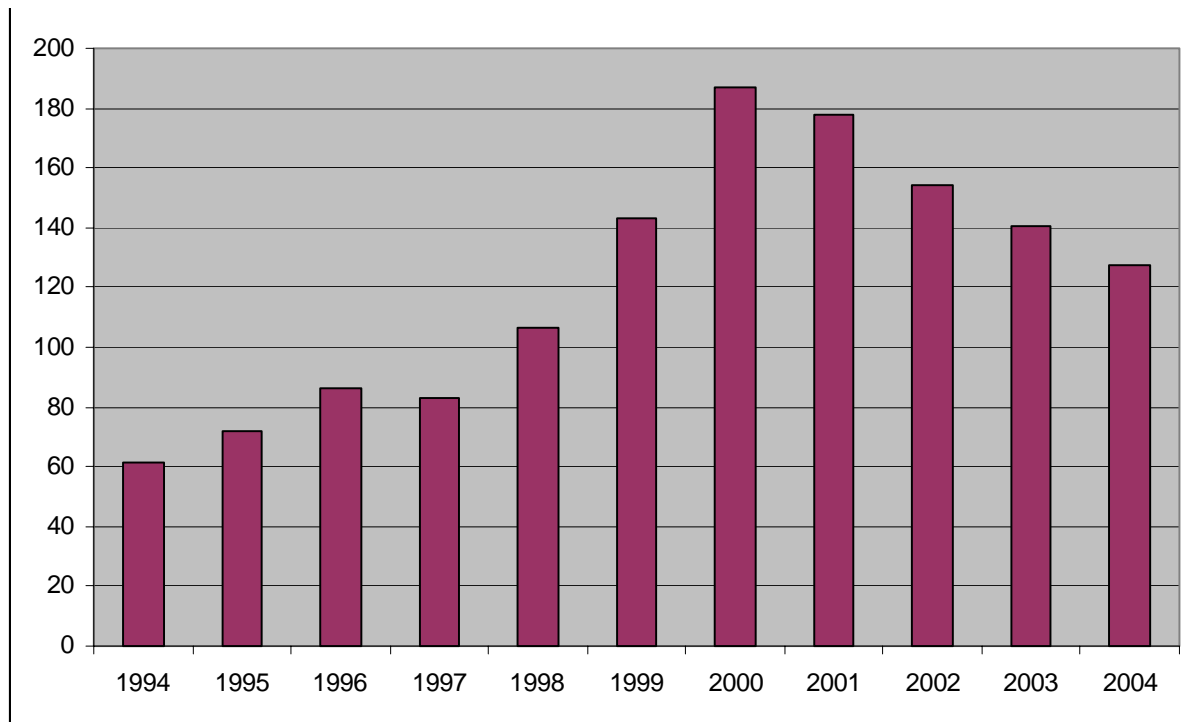
“You can generally only take up German citizenship once you have been resident in Germany for at least eight years. If you fulfill certain conditions, then you have the right to become a German citizen. This cannot be refused.” [http://www.handbuch-deutschland.de/book\\_en.html](http://www.handbuch-deutschland.de/book_en.html)

“Naturalization can occur within a shorter period of time for people who have been granted asylum (under Article 16a of the German Constitution), refugees who have been recognized under the Geneva Convention or those who are stateless: these people can apply for citizenship after a period of 6 years.”

“For spouses of German citizens the following rules apply: the couple must have been married for at least two years at the moment of naturalisation and the spouse resident in Germany for at least three years before any application can be made.”

[http://www.handbuch-deutschland.de/book\\_en.html](http://www.handbuch-deutschland.de/book_en.html)

Figure 1:  
**Acquisition of German citizenship 1994-2004, in thousands**



Source: Statistics Germany ("Statisches Bundesamt"), Statistisches Jahrbuch. Authors' calculations.

We proceed in two steps. First, we investigate the probability to remit by estimating Probit models. Second, we address the question of what determines the amount of remittances. Because not all immigrants remit, the data set contains many zeros.<sup>9</sup> To deal with this issue, we perform estimations of Tobit models, which enable us to analyze the determinants of the positive amount in relation to socio-economic variables.

Based on the relevant theoretical arguments and findings from the literature, the following independent variables are used:

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<sup>9</sup> Due to this fact, estimating the determinants of remittances using ordinary least squares (OLS) raises problems. Particularly the early studies on remittances neglected this problem by simply ignoring the structure of the data set (for example Lukas/Stark 1985). Unfortunately, this limits the comparability of the results.



