

## BULGARIAN MIGRANT REMITTANCES AND LEGAL STATUS: SOME MICRO-LEVEL EVIDENCE FROM MADRID

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### **Abstract**

Migrant remittances have assumed an increased importance over the last decade for many transitional economies and in Bulgaria now account for close to 4% of officially measured GDP. Private transfers from abroad can play an important role in preventing households from falling into poverty and in stimulating economic development through investment. In spite of the scale of migrant remittances for Bulgaria at the macroeconomic level, there is limited understanding of their determinants at a micro-level. This paper attempts to fill the gap in our understanding of the factors that influence migrant remittances to Bulgaria using micro-level data. A particular focus in this study is on the role of a migrant's legal status. This paper reports estimates for remittance functions using data drawn from a unique survey conducted among legal and illegal Bulgarian immigrants in the city of Madrid in late 2003 and in the early months of 2004.

**JEL Classification:** J61

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## Introduction

The final decade of the twentieth century witnessed the largest economic experiment of recent times as former communist countries implemented economic reform programmes designed to expedite transformation to a market-based system. The transformation process has influenced the direction of economic policies and shaped social policies, business practices and institutions. The collapse of the central planning system in Europe also provided the citizens of these erstwhile communist regimes with greater opportunities to migrate abroad.

The first post-communist emigration wave from Bulgaria started soon after the liberalisation of state passport regulations and the abolition of the exit visa requirements in 1989. Nearly one-quarter of a million Bulgarians left the country in this particular year (see National Statistical Institute, 1992). They mainly comprised Bulgarians of Turkish extraction whose departure was motivated by political rather than economic considerations. It was not until the mid-1990s that the pattern of Bulgarian emigration could be characterised as primarily driven by economic factors. In this early period, Bulgarian emigration was mainly towards central European destinations, notably the Czech Republic, Hungary and Austria (see SOPEMI, 1999).

In recent years, there has been a growing tendency towards temporary seasonal rather than permanent migration with the preferred destinations being Greece, Italy, Netherlands, Germany and Spain. The main motives are now interpreted to be primarily economic in nature (see Guentcheva *et al.*, 2003). The rise in temporary or circular (repeated) economic migration, which is largely undocumented in character, is attributed to increased unemployment in certain regions within Bulgaria. The opportunity to stay in countries in the Schengen-area of the EU for three months without a visa provides an additional incentive.<sup>1</sup>

Spain in particular emerged as an attractive destination for Bulgarian migrants in the second half of the 1990s. A recent OECD report estimates the total number of Bulgarians in Spain to be approximately 60,000 (SOPEMI, 2006). Anecdotal evidence suggests that this country became a preferred destination for many Bulgarians because of the comparative tolerance of both the Spanish authorities and employers towards undocumented foreign workers. In addition, legislative programmes sympathetic to migrants in the past, and an anticipation of new ones in the future, encouraged these flows. Most recently in May 2005, the Spanish government completed a new regularisation programme for the estimated one million undocumented foreign-

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1. Bulgaria was removed from the 'black Schengen list' in April 2001, which allowed Bulgarian citizens to travel freely within the Schengen area for three months. It has been conjectured that many Bulgarians exploit this facility to undertake illegal employment in Europe while residing there legally.

ers in their country. Under the new rules, an undocumented migrant with no criminal record could attain legal status by producing a work contract of more than six months duration and proof of prior residence in Spain for at least half a year. Over 25,000 Bulgarian workers (roughly 3.7% of the estimated foreign workforce in Spain) have recently applied to regularise their status.<sup>2</sup>

