

Determinants of Workers Remittances: The Case of Turkey

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Abstract

Workers remittance flows in Turkey have been increasing since 1960s, remaining to be a significant proportion of imports. The empirical evidence in this paper indicates that, the black market premium, interest rate differential, inflation rate, growth, both home and host country incomes and periods of military regime have significantly affected remittance flows in Turkey. Among them, the negatively significant effects of black market premium, inflation and military regime dummy point at the importance of sound exchange rate policies and economic and political stability in attracting remittance flows. Besides, both consumption smoothing and investment motives are observed, while the second of which appears more prevalent after the 1980s.

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Abstract

Workers remittance flows in Turkey have been increasing since 1960s, remaining to be a significant proportion of imports. The empirical evidence in this paper indicates that, the black market premium, interest rate differential, inflation rate, growth, both home and host country incomes and periods of military regime have significantly affected remittance flows in Turkey. Among them, the negatively significant effects of black market premium, inflation and military regime dummy point at the importance of sound exchange rate policies and economic and political stability in attracting remittance flows. Besides, both consumption smoothing and investment motives are observed, while the second of which appears more prevalent after the 1980s.

1. Introduction

According to the estimates by International Labor Organization, there were between 36 to 42 million migrant workers worldwide in 1999, reaching to much larger numbers if dependants are also considered. Remittances are the main reason for workers to choose employment abroad (Murinde, 1993).² As a major source of foreign exchange in many developing countries, workers remittance flows (WR herein) are an increasingly important outcome of global economic integration.

Neyapti (2003) reports that, during the 1990s, in countries like Samoa, Yemen, Cepe Verde, Jordan, Tonga, Albania and El Salvador, net workers remittance receipts (NWR) exceeded 10 percent of GDP; in countries like Hungary, Egypt, Morocco and Sri Lanka, they exceeded 5 percent of GDP; and in countries like Nigaragua, Portugal, Tunisia, Georgia, Croatia, Nigeria and Turkey they exceeded 2 percent of GDP. Neyapti (2003) also observes that, during the 1990s, workers remittance receipts in many developing countries have been many-fold of other forms of foreign exchange inflows, such as foreign direct investment and net long-term or short-term flows.³

It is well known that much of the WR are channelled through informal mechanisms into developing countries (El Sakka and McNabb, 1999). Though it is beyond the scope of this study to question whether these mechanisms lead to more or less efficient outcomes than otherwise, the mere fact that they exist cautions us against the quality of available data. Due to this common data deficiency, cross

² According to the World Bank, workers remittances are composed of three types of flows: workers remittances (transfers of money by those workers who reside abroad for more than a year); compensation of workers (gross earnings of workers residing abroad for less than a year, including the value in-kind benefits, such as housing and payroll taxes) and; migrant transfers (net worth of migrants who move from one country to another).

³ For example, in terms of % of foreign direct investment, net workers remittances were 245 %in Portugal, 460% in Turkey and 687% in Egypt during the 1990s. For more detail, please see Neyapti (2003).

sectional empirical analysis on WR could merely emphasize the "official" aspect of its measurement.

In view of increasing global economic integration that leads to the increasing volume of WR and thus to its growing potential to affect domestic economies via current account financing, it is important to ascertain the determinants of WR flows. The literature presents the analysis of the determinants of WR under two main categories: those that are related with the socio-demographic characteristics underlying the motives for remittances, and those that are economic, political and institutional in nature. Among the macroeconomic determinants of WR, while the literature agrees on the impact of variables such as income and worker stock in the host country, there is disagreement on the impact such variables as of domestic income, inflation, exchange rate premium and relative interest rates.

This study investigates the role of macroeconomic variables on WR flows to Turkey, in particular, black market premium; interest differentials; per capita income in domestic and host countries; besides the variables that are related with economic and political risk. Based on the time series analysis using data for the 1964-1993 period, our empirical analysis suggests that macroeconomic and political stability, particularly implied by black market premium, inflation, growth and military regime periods, have significantly affected remittance flows to Turkey.

The organization of the rest of the study is as follows. Section 2 provides a brief historical account of the Turkish economy. Section 3 is the review of literature on the determinants of workers remittances. Section 4 presents the data and methodology used in this paper. The results of the estimation are discussed in Section 5. Finally, Section 6 concludes.

2. A Brief Historical Account of the Turkish Economy and Workers Remittances

We provide a summary of trends in workers remittance flows to Turkey in Section 2.1. Section 2.2 presents the economic and historical background in Turkey to better understand the context within which the determinants of WR are analyzed. Government's official measures with regards to migration and WR are presented in Section 2.3.