*Income*

- To capture the influence of the income of the migrant, the net household equivalent income is used.<sup>10</sup> The construction of the net household equivalent income thus makes it easier to compare households with different numbers of members.<sup>11</sup> We took the net household equivalent income after governmental transfers in 100-euro increments and constructed four income classes.<sup>12</sup> According to the theoretical literature, remittances increase with per capita income – a finding reported in all microeconomic models. Here we test the remittance behavior of the three lower quartiles against that of the fourth, highest-income quartile. Therefore we expect a negative sign of the variable “income”.

*Age*

- According to the theoretical literature, the *age* of the remitter plays an important role. However, the age-remittances relationship seems to be non-linear. Age is squared to control for nonlinearities concerning the influence of the variable “age”. While during the first years of migration, the amount of remittances seems to increase with age, beyond a certain age a tendency to decline appears. This finding is reported in many empirical studies (such as Merkle/Zimmermann 1992) and often explained by the assumption that personal ties to the recipient become more distant with age.

*Education*

- The value of the human capital of the migrant is reflected in years of education. According to many theoretical models relying on altruism as well as intra-family- investment

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<sup>10</sup> Income is imputed in case of item-non-response. See for the method of the provided data Frick and Grabka (2005).

<sup>11</sup> The net household equivalent income is constructed to tackle the scale effects in a household with more than one person. Consider a net income of 1,000 euros and a household consisting of four persons: two adults and two children. Here, the net household equivalent income is calculated by taking the factor 1 for the first adult, the factor 0.8 for the second and the factor 0.5 for each child. In sum we get 2.8. Now the net household income is divided by this sum, so we get a net household equivalent income of 357.14 euros, which is a per capita value.

<sup>12</sup> We constructed four income quartiles: the first quartile lives in a household with a net equivalent income of less than 900 euros, the second quartile lives in a household with a net equivalent income of between 900 and less than 1200 euros, the third has a net household equivalent income of between 1,200 and less than 1,600 euros, and the fourth has a net household equivalent income of more than 1,600 euros.

schemes, better education leads to higher transfers. Therefore a positive sign is expected here.

### *Gender*

- Many empirical studies report a significant influence of gender on remittances. While Lucas and Stark (1985) found in their seminal work on remittances that women show a higher propensity to remit, more recent studies have produced the opposite finding. We use a dummy variable to check for this effect here. The variable “gender” is 1 in the case of a female remitter and 0 in the case of a male remitter.

### *Household size of the remitter and integration into German society*

- One important determinant of remittances is the household size of the migrant in the host country. The more members of the household live in Germany, the more Germany can be considered the locus of family life. Therefore, and in line with the theoretical models, we assume that remittances decrease with increasing numbers of members in the migrant’s household in Germany.
- The variable “years” shows the years spent in Germany and occurs only in the questionnaire for foreigners. With the duration of her stay, the migrant’s integration into the host country seems to increase. Therefore, and in accordance with the theory, we assume that the length of the stay is negatively correlated with remittances.
- Another integration indicator is the ownership of real estate in Germany. To capture this, we use a dummy variable which is 1 in the case of real estate ownership (home owner) and zero otherwise. Taking the integration effect into account, we expect lower remittances by those migrants owning real estate in Germany.

### *Social dependency and employment*

- The migrant’s dependency on social transfers might influence remittances and transfer behavior. We check for this using a dummy which has the value of 1 in the case of being a

welfare recipient (*Sozialhilfeempfaenger*) in the year of (a possible) remittance and zero otherwise. We expect that persons relying on social transfers for at least one month remit and transfer less than others; therefore we expect a negative sign. In addition, we check for employment using a dummy variable. The variable has the value of 1 if the individual was employed for more than one month in the year of (possible) remittance and zero otherwise.<sup>13</sup> The variable unemployed is constructed correspondingly: the variable takes the value 1 if the transferring person was unemployed for at least one month in 2003.

#### *Visits home*

- One important basis for remittances is personal contacts to the home country. Here we assume that visits to the country of origin are an important indicator for such personal links. Therefore we expect a positive impact of the visit on remittances.