Migration can provide an important coping strategy for households in many of the less developed transitional economies. Although there is no broad consensus, migrant remittances, defined as cash or in-kind transfers from migrants to relatives and friends in their country of origin, can play a role in maintaining a basic living standard for many households in the origin countries. Data released by the Bulgarian National Bank confirm that the amounts of money sent by Bulgarians resident abroad to relatives in their home country has, over recent years, steadily increased both in absolute terms and as a percentage of measured GDP (see Alexandrova *et al.*, 2003).<sup>3</sup> Given the existence of both informal methods for remitting and remittances that take the form of in-kind transfers, this is likely to under-report the scale of remittance activity. According to data released by the Agency for Bulgarians Abroad, at least 300,000 Bulgarian migrants, on a regular monthly basis, remit to their families back in Bulgaria amounts that range from between US\$100 to US\$300.<sup>4</sup> The remittances are used primarily to cover basic needs but are also used for the purchase of durable and investment goods. The scale of these remittances raises important questions about the potential impact they exert in Bulgaria and whether the gain through remittances counterbalances the 'brain-drain' the country initially experiences through emigration. A recent study on the effects of migrant remittances on the Bulgarian economy emphasizes their increased use for the purchase of real estate, which is often procured as part of an investment. Research on the real estate market within the larger cities of Bulgaria, conducted by the Institute for Market Economics in Sofia, reported that over the period 2002 to 2004, about 10% of real estate purchases were financed from migrant remittances (Kostadinova, 2005).

The primary motivation for the current paper is an examination of the remittance behaviour of a sample of Bulgarian migrants using responses from interviews conducted in Madrid in late 2003 and early 2004. The theoretical framework within which our analysis is loosely situated is provided by Stark (1991), which emphasized

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2. See [www.mtas.es/balance/pagina8.htm](http://www.mtas.es/balance/pagina8.htm)

3. For example, in 2003 such transfers comprised about 3.5% of measured Bulgarian GDP (see Stanchev (2004)).

4. The Agency for Bulgarians Abroad (ABA) is a state institution tasked with collecting data about expatriate Bulgarians. It also co-ordinates and supports the activities of state institutions towards expatriate Bulgarian communities ([www.aba.government.bg](http://www.aba.government.bg)). It should be noted that ABA uses the term 'expatriate Bulgarian' and not the term 'Bulgarian emigrant'.

the collective nature of the migration decision and the mutual interdependence of household members. Decisions to migrate are motivated by a concern to minimize the risks that attach to household income variability and the private transfer of income from the migrant worker to the household constitutes an integral part of the migration decision.

Stark (1991, Ch.15) interprets the income transfers as the outcome of a migrant family's implicit contractual insurance arrangement. Initially, the sending household insures the migrant against the early uncertainties associated with working in an urban labour market but subsequently the migrant adopts the role of insurer to allow the household to engage in more risk-increasing activities. Although altruistic motives could explain why migrants comply with such arrangements, self-interested factors are also likely to be important. Even if the migrant is well established in the host labour market, such markets are not immune to cyclical fluctuations and retaining contact with the household of origin can be important. The relationship is also particularly relevant if the status of the migrant is not legally recognised within the host country. The family coinsurance model could also be viewed as an exchange model, with the service provided in the early stages by the household (insurer) repaid by the migrant (insurant) in the form of insurance premiums through the transfer of remittances. The repayments could give rise to an inverted U-shape with respect to time spent in the host country and thus consistent with notions inherent in the remittance decay hypothesis (see Brown, 1997).<sup>5</sup>

This paper exploits a relatively rich, albeit small-scale, dataset acquired through interviews undertaken with a sample of Bulgarian immigrants to better inform the key determinants of individual-level remittance behaviour. In particular, we are interested in exploring the relationship between remittance behaviour and time spent in Spain to provide some insight into the relevance of, *inter alia*, the coinsurance and remittance decay hypotheses for this Bulgarian sample. The role of an individual's legal status is also explored as is the importance of family structure. In addition, we are also keen to determine the sensitivity of the volume of remittances to labour market earnings and situate this particular finding within the broader context provided by the international literature on this theme.