2.1. Trends in Workers Remittance Flows to Turkey

Aydas (2002) reports that Turkish workers' migration, mainly to Western Europe and especially to the Federal Republic of Germany, started in the early 1960s. Since then, over 2 million Turkish workers have migrated for employment to about 30 countries. Appendix 1 shows the number of workers sent abroad during the 1961-2000 period as recorded by the Turkish Employment Service. After the mid-1970s, the flow of Turkish workers to Europe stagnated, and was directed instead towards the Arabic peninsula and towards Russia after 1990.

Figure 1 shows the trend in Turkish workers' remittances for the period of 1964 to 2000. Before 1963, remittances of Turkish emigrants towards their home country were so small that they were not recorded in the Turkish balance of payments. The flow of remittances started to grow slowly only after 1964. After then the amount of remittances reached considerable amounts and became an important source of external financing for Turkey.

Appendix 2 provides a historical account of the remittance flows to Turkey, as well as their ratio to imports, exports and GDP. As the Table shows, the ratio of WR to total exports was 20 % in 1970, reaching its peak of 90 % in 1976 and remained

around 20 % since 1990. WR as percentage of GDP has remained barely over 2 percent of GDP by the year 2000. Nevertheless, with about 10 percent of imports since 1990s, WR still appears to be an important financing item.

2.2 Economic and Political Context

The economic and political context in Turkey during the period of 1960-1980 is closely connected with the trends in Turkish workers migration. When Turkey started the phase of planned development in 1963, it was a dominantly agricultural country. Agriculture was producing about 41% of the national income and over 80% of exports were agricultural products. In addition, agriculture was employing over three quarters of the civilian active population, which then amounted to almost 12 million (Paine, 1974).

Rapid industrialization and economic growth were the main concepts for the three period of development planning, covering the period from 1963 to 1977. Although the first two of the Five year Development Plans were reasonably successful in achieving their aggregate targets (in particular, in terms of an average annual growth rate of 7%), they were less successful in bringing about basic structural transformation in the economy, or in distributing the gains from development to those most in need. Also, price stability was not achieved and employment generation was not sufficient; official total unemployment index rose from 100 in 1962 to 162 in 1972; and non-agricultural unemployment index from 100 to 319 during the same period. In 1973, the official total unemployment estimate approached 12.5 percent of the economically active population. Because of these developments and in view of the inflow of savings and remittances, exporting workers became an increasingly attractive policy to the government. The outflow of migrant workers was primarily determined by host country demand and so was subject to large fluctuations. Paine

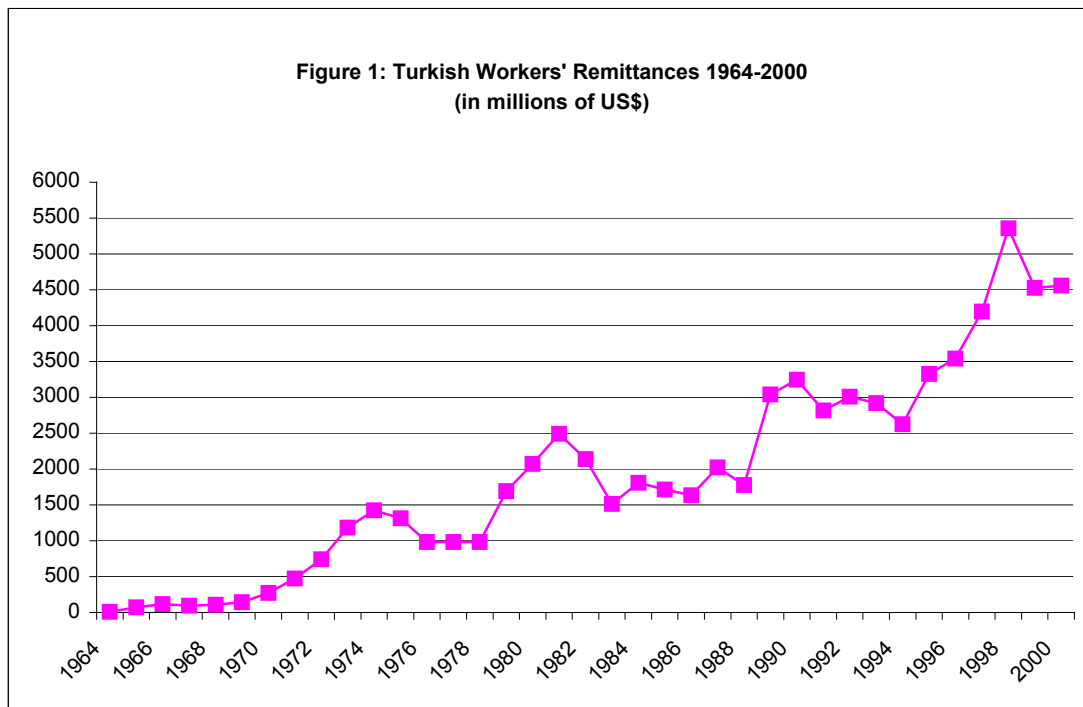
(1974, p.36) indicates that “Despite the high risk attached to the adoption of a mass labor export policy, the achievement of Turkey’s development plans was made increasingly dependent on labor export.”