#### *Nationality*

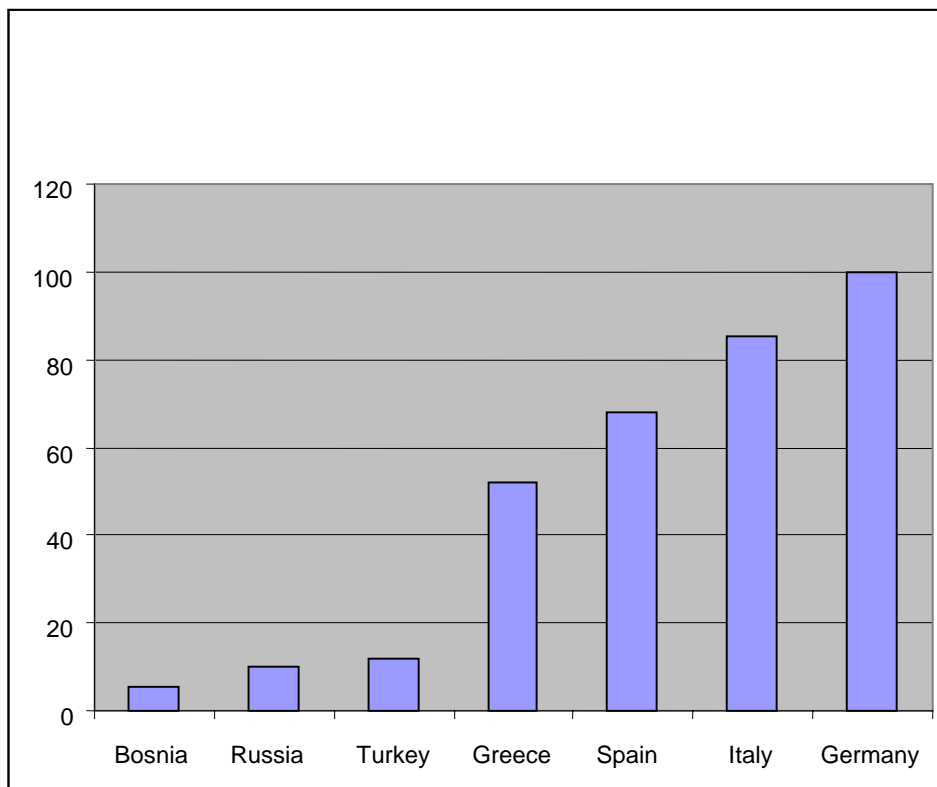
- Nationality, country of origin and the specific migration background might influence the remittances and transfer behavior. The recent nationality as well as the country of origin of a migrant captures numerous non observable determinants of remittances. First, the institutional and legal differences governing a stay in Germany differ depending on the migrant's country of origin. Within the group of foreigners, we differentiate between Turkish, former Yugoslavian and other foreigners using dummy variables. This distinction appears interesting because of the large size of these groups and the fact that Turks have strong home ties and former Yugoslavians experienced - due to the Balkan war - special circumstances of leaving country and family and are under relatively heavy pressure to return home. These factors might manifest itself in higher remittances out of an investment motive. However, the country of origin does not only define the specific institutional setting of migration; it may also provide insights into income differences between the remitter and the recipient that are not captured by the data set directly, since it enables us to look at average income differences between that country and Germany (figure 2). These differences are relatively high in the case of Russia, where many of the so-called "(Spaet-) Aussiedler"

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<sup>13</sup> Specifically we check whether the individual was employed for at least one month in the year 2003.

(Ethnic Germans) lived before migration; and in Turkey and Bosnia-Herzegovina. Nevertheless, since nationality/origin delivers only a proxy for existing income differences between the remitter and the recipient, the results have to be interpreted with care.

Figure 2:  
**Per capita GDP in percent of per capita GDP in Germany, PPP, in 2000**



Source: <http://aol.countrywatch.com/includes/grank/gdpnumericcer.asp?TYPE=GRANK&TBL=NUMERICCER&vCOUNTRY=191>. Authors' calculations.

Our sample includes 2,608 observations. The empirical analysis proceeds in two stages using Stata 8.2. Our core questions are: What determines the probability to remit? What influences the remitted amount? Are there any observable differences between persons with a migration background and foreigners? Is the group of foreigners a homogenous one?