The structure of this paper is now outlined. The next section contains a description of the unique dataset assembled for this research followed by a section that describes the empirical methodology used. The penultimate section discusses the empirical results and a final section offers some conclusions.

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5. Lianos (1997) provides a brief critique of some of the literature underlying the theory of remittances.

## Data

This study exploits data obtained in a unique survey conducted by the first author among Bulgarian immigrants in the Madrid area of Spain (particularly, in the southern suburbs of Parla and Getafe, and in the south-eastern region of Alcala de Henares). The survey was conducted over two separate periods: November/December 2003 and in late April 2004 and thus pre-dates legislative changes introduced in 2005 designed to regularise the status of illegal or undocumented workers.

A total of 198 Bulgarian immigrants living in the Madrid area were interviewed in detail about their migration history, working and living conditions, saving and remitting behaviour, intentions to return and the use of social services in the host country. An important issue concerning a survey of this type concerns the representative nature of the sample. It is always difficult to obtain reliable estimates regarding the number of immigrants illegally residing and working in a host country and there is always a great degree of uncertainty about the appropriate sampling frame to use in implementing such a survey. The sample design by necessity tends to be *ad hoc* and sometimes combines elements of 'snowballing' and/or 'purposive' sampling. This unavoidable constraint renders broad generalisations about the population of Bulgarian migrants in Madrid difficult but, in our view, does not vitiate the exercise. The information acquired can cast light on the nature of important empirical relationships for the interviewed sample but inferences need to be couched within the conditional nature of the particular sample used.<sup>6</sup>

In order to ensure worthwhile and informative responses, the primary concern of the interviewer was to build trust and understanding with potential interviewees. This was ensured by the fact that the interviewer is a native Bulgarian who initially knew a small number of migrants resident in the southern suburbs of Madrid. These contacts facilitated initial access to locations where Bulgarians gathered, usually in Bulgarian-owned businesses ('phone and money houses' called '*locutorios*'), coffee-shops, restaurants or private houses. Several immigrants were approached through their acquaintances. Further access was gained through personal contacts with influential people among the Bulgarian emigré community.

The interviews were conducted entirely in Bulgarian and the questionnaire was available in this language. It is acknowledged, as noted earlier, that the foregoing sampling is unlikely to generate a random sample of responses. For instance, the selection of individuals is, to some degree, related to their visibility and those that are more actively engaged in ethnic affairs are more likely to be selected for interview. If the unobservable characteristics that encourage engagement in ethnic affairs, for example, are highly correlated with labour market earnings, there is a potential for

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6. Further details on this survey are contained in Markova (2006).

bias in the estimates of interest to us in the remittance function. There is little that can be done to treat this potential problem given the nature of the survey undertaken. However, it could be argued that this limitation is counter-balanced by the quality and detail of the information obtained. This was assessed by the interviewer as relatively reliable given that a considerable amount of time was devoted to completing each questionnaire with the individual respondents.

An extensive array of information was collected through the interviews, a subset of which is exploited in the empirical analysis undertaken here. Table 1 contains a description of the variables to be used and also reports some summary statistics. Our sample comprises responses from 188 Bulgarian nationals who resided in Madrid in the reference month prior to interview and for whom usable information was obtained. The responses for only ten individuals were excluded, as these were not currently working. Almost half of the usable sample was male and half again were married. The sample mean age is close to 37 and the average respondent had spent, up to the interview date, about 2.5 years in Spain. Almost three-quarters of the sample remitted money to Bulgaria in the reference year and the unconditional annual sample average was almost 1,100 Euros.<sup>7</sup> The average number of family members residing in Spain was 2.2 compared to 1.6 in Bulgaria. The differential in the point estimates between these two measures is statistically significant at a conventional level with a computed z-score of 4.5. Finally, just over one-third of the respondents were legally entitled to work in Spain.