Although the planned economy period was associated with growth of industrial output and GNP, it also had some important drawbacks. Industrialization in Turkey took place mainly in large-scale, capital-intensive industries with high quality technological equipment, having two consequences that were important for emigration: firstly, this form of industrialization created relatively little employment. Meanwhile, population grew and labor used in the agricultural sector decreased. As a result, pressures to migrate increased as official unemployment continued to rise during 1962-1977. Second, although the process of industrialization aimed towards more self-sufficiency, the opposite was realized. Turkey became strongly dependent on other countries for raw materials, semi-manufactured articles and technology. Hence, lack of foreign currency and the deficit on the balance of payments formed a great problem (Penninx, 1982).⁴ Adler (1981 and 1982) noted: “The emphasis was on maximizing the outflow of individuals and the consequent inflow of hard currency; little else had such high priority.” On the contrary, political instability⁵ caused an unstable economic environment that led to deterioration in remittances.

Figure 1 shows that WR (in percentage to GDP) to Turkey declined dramatically after 1974, coinciding with oil crises and pursuant increase in the

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⁵ Between May 1960 and September 1980, ten changes in the government took place.



inflation rates. WR started to recover in mid-1979 as the government started to devalue the Turkish Lira as the first attempt to correct a large exchange rate misalignment. However, in view of both the political turmoil and the failure to effectively correct the misalignment brought remittances back to very low levels in the last months of 1979. Yearly figures show a recovery in remittances only after the new economic program that started to be implemented in the early 1980s (Elbadawi and Rocha, 1992). Though the remittance flow declined in the early 1980's, the years of military administration, it stabilized in the second half of the 1980s and rose substantially in the second half of the 1990's, following the economic crises in 1994. Interestingly, however, the flow declined in 1999, the year of the great earthquake disaster, which points out the dominance of investment motive as the possible deriving force of migrant remittances, rather than the motive of smoothing consumption of the families left behind.

2.3 Official Measures with regards to Migrants and Remittances

As the period between 1960 and 1980 witnessed substantial political turmoil⁶, workers remitted substantially less during the years of a change in the government for those years were also portrayed changes in the official attitude towards the remittances. How these repeated changes in the government led to just as many repeated changes in the official attitude towards the remittances is described at length in Miller (1976), Etzinger (1978), Werth and Yalçıntaş (1978), Adler (1981), and in Penninx (1982).

To encourage migrants' remittances, the Turkish Government implemented a number of policies, such as special exchange rates for remittances, special interest rates for the foreign currency accounts at the Turkish Central Bank, and a program that permits Turks residing abroad to shorten their compulsory military service by paying a fee in foreign currency. In addition, Turkish migrants enjoyed special import privileges for consumer goods and machinery. Since the late 1980s, returned migrants have had the right to buy consumer durables with foreign exchange at special duty free shops during the first six months after their return (Martin, 1992).

Preferential exchange rates for emigrants' remittances were practiced in the 1960s, abolished in 1970, and became effective again in April and May 1979. Turkey adopted a two-tier exchange rate in May 1979, which did increase remittances for a short time, and then devalued the Turkish Lira in 1980, which once again increased remittances.

Since 1976, Turkey has had a foreign exchange deposit program, which offers premium interest rates on foreign currency accounts. Currently, two types of accounts are available for migrants: foreign currency deposit accounts with credit letter and super foreign exchange accounts. As of April 2002, foreign currency deposit

⁶ Between the overthrow of the Menderes-government (May 27, 1960) and the takeover by the military

accounts with credit letter offer 4% premium interest for one-year time deposits of US\$ and Euro, and annually 5% interest rate is offered for two-years time deposits. On the other hand, super foreign exchange accounts offer 8% interest rate for one-year time deposits, 9% annually for two-year time deposits and 10% annually for three-year time deposits.