## 4 Empirical Results

The fact that one person remits can be always be understood as an indicator for the existence of personal ties to the home country. The theoretical models on remittances do not distinguish between the determinants of the probability to remit and the determinants of the remitted amount. In general, our empirical results support this view and offer some new insights into the recently identified determinants of remittances. Our main findings are: first, the degree of integration into the society of the host country matters. Second, the probability to remit is not dominated by income. Third, foreigners living in Germany are not a homogenous group concerning their remittance behavior. People with Turkish and former Yugoslavian citizenship remit significantly more than all other migrants. However, the investigation of the remittance behavior of foreigners alone shows that many of the personal status variables are not significant.

Table 1 shows the results concerning the probability to remit. Focusing on all persons with migration background (columns a and b), the probability to remit increases with marriage, years of education, and employment, and in a non-linear fashion with the age of the migrant. Owning real estate in Germany has a negative impact on the probability to remit. Income itself as well as receiving social assistance or unemployment benefits has no effect on the probability to remit. According to these findings, foreigners and naturalized migrants do differ concerning the probability to remit. Nevertheless, taking a closer look at the migration status (column b), we find that Turkish residents, people from former Yugoslavia as well as “(Spaet-)Aussiedler” show a significantly higher probability to remit than other migrants. In other words, the migration status matters. In the case of former Yugoslavian this can be explained by the relative high remigration pressure for this group. Therefore personal investment motives might play a role. In the case of Turkish it might be due to strong family ties to the home country as well as due to remigration plans. In contrast to this it can be assumed that “(Spaet-)Aussiedler” have no remigration plans, there remittances could be part of an intra-family contract scheme as well as out of altruism.

Table 1:  
The probability to remit – Probit

	Migrants (a)	Migrants (b)	Foreigners (c)
<b>Personal status</b>			
Age	0.0458** (2.30)	0.0451** (2.24)	0.050 (1.45)
Age squared	-0.000471** (-2.14)	-0.000465** (-2.09)	-0.000451 (-1.22)
Female (yes = 1)	-0.0713 (-0.97)	-0.0709 (0.96)	-0.104 (-0.87)
Married (yes = 1)	0.408*** (3.77)	0.420*** (3.86)	0.3304 (1.59)
Education (in years)	0.0457*** (3.21)	0.0520*** (3.61)	0.020 (0.94)
<b>Social status</b>			
Employed (yes = 1)	0.199** (2.02)	0.204** (2.05)	0.305** (1.96)
Social assistance (yes = 1)	-0.256 (-1.14)	-0.228 (-1.01)	-0.189 (0.50)
Unemployed (yes = 1)	-0.105 (-0.90)	-0.0825 (0.70)	-0.076 (0.42)
Income less than 900 euro (yes = 1) <sup>1</sup>	-0.163 (-1.34)	-0.197 (-1.59)	-0.303 (-1.45)
Income 900 to less than 1200 euro (yes = 1) <sup>1</sup>	-0.117 (1.08)	-0.181 (-1.63)	-0.032 (-0.19)
Income 1200 to less than 1600 euro (yes = 1) <sup>1</sup>	-0.00602 (-0.06)	-0.0367 (-0.37)	-0.137 (-0.85)
<b>Migration status</b>			
Foreigner (yes = 1)	-0.0289 (-0.39)		
Turkish (yes = 1)		0.218** (2.00)	0.370** (2.54)
Former Yugoslavian (yes = 1)		0.551*** (4.87)	0.713*** (4.95)
"(Spaet-)Aussiedler" (yes = 1)		0.238*** (2.62)	
<b>Integration</b>			
Household size	-0.0455 (-1.32)	-0.0439 (1.26)	-0.162*** (3.25)
Real estate owner (yes=1)	-0.254*** (-3.06)	-0.216** (2.55)	-0.175 (1.18)
Years in Germany			-0.029*** (-4.07)
Visits at home in the last 2 years (yes = 1)			0.311 (2.65)***
Imputation control variable	-0.278 (-1.32)	-0.194 (0.91)	-0.214 (0.66)
Constant	-2.884*** (6.50)	-3.128*** (-7.09)	-2.174 (2.57)
N	2608	2608	987
Pseudo R <sup>2</sup>	0.0589	0.0742	0.1398
LL	-736.58	-724.63	-291.34

z values in brackets \*\*\* p<0.01, \*\* p<0.05, \* p<0.1

<sup>1</sup> Income 1600 euro and more (yes = 0).

Source: SOEP 2004: own calculations.

Turning now to the group of foreigners several interesting findings emerge. First, all variables have the same sign as in the case of migrants, but the personal status variables are now no longer significant. Second, other factors, mostly indicating the degree of integration into the German society as the years spent in the host country as well as the household size in Germany now play an important role. In addition, we find that visits in the home country have no significant influence on the probability to remit.