### **Empirical Methodology**

In modelling the determinants of migrant income transfers, it is important to consider the censored nature of the dependent variable. As noted in the previous section, not all individuals remit positive amounts in a given year and, given the scale of non-remittance, the use of the ordinary least squares (OLS) procedure is invalidated. Our approach is to assume that the decision to remit and the level of remittances are made simultaneously. A censored tobit model that uses data on both remitters and non-remitters can then be used (e.g., see Brown, 1997 for an application to Pacific islanders and Liu and Reilly, 2004 for an application to China).

We define the remittance equation as:

$$R_i^* = \mathbf{x}_i' \boldsymbol{\beta} + u_i \quad (1)$$

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7. Given the relevant exchange rate at the time of one Euro = \$1.198, this sample average is within the ballpark of the estimates provided by the Agency for Bulgarians Abroad.

where  $R_i^*$  is a partial latent dependent variable that captures the  $i^{\text{th}}$  individual's propensity to remit,  $\mathbf{x}_i$  is a vector of remittance determining variables for individual  $i$ ,  $\boldsymbol{\beta}$  is a vector of fixed unknown coefficients to be estimated, and  $u_i \sim N(0, \sigma^2)$ . Thus:

$$R_i = R_i^* \quad \text{if } \mathbf{x}_i' \boldsymbol{\beta} + u_i > 0 \quad \text{and} \quad (2)$$

$$R_i = 0 \quad \text{if } \mathbf{x}_i' \boldsymbol{\beta} + u_i \leq 0$$

where  $R_i$  represents the actual amount remitted home by the  $i^{\text{th}}$  individual (see table 1).

**Table 1.** Variable Description and Summary Statistics

Variable	Description	Sample Mean Values
<b>R</b>	The amount of remittances sent home in the last year in Euros	1095.657 (1661.388)
<b>Remit</b>	=1 if the individual remits money to Bulgaria; = 0 otherwise.	0.744
<b>MALE</b>	=1 if the individual is male; = 0 if female.	0.452
<b>AGE</b>	The age of the respondent expressed in years	35.654 (10.656)
<b>TIME</b>	The total time spent in Spain expressed in months.	28.896 (24.126)
<b>TIMELEG</b>	The total time spent legally in Spain expressed in months.	11.008 (19.153)
<b>TIMEILLEG</b>	The total time spent illegally in Spain expressed in months.	17.888 (12.566)
<b>MARRIED</b>	=1 if the individual is married; = 0 otherwise.	0.489
<b>LEGAL</b>	=1 if the individual has legal status to remain in Spain; = 0 otherwise.	0.345
<b>NUMFM_BUL</b>	The number of family members in Bulgaria	1.612 (1.514)
<b>NUMFM_SP</b>	The number of family members in Spain	2.239 (1.180)
<b>PAY</b>	The total monthly labour market earnings for the last month in Euros	904.660 (522.842)
<b>N</b>	The total number of usable observations in the sample	188

*Notes:* (a) The numbers reported in parentheses are standard deviations and these are reported for the continuous variables only.

Thus  $R_i$  is either positive ( $R_i > 0$ ) or zero ( $R_i = 0$ ). Using this information, the log-likelihood function (L) may be expressed as follows:

$$L = \sum_{i=1}^n [\text{Remit}_i \times \log_e \frac{\phi[(R_i - \mathbf{x}_i' \boldsymbol{\beta}) / \sigma]}{\sigma} + (1 - \text{Remit}_i) \times \log_e [1 - \Phi[\frac{\mathbf{x}_i' \boldsymbol{\beta}}{\sigma}]]] \quad (3)$$

where  $\text{Remit}_i = 1$  if the individual remits and 0 otherwise (see table 1),  $\Phi(\cdot)$  and  $\phi(\cdot)$  denote the cumulative distribution function and probability density function operators respectively, and  $\log_e$  denotes the natural logarithmic operator.<sup>8</sup>

### Empirical Results

The tobit estimates for the first set of remittance equations are reported in table 2. Two models are reported here, one with interactions between time spent in Spain and legal status and a second without these interactions. The goodness-of-fit measures are satisfactory by the standards of cross-sectional models. The reported effects are all well determined at a conventional level of statistical significance using two-tailed tests. The volume of remittances was found to rise with age in a linear fashion. We experimented with fitting a quadratic specification in age but this performed less well than the linear form. Remittances were also found to be higher, on average and *ceteris paribus*, for both males and those married. The legal status of an individual dramatically reduces the scale of annual remittances to Bulgaria and monthly labour market earnings are, as anticipated, a positive determinant of remittances.