During the 1970s, the Turkish Government also tried to channel remittance savings into employment generating activities. Such governmental channelling of remittances included programs of Turkish Lira loans for homes, farms and small businesses, contingent on migrants establishing foreign currency savings accounts with one of the designated Turkish banks. Migrants wanting to return with cars, trucks and professional equipment were also required to open foreign currency savings accounts. However, according to Abadan-Ünat (1986), such programs to channel remittances into government approved investments failed to attract many migrant applicants, in part because the private sector offered attractive savings alternatives.

Turkey also established two unique development programs linked to migration: Village Development Cooperatives, which were initiated in 1962 both to help rural development and to give priority to members who wished to migrate abroad for employment, and Turkish Workers Corporations. Abadan-Unat (1986) argues, however, that both of these programs failed to fully deliver their intended goals.

When labor demand in Western Europe suddenly decreased in the beginning of 1970s, in order to promote the departure of migrants, bilateral credit programs and some other programs were also affected. But these programs failed to attract many participants. An agreement, dating 1972, between the Federal Republic of Germany

(September 12,1980) ten changes in government had taken place.

and Turkey made German funds available to returning Turkish migrants who wished to open a small business in Turkey provided that the migrant participated in training programs in both the Federal Republic of Germany and Turkey. One analysis of such reintegration programs by the host nations to promote returns concluded that they were too complicated and too costly for host governments and not attractive enough to encourage migrant participation (Martin, 1992).

3. Review of Literature on the Determinants of Workers Remittances

The literature treats the determinants of workers' remittances in two main categories (see, for example, Russell, 1986). The first category concerns the socio-demographic characteristics of migrants and their families. The second category of determinants, on the other hand, considers macroeconomic and political variables as well as variables related with the institutional environment.

A large part of the existing literature (see, for example, Knowles and Anker, 1981; Lucas and Stark, 1985; Hoddinott, 1992) focuses on the first group of determinants of WR rather than on the macroeconomic variables that may influence the flow of migrants' savings to their countries of origin. According to Russell (1986) potential socio-demographic determinants of WR are: the ratio of females in population in host country; years since worker has out migrated; household income level; employment of other household members; marital status of the migrant; years of education of the migrant and; occupational level of migrants. To this list, Ilahi and Jafarey (1999) also add variables like the number of children and their educational position, and pre-migration economic situation.

Such socio-demographic determinants have a close relationship with the motives to remit. Lucas and Stark (1985) point out that the motives to remit can be purely altruistic, may originate from self-interest, or may be due to a mutually

beneficial agreement between the migrant and the family left behind. Within this context, one approach to analyse the remittance decision has been to model the migrant workers' saving function (see, for example, Djajic [1989]; Djajic and Milbourne [1988]), and the other approach has been to view remittances as an intertemporal contractual agreement (see, for example, Lucas and Stark, 1985, and Stark, 1980, 1982, 1983, 1985 and 1987).

The second strand of the literature that focuses on the macroeconomic determinants of WR emphasizes the number of workers; wage rates; economic activity in host and home countries; exchange rates relative interest rate between labor sending and receiving countries; political risk factors in sending country and; facility of transferring funds (see Russell, 1986). Among them, the level of economic activity, real earnings of workers and total number of workers in the host country were consistently found to have a significant and positive effect on the flow of remittances (see, for example, Swamy [1981], Straubhaar [1986], Elbadawi and Rocha [1992], El-Sakka and McNabb [1999]).

The evidence on the impact of relative rates of return, exchange rate premium, domestic income and inflation is rather mixed, however.⁷ While Swamy (1981), Straubhaar (1986) and Glytsos (1988) all argue that neither interest rate differentials between the host and home countries, nor the variation in exchange rates have any effect on remittance flows, Katselli and Glytsos (1986) find per capita remittances to be related to the interest rate in the host country. According to Chandavarkar (1980), both realistic exchange rates and existence of necessary institutional environment significantly affect remittances. Wahba (1991) also indicate that black market premium, interest rate differentials, political stability, consistency in government

⁷ See Aydas (2002) for a detailed survey of the literature.

policies and financial intermediation all significantly affect the flow of remittances. However, while El-Sakka and McNabb (1999) and Elbadawi and Rocha (1992) agree on the negative effect of the black market premium, they disagree on the effects of differential interest rate and domestic inflation. According to Elbadawi and Rocha (1992), differential between domestic and foreign interest rates has no significant effect on remittances, while El-Sakka and McNabb (1999) argue that it negatively affect the remittances. Moreover, both Katselli and Glytsos (1986) and Elbadawi and Rocha (1992) find significant negative effect of inflation on WR flows, while El-Sakka and McNabb (1999) argue that it has a positive effect.