The analysis above concentrates on the probability to remit, but not on the amount. What determines the amount of remittances? Again our first step is to analyze the remittance behavior of all migrants before turning to the group of foreigners. Table 2 shows the results. Our main findings are: the determinants of the amount of remittances and the probability to remit are similar, but also differ in some respects. The most important difference is that the amount is to a certain degree linked to the income situation while the variable “income” is insignificant in the case of the probability to remit. The first column of Table 2 shows the estimated impact of the independent variables on the amount remitted by migrants. According to our results, the amount of remittances is significantly correlated with the majority of explanatory variables. While many findings are in line with theoretical explanations and previous empirical findings concerning the microeconomics of remittances, the analysis also reveals some new insights. The most important difference between this and previous studies is that we find only a significant correspondence between the amount of remittances and the income variable for low incomes. This result is important, since it calls into question income-based hypotheses on remittances. However we find that persons employed for at least one month of the year of observed (or non-observed) remittances remit significantly more than others. Household size affects the remitted amount significantly negatively. In accordance with the theoretical arguments we show that there exists a significantly positive relationship between the age of the remitter and the amount transferred. Also in line with the literature, we find that this relationship is not linear. Furthermore we find that the amount of remittances reaches its peak at the age of 53, which is relatively late in the life course. We find that females remit significantly less than males. Again, being married as well as years of education has a positive impact on remittances. While controlling for being a foreigner (column a) reveals no significant differences in the remittance behavior, taking a closer look at the impact of citizenship shows that only those from former Yugoslavia remit significantly more than other migrants (column b).

Table 2:  
Determinants of the amount of remittances – Tobit

	Migrants (a)	Migrants (b)	Foreigners (c)
<b>Personal status</b>			
Age	230.8*** (3.40)	222.9*** (3.27)	283.5* (1.70)
Age squared	-2.167*** (-3.07)	-2.087*** (-2.95)	-2.608 (-1.52)
Female (yes = 1)	-562.7** (-2.00)	-571.8** (-2.03)	-836.5 (-1.57)
Married (yes = 1)	1,403*** (3.53)	1,435*** (3.59)	1,135 (1.42)
Education (in years)	191.6*** (3.62)	207.4*** (3.88)	97.4 (0.99)
<b>Social status</b>			
Employed (yes = 1)	844.08** (2.25)	865.1** (2.29)	1,205.7* (1.80)
Social assistance (yes = 1)	-1,230 (-1.34)	-1,107 (-1.22)	-898 (-0.49)
Unemployed (yes = 1)	-661.2 (-1.38)	-572.9 (-1.19)	-483.5 (-0.55)
Income less than 900 euro (yes = 1) <sup>1</sup>	-987.7** (-2.14)	-1,106** (-2.37)	-2,028** (-2.30)
Income 900 to less than 1200 euro (yes = 1) <sup>1</sup>	-626.8 (-1.52)	-813.4* (-1.93)	-364.5 (-0.50)
Income 1200 to less than 1600 euro (yes = 1) <sup>1</sup>	-324.4 (-0.89)	-417.3 (-1.14)	-843.9 (-1.22)
<b>Migration status</b>			
Foreigner (yes = 1)	161.3 (0.56)		
Turkish (yes = 1)		670 (1.56)	1,356** (2.03)
Former Yugoslavian (yes = 1)		1,958*** (4.44)	2,740*** (4.08)
"(Spaet-)Aussiedler" (yes = 1)		522.6 (1.50)	
<b>Integration</b>			
Household size	-268.7** (-2.28)	-2,60.1** (-2.20)	-693.2*** (2.82)
Real estate owner (yes=1)	-805.2** (-2.49)	-663.1** (-2.06)	-621.1 (1.00)
Years in Germany			-101.9*** (3.26)
Visits at home in the last 2 years (yes = 1)			1,097 (1.11)
Imputation control variable	-732.3 (-0.99)	-468.3 (-0.63)	-1,650.2 (1.03)
Constant	-12,365*** (-6.87)	-12,570*** (-7.04)	-10,581** (2.57)
N	2602	2602	983
Pseudo R <sup>2</sup>	0.0196	0.0228	0.0327
LL	-3,027.23	-3,017.35	-1,300.00

t values in brackets; \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

1 Income 1600 euro and more (yes = 0).

Source: SOEP 2004: own calculations.