The number of family members remaining in Bulgaria exerts a positive impact on annual remittances but the number located in Spain exerts the opposite effect. The null hypothesis that these coefficients sum to zero produces a chi-squared value of 3.54 implying a rejection of the null at the 0.06 significance level. This suggests that remittance behaviour is more sensitive to the number of family members that are Spanish rather than Bulgarian-based. This is intuitive as, given competition for a migrant's finite resources, the primary concern is likely to focus on those family members in closest proximity and these are less likely to belong to the extended family in Bulgaria. The larger the number of family members based in Spain the weaker is the relationship with the Bulgarian-based household.

The computation of the marginal and impact effects provides for a more transparent interpretation of the foregoing and these are reported in the second column of table 2. The impact effect for the gender control suggests that, on average and *ceteris paribus*, a male remitted annually about 588 more in Euros to Bulgaria than a female

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8. The parameter values for the  $\boldsymbol{\beta}$  vector and the ancillary parameter  $\sigma$  are chosen to maximise L using conventional Newton-Raphson non-linear iterative methods.



**Table 2.** Maximum Likelihood Estimates for Remittance Function Tobit Model

Variable	Estimated Coefficients	Impact/ Marginal Effects	Estimated Coefficients	Impact/ Marginal Effects
Constant	-2181.837*** (655.277)	†	-2752.797*** (719.776)	†
MALE	875.754*** (306.625)	587.673*** (206.198)	934.774*** (300.609)	631.015*** (203.635)
AGE	38.119*** (13.047)	25.579*** (8.726)	40.435*** (12.783)	27.296*** (8.597)
MARRIED	625.377** (269.740)	419.654** (181.755)	678.676*** (265.846)	458.137** (180.380)
LEGAL	-1815.956*** (401.682)	-1218.594*** (270.223)	1185.542 (1017.986)	†
NUMFM_BUL	201.541* (101.930)	135.244* (68.462)	211.030** (100.583)	142.455** (67.942)
NUMFM_SP	-600.345*** (140.476)	-402.860*** (94.833)	-671.897*** (140.573)	-453.561*** (95.625)
PAY	1.524*** (0.346)	1.023*** (0.234)	1.345*** (0.342)	0.908*** (0.232)
TIME	48.824*** (14.894)	24.539*** (9.265)	113.828*** (38.332)	†
TIMESQ	-0.212** (0.106)	†	-1.210 (0.8037)	†
TIME×LEGAL	†	†	-131.688*** (46.949)	†
TIMESQ×LEGAL	†	†	1.389* (0.822)	†
$\sigma$	1630.695*** (98.719)	†	1588.244*** (95.922)	†
R <sup>2</sup> – ANOVA	0.131	†	0.142	†
R <sup>2</sup> – Decomposition	0.232	†	0.245	†
Log-Likelihood Value	-1272.328	†	-1267.512	†
N	188	188	188	188

Notes (a) \*\*\*, \*\* and \* denote statistical significance at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.

(b) † denotes not applicable.

(c) See table 1 for a description of the variables used in the regression model.

(d) The scale factor used for the computation of the impact/marginal effects is 0.6710.

(e) The marginal effect for TIME is computed at the sample average duration.

(f) The maximum likelihood estimates are based on maximizing expression [3] in the text.