As El-Sakka and McNabb (1999) indicate, the contradictory findings reported in the literature may reflect the fact that the focus of some of these studies is often limited to only a few macroeconomic variables, ignoring key determinants such as the black market exchange rate. In addition, due to the lack of data, estimation periods of most of the studies are rather short. Also, in various studies (see, for example, Elbadawi and Rocha [1992], El-Sakka and McNabb [1999]) the estimation is based on modelling remittances with the levels of potential determinant variables, while these variables are generally non-stationary. All these factors lead us to question the reliability of the general conclusions in the previous literature.

To summarize, while the evidence in the literature consistently shows the significant influence on remittances of various socio-demographic characteristics of migrants and their families, evidence regarding the impact of macroeconomic variables, such as interest rate differentials, black market premium and domestic rate of inflation, on remittances is not conclusive.

4. Data and Methodology

In view of the existing literature and the historical background of the Turkish economy, this study presents a model to analyze the macroeconomic determinants of workers remittances in Turkey. The following is a brief summary of the hypotheses behind the variables we employ in our model. Previous studies⁸ suggest that host country income is a significant determinant of WR due to both increased quantity demanded of the migrant labor and increase in the wages offered to them. The stock of workers abroad is also argued to positively affect the WR. The income level of the migrants' country of origin may affect WR either positively or negatively, on the other hand, depending on different motives to remit, roughly speaking consumption smoothing or investment motives. Similarly, both growth and inflation in the economy of origin may affect WR both ways: if investment is the main motive to remit, the effect of the first would be positive and the latter would be negative. However, if concern for the relatives in the country of origin is the main motive to remit, opposite results could obtain. The effect of high interest rate differential is also ambiguous due to two possible reasons: while high interest rates may provide incentives for WR, it may also reflect economic instability and high risk. Likewise, while the existence of a parallel market for exchange rates may provide incentives for WR via offering more realistic returns, it also increases the cost of using official channels to remit and therefore its effect on WR as a whole is ambiguous. Especially in the absence of a black market for the exchange rates, real overvaluation of currency would be a deterrent to WR flows.

Hence, the variables employed in this study are: official cash remittances (REM); stock of workers abroad (WORKER); per capita income of Turkey (YDOM); black market premium (BMP); real overvaluation (ROV); domestic inflation (INF);

⁸ see, for example, Swamy (1981), Straubhaar (1986), Elbadawi and Rocha (1992)

domestic growth (GROWTH) and; a dummy variables that take the value of 1 in years of military regime and zero otherwise (EXGOVDUM). In addition, we consider eleven countries that have the largest stock of Turkish emigrants that we use as weights to calculate "host country per capita income" (YHOST) and; interest rate differential (INTDIF).⁹ Appendix 3 provides the list of variables along with their definitions and sources from which they are obtained.

Unit root tests reported in Table 1 indicate that all variables of interest other than EXGOVDUM and GROWTH are all integrated order one, that is I(1). Hence, throughout the paper we use first differences for the I(1) variables.

Table 1: Augmented Dickey Fuller Test Results:

VARIABLE ¹⁰	ADF Test-stat
BMP	-2,17
Δ BMP	-4,02***
LOGYHOST	-1,61
Δ LOGYHOST	-3,65***
LOGYDOM	-2,20
Δ LOGYDOM	-3,46**
LOGREM	-2,25
Δ LOGREM	-4,17***
LOGREMPw	-1,96
Δ LOGREMPw	-4,35***
INTDIF	0,01
Δ INTDIF	-3,42**
GROWTH	-3,39**
INF	-1,81
Δ INF	-5,32***
ROV	-1,67
Δ ROV	-3,40**
EXGOVDUM	-3,01**

*** indicates significance at 1% level and ** at 5% level.

⁹ Due to lack of data, interest rate and exchange rates incentives provided to the migrant workers are not taken into consideration.

¹⁰ LOG and Δ indicate the logarithm and the first difference of the variables of interest.

The correlation matrix (see Appendix 4) of the variables indicates that there is high positive correlation between the first difference of domestic per capita income and domestic rate of growth. Also, black market premium and real overvaluation are highly correlated in positive direction. Real overvaluation is also negatively correlated with extra government dummy. These correlations should be kept in mind in interpreting the regression results as they may affect the direction and significance of the impact of these variables on the dependent variable.