“(Spaet-)Aussiedler” and Turks do not remit significantly more than others. Finally it should be noted that relying on social welfare as well being unemployed has no significant influence on the amount of remittances.

Now we turn to the remittance behavior of foreigners only (column c). One important finding is that origin and integration into the German society matter. Nevertheless, as in the case of the probability to remit, now many of the explanatory variables turn out to be insignificant, but show the expected sign.<sup>14</sup> In particular, it must be noted that being married, years of education, being a recipient of “Sozialhilfe” (social assistance), being unemployed and owning real estate have statistically insignificant effects on the amount of remittances transferred by foreigners. Also personal visits in the home country do not lead to significant higher remittances. In contrast to earlier studies we reveal a linear relationship between the age of the foreigner and the amount remitted. We find that the degree of integration into the German society plays an important role. Not only the amount of remittances is significantly negatively correlated with the size of the household in Germany but also to years spent in Germany. Migrants from former Yugoslavia and people with Turkish citizenship remit significantly more than other foreigners. This might be partly due to the existing income differences between Germany and the home country. It can be also assumed that the institutional setting of migration plays a crucial role. While Merkle/Zimmermann (1992), using a data set for guest workers interviewed in the year 1988, found a significant effect of being “Turkish” on the amount of remittances, the impact of coming from a former Yugoslavian Republic on remittances is a new finding. However, this might be explained at least in part by the relatively high pressure these individuals face to return to home.

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<sup>14</sup> At a glance this might be due to relatively lower number of observations. While the remittance behavior of migrants is analyzed on the basis of 2,608 observations, the number of observations on foreigners is only 983. However, studies of remittance behavior in the 80s and early 90s operate on the basis of an even lower number of observations (Merkle/Zimmermann 1992; Oser 1995). Since they report a significance of many of these variables, such as owning real estate and the insignificance of others, like the years in Germany, these differences might also indicate a shift in the determinants of these cross-border transfers.

## 5 Conclusions

Remittances are often considered a major factor behind migration. Here we investigate remittance behavior of migrants living in Germany. Important findings of our study are: The degree of integration into the German society and the personal attachment to country of origin matter. Income does not in general influence the probability to remit. Furthermore, the amount of remittances is only affected by this variable in the lowest income groups. This is an important finding, since theoretical models based on altruism as well as those on family contracts argue that the income situation is crucial for remittances. Moreover, we find that being married as well as years of education have a positive impact on remittances and that females remit significantly less than males. Receiving social transfers as well as being unemployed has no significant impact. Turning now to the group of foreigners, we find that many of the explanatory variables, especially concerning the personal characteristics of the migrant are insignificant. It must be noted in particular that marriage, gender, years of education, receiving social assistance (“Sozialhilfe”), being unemployed and owning real estate have a statistically insignificant effect on the amount of remittances transferred by foreigners. However, we show that the degree of integration into German society as well as ties to the country of origin both play an important role. Remittances are significantly negatively linked to the duration of migrants’ stay in Germany and their household size. Personal visits to the home country had no significant impact on both the probability and the amount of remittances. Moreover, we show that the foreigners are not a homogenous group with regard to their remittance behavior. People from former Yugoslavian and Turkish people remit significantly more than other foreigners.

The results presented do only partly support the standard theoretical arguments of remittances, like altruism, insurance and investment. Furthermore, the study shows that one important motivation of remittances might be the degree of integration into the society of the host country. One important factor is the legal framework defining migration. A sustainable policy should give the migrant a clear perspective concerning family reunification, naturalization and the legal status of the next generation. Such a framework would also enable the migrant to make efficient allocation decisions – also on remittances. To create sustainable migration patterns the linkages between migration, the design of appropriate institutions and integration will become more and more important in the future.

This study can be considered a first step concerning the analysis of remittances in the new institutional framework of migration implemented in Germany during the last decade. The link between remittances and the institutional framework shows one potentially interesting direction for future research: carrying out more detailed tests of the extent to which the legal status of the migrant influences cross-border transfer behavior. In this context, a longitudinal study of remittance behavior would be natural extension of the present paper. In addition, deeper investigation of the potential motivations of migrants might be possible using the tools of experimental economics (Fehr et al. 2002, Fehr/Schmidt 2005). This could also lead to a further investigation of the changing patterns in remittances.

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