(g) R<sup>2</sup> – ANOVA = variance in predicted conditional mean over variance in the dependent variable.

(h) R<sup>2</sup> – Decomposition = variance in predicted mean over variance in predicted + plus model residual variation.

(i) The six other variables were also interacted with legal status. The resultant chi-squared with six degrees of freedom was 4.92 and the corresponding prob-value was 0.555.

migrant. A married individual remitted over 420 more Euros in the reference year than those in all other marital status categories. If the number of family members in Bulgaria (Spain) rose by one, the volume of annual remittances would rise (fall) by 135 (402) Euros. A one month increase in the time an average Bulgarian migrant spends in Spain increases the annual remittances home to Bulgaria by about 25 Euros, on average and *ceteris paribus*.

The strongest effect reported is reserved for the legal status of the respondent. The impact effect for this measure suggests that, on average and *ceteris paribus*, a Bulgarian migrant with legal status to remain and work in Spain remits almost 1,220 less in Euros per year than someone without this status – a sizeable amount given the sample mean value for the dependent variable (see table 1). This finding is resonant of that reported by Markova and Sarris (2002) for Bulgarians in Athens and by Liu and Reilly (2004) for a sample of rural Chinese migrants in Jinan. Those without legal status retain stronger connections with their Bulgarian-based family members given the greater degree of uncertainty that attaches to their status in Spain. This type of relationship could be interpreted as a form of insurance against the risk of being apprehended and repatriated. The converse of this implies that legal status guarantees a greater degree of certainty for the migrant thus potentially reducing reliance on the Bulgarian household to act as an insurer of last resort. We also investigated whether there were any interactive effects between the number of family members in either Bulgaria or Spain and legal status. A joint test for the significance of these two interaction terms yielded a statistically insignificant Wald test value of 1.63 with a corresponding prob-value of 0.44.

The monthly pay effect illuminates the relationship between labour market earnings in Madrid and annual remittances to Bulgaria. The marginal effect suggests that a one Euro rise in monthly pay raises annual remittances by just over one Euro. It is useful to compute the corresponding elasticity for this relationship at the sample means of the data. This is calculated at 0.84 with a corresponding asymptotic standard error of 0.19. The estimated elasticity is not statistically significant from one and suggests a unitary elastic response of annual remittances to labour market earnings in Madrid. In other words, a 1% rise (fall) in monthly earnings yields a 1% rise (fall) in annual migrant remittances.

The estimates for the linear and quadratic terms in time spent in Spain suggest an inverse U-shaped relationship between remittances and time. The turning point is computed at approximately 9.6 years. This is broadly consistent with the remittance decay hypothesis (see Brown, 1997) but the turning point is somewhat later than generally found in the literature (see Liu and Reilly, 2004). This issue is explored in more detail by introducing a variable that interacts legal status with the time spent in Spain. The estimates for this exercise are reported in column three of table 2 and it should be noted that the estimated effect for 'LEGAL' cannot be interpreted in

isolation of the interaction effects in this model. Although the quadratic term in the non-interacted time measure is less well determined than in the earlier specification, a potential asymmetry emerges in regard to the nature of the relationship between those with and without legal status. The relationship between remittances and time spent in Spain for those without legal status is close to being an inverted U-shape given the point estimates and their corresponding statistical significance.<sup>9</sup> The reverse is the case for those with such status. The turning point for the former is now computed at a peak of 3.9 years (though given the marginal result in regard to the quadratic term some caution is required here), while for the latter the trough point is computed at 4.1 years.

These findings demonstrate the rather complex nature of the relationship between remittances and time spent in the host country. The data that are available to us allow this issue to be investigated a little further by breaking down the time spent in Spain into its legal and illegal components. The coefficients for this re-specified model are reported separately in table 3.<sup>10</sup> The estimated effect for the quadratic term in the illegal time spent in Spain is again poorly determined but the estimated effects for the legal variant are well determined. The turning point suggests a trough at about 3.5 years.