We use ordinary least squares to estimate two models that are distinguished only on the basis of the two definitions of WR: WR receipts per worker (REMPw) and WR flows (REM). Since the unit root tests indicate that all the variables were I(1), except for growth rate and extra government, we use a model with the first differences of I(1) variables. However, since we are interested in the effect of the level of income as well as the rate of growth of income, we use levels for both domestic and host incomes. Hence, the following model is estimated for the two dependent variables LOGREM¹¹ and LOGREMPw:

$$\Delta \text{LOGREM}(pw)_t = \beta_0 + \beta_1 \Delta \text{BMP}_t + \beta_2 \Delta \text{INF}_t + \beta_3 \Delta \text{ROV}_t + \beta_4 \Delta \text{INTDIF}_t + \beta_5 \text{GROWTH}_t + \beta_6 \text{EXGOVDUM}_t + \beta_7 \text{LOG YHOST}_t + \beta_8 \text{LOG YDOM}_t + \varepsilon_{1t}$$

5. Empirical Results

In this section, we report and discuss the results of the estimation of the model presented in the foregoing section. We consider two different estimation periods: 1965-1993 and 1979-1993. The reason for this division is that a significant portion of the data on interest rate differential (INTDIF) is not available until 1978. In addition, we do not consider the period after 1994 since and data on black market premium

(BMP) is not available after 1994 and 1994 itself is the year of crises. Hence, estimation for the period 1965-1993 excludes INTDIF.¹²

Table 2: Regression Results (Dependent variable: $\Delta \text{LOGREMP}_{pw}$)

Explanatory Variables	Data Period:	
	1965-1993	1979-1993
C	16.66*** (2.13)	32.32*** (2.90)
ΔBMP	-0.009** (-2.18)	-0.02*** (-3.01)
ΔINF	-0.0002 (-0.05)	-0.0038 (-1.52)
ΔINTDIF	-	1.94* (1.85)
ΔROV	0.016*** (2.18)	0.009 (1.26)
EXGOVDUM	-0.076 (-0.49)	-0.91*** (-3.37)
GROWTH	0.005 (0.19)	0.034 (1.44)
LOGYDOM	-6.80** (-1.91)	-14.32*** (-2.79)
LOGYHOST	1.13 (1.38)	3.05** (2.43)
R-squared	0.38	0.78
F test	1.89*	2.73*

Notes: Figures in parentheses are the t-ratios

*** indicates significant at 1 per cent level; ** indicates significance at 5% level and

* indicates significance at 10% level

Regression results reported in Table 2 indicate that, during the period 1965 to 1993, among the variables of the model, only BMP and YDOM appear significant at 5 % level and ROV appears significant at 1 % level. Hence, the evidence indicates that, during this period, remittances flew to Turkey in order to compensate for negative income shocks, that is, for consumption smoothing purposes. The positive effect of real overvaluation on remittances reinforces this effect. On the other hand, the

¹¹ When the dependent variable is ΔLOGREM , stock of workers abroad, WORKER, is also included in to the equation.

¹² Year 1994 is lost due to first differencing.

negatively effect of black market premium on remittances indicate that exchange rate controls have discouraged remittances.

The estimation of the model in period 1979-1993 with the inclusion of the variable INTDIF, however, leads to rather interesting results, with a large goodness of fit: 0.78. While the negative effect of BMP and the positive effect of remain significant for this period as well, ROV loses its significance and EXGOVDUM and YHOST now become significant. The loss of significance in ROV is possibly due to a more liberal exchange rate system since the 1980s. In addition, INTDIF is significantly positive, indicating that higher interest rates in Turkey has attracted remittances. On the other hand, the negative significance of EXGOVDUM indicates that political instability has discouraged remittance flows. During this period, consumption smoothing effects are still evident in the negative coefficient on YDOM and positive coefficient of YHOST, which are significant at 1% and 5% level, respectively.

Next, we estimate the model for LOGREM where we also control for the stock of workers abroad: WORKER, which leads to higher goodness of fit: 0.70 and 0.88 for the two periods, respectively. WORKER appears to affect remittance flows only in the earlier period: 1965-1993, which is not so surprising considering that family ties of workers living abroad with Turkey have probably much weakened over time.

While the significance of ROV in period 1965-1993 and BMP, INTDIF, YDOM, YHOST and EXGOVDUM in period 1979-1993 remain, the significance of BMP and YDOM (though still remain negative) disappears in the 1965-1993 period. On the other hand, we observe that both INF and GROWTH become significant in the 1973-1993 period, with negative and positive signs respectively. The significance of INF and GROWTH, as indicators of economic stability, in explaining total remittance

flows, combined with earlier observations, indicates that in the period after 1979, investment becomes an effective motive for the remittance flows in Turkey besides the consumption smoothing motive.

Table 3: Regression Results (Dependent variable: ΔLOGREM)

Explanatory Variables	Data Period:	
	1965-1993	1979-1993
C	5.33 (1.64)	18.06*** (4.17)
$\Delta\text{LOGWORKER}$	0.86*** (4.52)	-0.28 (-0.81)
ΔBMP	-0.003 (-1.50)	-0.0087*** (-3.63)
ΔINF	-0.0005 (-0.5)	-0.0027*** (-2.70)
ΔINTDIF	-	0.961*** (2.60)
ΔROV	0.007*** (3.00)	0.002 (0.73)
EXGOVDUM	-0.027 (-0.44)	-0.47*** (-4.69)
GROWTH	0.002 (0.22)	0.017** (2.07)
LOGYDOM	-2.29 (-1.58)	-8.136*** (-4.06)
LOGYHOST	0.45 (1.36)	1.81*** (3.66)
R-squared	0.70	0.88
F test	6.11***	4.20**

Notes: Figures in parentheses are the t-ratios

*** indicates significant at 1 per cent level; ** indicates significance at 5% level and

* indicates significance at 10% level

6. Conclusions

Workers remittance flows in Turkey have increased over time since 1960s and remained to be a significant proportion of imports. This study examines the effect of various macroeconomic variables on these flows, namely host and home income levels, income differentials, black market premium, inflation and growth in home country, real overvaluation and a dummy for the periods of military regime.

The empirical evidence in this paper indicates that, for the 1979-1993 period, macroeconomic variables, specifically, both domestic and host country incomes, black market premium, interest rate differentials, growth, inflation rate and periods of military regime, significantly affect remittance flows. Among them, the negatively significant effects of black market premium, inflation and military regime periods as well as the positive significant effect of growth point at the importance of sound exchange rate policies and economic and political stability in attracting remittance flows. While these observations, which are mostly prevalent in the 1979-1993 period, indicate that investment motive is more effective for workers remittance flows to Turkey, consumption-smoothing also remains to be an effective motive since 1965, as seen in the negative coefficient of the domestic income.

Based on the findings of this paper, we conclude that macroeconomic variables significantly impact on workers' remittances for the Turkish case, indicating that governments of the labor exporting countries can influence the inflow of remittances by means of appropriate macroeconomic policies. Empirical findings in this paper also imply that, improving financial intermediation and preventing exchange rate misalignments would help increase the inflow of remittances.

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Appendix 1: Workers Sent Abroad¹: 1961-2000

Years	Germany ²	France	Austria	Netherlands	Belgium	Switzerland	Australia	Libyan A.J.	Saudi Arabia	Iraq	Rep.For. USSR	Others	Total
1961	1476	0	0	0	0	0	0	0	0	0	0	0	1476
1962	11025	0	160	0	0	0	0	0	0	0	0	0	11185
1963	23436	63	937	251	5605	36	0	0	0	0	0	0	30328
1964	54902	25	1434	2958	6651	193	0	0	0	0	0	13	66176
1965	45572	0	1973	2181	1661	122	0	0	0	0	0	11	51520
1966	32580	0	469	1208	0	153	0	0	0	0	0	0	34410
1967	7199	0	1043	48	0	215	0	215	0	0	0	135	8855
1968	41409	0	673	875	0	97	107	0	0	0	0	43	43204
1969	98142	191	973	3404	0	183	970	0	0	0	0	112	103975
1970	96936	9036	10622	4843	431	1598	1186	0	0	0	0	4923	129575
1971	65684	7897	4620	4853	583	1342	879	0	0	0	0	2584	88442
1972	65875	10610	4472	744	113	1312	640	0	0	0	0	1463	85229
1973	103793	17544	7083	1994	265	1109	886	0	0	0	0	3146	135820
1974	1228	10577	2501	1503	555	770	1138	1015	0	0	0	924	20211
1975	640	25	226	32	59	229	401	2121	251	0	0	435	4419
1976	2101	6	672	98	72	281	339	4098	1832	0	0	1059	10558
1977	2413	15	583	83	45	246	542	8582	4722	0	0	1853	19084
1978	1333	13	54	48	41	326	549	7726	5769	0	0	2993	18852
1979	933	11	23	40	27	406	407	9825	8522	0	0	3436	23630
1980	764	21	944	32	35	549	409	15090	5643	0	0	5016	28503
1981	274	6	184	31	13	379	321	30667	14379	10467	0	2032	58753
1982	75	9	12	2	2	163	125	26686	12325	8906	0	1083	49388
1983	43	4	7	4	2	209	181	23292	20238	7367	0	1123	52470
1984	17	0	2	5	3	69	145	16410	25985	2430	0	749	45815
1985	23	4	16	5	7	110	250	9680	35067	1612	0	579	47353
1986	17	3	52	12	0	137	391	8381	23771	2160	0	684	35608
1987	422	4	18	18	2	83	422	10986	27109	1725	0	18	40807
1988	85	0	34	0	0	96	372	13194	34645	3717	0	878	53021
1989	51	0	142	0	0	38	271	12608	32319	2549	932	1018	49928
1990	62	0	423	0	0	64	255	8606	33077	1274	1243	2703	47707
1991	49	0	315	0	0	66	308	4728	40782	6	4695	2071	53020
1992	1685	0	239	0	0	52	208	2432	46467	0	6708	2209	60000
1993	1999	0	82	0	0	32	166	2549	35826	0	21436	1154	63244
1994	2032	0	10	0	0	13	139	1869	13050	0	41837	2195	61145
1995	2246	0	16	0	0	18	248	1753	14529	0	35792	4881	59483
1996	2443	0	5	0	0	31	97	2063	5635	0	20460	9963	40697
1997	1800	0	0	0	0	0	21	1833	7657	0	13195	8815	33321
1998	1734	0	1	0	0	10	4	1032	6821	0	7426	8879	25907
1999	2350	25	1	2	1	5	11	698	5178	0	6786	2412	17475
2000	2135	87	1	1	1	1	4	385	1862	0	6740	2428	13645
2001	2437	202	5	2	1	1	5	238	4657	0	7600	5087	20235
Total	679420	56378	41027	25277	16175	10744	12397	228762	468118	42213	174850	89107	1844474