It is clear from the foregoing that the remitting behaviour of migrants is contingent on their legal status. The remittance decay hypothesis appears to provide a reasonably good approximation for the behaviour of illegal Bulgarian migrants but certainly not for their legal counterparts.<sup>11</sup> The estimates for the other coefficients are generally insensitive to the treatment of time here. However, the estimated effect for the number of family members in Bulgaria becomes statistically insignificant (though only marginally so), and there is a slight attenuation in the estimated monthly wage effect. The computed elasticity is now 0.76 with an asymptotic standard error of 0.19. However, the null hypothesis of a unitary relationship between annual remittances and monthly earnings is again upheld by the data.<sup>12</sup>

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9. The absolute value for the asymptotic t-ratio is 1.5 and suggests statistical significance at the 0.132 level using a two-tailed test. We acknowledge that a stringent interpretation would suggest linearity in the empirical relationship of interest here but we do not believe that our claim in the text is unduly extravagant.

10. The LEGAL variable is excluded from the specification in table 3 as it failed to achieve statistical significance at a conventional level achieving an absolute t-ratio of slightly over 1.

11. This finding is partially at odds with those of Lianos (1997) who used time series data on Greek migrants in West Germany covering the period 1961 to 1991.

12. The exogeneity assumption for earnings was empirically tested, using the model reported in table 3, and found to be satisfied. A set of eight identifying instruments was used comprising self-employed status, legal status, four industry sector controls, the number of hours worked per week, and a control for whether the migrant planned to return to Bulgaria. These variables jointly influenced monthly labour market pay with a  $F(8,170) = 3.21$  (prob-value=0.002) but not annual remittances with a Wald of 7.89 (prob-value=0.444). The Wald value for the exogeneity test based on Smith and Blundell (1986) is 2.40 (prob-value=0.121).

**Table 3.** Maximum Likelihood Estimates for Remittance Function Tobit Model with Time Separated by Status

Variable	Estimated Coefficients	Impact/ Marginal Effects
<b>Constant</b>	-2186.216*** (690.576)	†
<b>MALE</b>	984.825*** (314.044)	659.003*** (210.367)
<b>AGE</b>	38.854*** (13.073)	25.999*** (8.720)
<b>MARRIED</b>	722.262** (271.500)	483.307** (182.570)
<b>NUMFM_BUL</b>	159.496 (102.674)	106.728 (68.756)
<b>NUMFM_SP</b>	-713.661*** (142.226)	-477.552*** (95.718)
<b>PAY</b>	1.383*** (0.344)	0.925*** (0.231)
<b>TIMELEG</b>	-38.498** (15.922)	†
<b>TIMELEGSQ</b>	0.455** (0.229)	†
<b>TIMEILLEG</b>	79.219*** (30.084)	†
<b>TIMEILLEGSQ</b>	-0.858 (0.588)	†
$\sigma$	1629.007*** (98.551)	†
<b>R<sup>2</sup> – ANOVA</b>	0.137	†
<b>R<sup>2</sup> – Decomposition</b>	0.237	†
<b>Log-Likelihood Value</b>	-1271.543	†
<b>N</b>	188	188

*Notes*

- (a) \*\*\*, \*\* and \* denote statistical significance at the 0.01, 0.05 and 0.10 level respectively using two-tailed tests.
- (b) † denotes not applicable.
- (c) See table 1 for a description of the variables used in the regression model.
- (d) The scale factor used for the computation of the impact/marginal effects is 0.6692.
- (e) The marginal effect for TIME is computed at the sample average duration.
- (f) The maximum likelihood estimates are based on maximizing expression [3] in the text.
- (g)  $R^2 - \text{ANOVA}$  = variance in predicted conditional mean over variance in the dependent variable.
- (h)  $R^2 - \text{Decomposition}$  = variance in predicted mean over variance in predicted + plus model residual variation.

The point estimate for the remittance-pay elasticity, though on the high side, is comparable with those generally reported in the remittance literature that exploits micro-level data. For example, Liu and Reilly (2004), using data for the Jinan Municipality in China, report an elasticity of 0.82; Johnson and Whitelaw (1974), using Kenyan data obtained an estimate of 0.63; Banerjee (1984), using data from New Delhi reports an estimate of 0.72; Lucas and Stark (1985), using data for Botswana compute an estimate of 0.58; Hoddinott's (1992) estimates for Kenya range from 0.64 to 0.86, and the implicit elasticities computed from Brown's (1997) work on Pacific island migrants in Australia produced elasticities of 0.81 and 0.38 for the sample of Tongans and Samoans respectively. On the other hand, Lianos (1997), using time series data for Greek migrants in West Germany over a 30 year period from 1961, reported more elastic responses in a range between 1.4 and 1.6.

It is uncertain whether the magnitude of the remittance elasticity for Bulgaria is important. If the host country's urban labour market responds rapidly to fluctuations in the economic cycle and if Bulgarian households are heavily reliant on such remittances, the sensitivity of remittances to labour market earnings may expose such households to a high degree of income variability. On the other hand, if households are less reliant on migrant transfers, the sensitivity of Bulgarian remittances to labour market earnings is likely to be of less import to the sending household. This issue is not something on which our analysis can provide a definitive insight given data constraints.

### Summary and Conclusions

Migrant remittances have assumed increased significance over the last decade for many transitional economies and in Bulgaria now account for close to 4% of officially measured GDP. Private transfers from abroad have the potential to play an important role in preventing households from falling into poverty and in stimulating economic development through investment. In spite of the importance of migrant remittances for Bulgaria at the macroeconomic level, there is little understanding

regarding their determinants at the micro-level. This paper has attempted to fill this gap in understanding by examining the factors that influence the size of migrant remittances to Bulgaria. This paper exploited a unique survey conducted among legal and illegal Bulgarian immigrants in the city of Madrid in late 2003 and in the early months of 2004.

The substantive findings of this paper are that gender, age and marital status exert predictable effects on migrant remittances. The elasticity capturing the sensitivity of remittances to labour market earnings suggests a unitary relationship, which is fairly consistent with evidence reported in the existing international literature. The presence of family members in the host country of Spain exerted a strong and sizeable negative influence on remittances in contrast to a rather weak positive one detected for the number of family members based in Bulgaria. Family ties are clearly important for the Bulgarian migrant but the effects are strongest the nearer family members are to the migrant physically.

An important feature of the paper was an emphasis on the legal status of the migrant. This was found to strongly influence the volume of remittances with those legally entitled to stay and work in Spain remitting substantially less than those without this entitlement. Given this finding, legislative changes introduced by the Spanish government in 2005 to regulate the employment status of illegal workers may have significant implications for the future scale of remittances from Spain to Bulgaria. This is not something that our analysis can shed light on. However, this is clearly an issue that warrants further investigation and may be better informed by re-interviewing those in the current sample whose status changed in the light of this legislative initiative in 2005. We feel this could comprise part of an important agenda for future research in this area.

Finally, our findings suggest a rather complex inter-relationship between remittances and time spent in the host country. The remitting behaviour of migrants in regard to the time spent in Spain is contingent on their legal status. Though inserting a modest caveat regarding statistical significance, the remittance decay hypothesis appears to provide a reasonably good approximation for the behaviour of illegal Bulgarian migrants but not for their legal counterparts. The estimated U-shaped relationship between remittances and time spent in the host country for those with a legal entitlement to remain and work in Spain is more consistent with a narrative that over time the migrant eventually adopts the role of insurer to allow the household based in Bulgaria to engage in riskier household-level activities. However, a definitive insight into this issue could only be provided by undertaking analysis at the household-level in Bulgaria, which is beyond the scope of the current investigation.

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