Notes: ¹. This table presents data on Turkish workers sent abroad through the Turkish Employment Service, which may underestimate actual emigration by 20-40 percent.

². Data on Germany represent the Federal Republic till 1991 and Germany after then.

Sources: Ministry of Labor of the Turkish Republic, Turkish State Statistical Institute.

Appendix 2: Worker Remittances and Selected Indicators of Turkey, 1964-2000.

Years	WRR	In % of Imports	In % of Exports	In % of %GDP
1964	9	1.7	2.2	0.11
1965	70	12.2	15.1	0.83
1966	115	16.0	23.4	1.14
1967	93	13.6	17.8	0.83
1968	107	14.0	21.6	0.59
1969	141	17.6	26.3	0.69
1970	273	28.8	46.4	1.53
1971	471	40.2	69.6	2.75
1972	740	47.3	83.6	3.43
1973	1183	56.7	89.8	4.37
1974	1426	37.7	93.1	3.82
1975	1312	27.7	93.6	2.81
1976	982	19.1	50.1	1.84
1977	982	16.9	56.0	1.61
1978	983	21.4	43.0	1.46
1979	1694	33.4	74.9	1.85
1980	2071	26.2	71.2	3.01
1981	2490	27.9	52.9	3.51
1982	2140	24.2	37.2	3.32
1983	1513	16.4	26.4	2.45
1984	1807	16.8	25.3	3.01
1985	1714	15.1	21.5	2.55
1986	1634	14.7	21.9	2.16
1987	2021	14.3	19.8	2.32
1988	1776	12.4	15.2	1.96
1989	3040	19.3	26.2	2.84
1990	3246	14.6	25.0	2.15
1991	2819	13.4	20.7	1.87
1992	3008	13.2	20.4	1.88
1993	2919	9.9	19.0	1.62
1994	2627	11.3	14.5	2.03
1995	3327	9.3	15.4	1.96
1996	3542	8.1	15.3	1.95
1997	4197	8.6	16.0	2.2
1998	5356	11.7	19.9	2.69
1999	4529	11.1	17.0	2.4
2000	4560	8.4	16.4	2.29

Notes: All figures (WRR, Imports, Exports and GDP) are used in millions of US\$.

Source: State Statistical Institute, (DIE), Turkey.

Appendix 3: Variable Definitions and Data Information

VARIABLES	DEFINITION	UNIT	PERIOD	SOURCE
REM	Cash remittances of Turkish workers	millions of US\$	1964-2001	Central Bank of Turkey. (website)
REMPw	Cash remittances of Turkish workers per worker	US\$	1964-2001	Produced using REM and WORKER variables.
WORKER	Stock of Turkish workers abroad	thousands	1964-2001	Annual Report 2002, Ministry of Labor, Turkey. ¹
YHOST	Representative host country GDP per capita	US\$	1964-2001	International Financial Statistics, IMF. ²
YDOM	Turkish GDP per capita at 1987 prices	thousands of TL	1964-2001	State Planning Institute of Turkey. (website)
BMP	Black market premium ³	%	1964-1993	Global Development Network Database, World Bank.
ROV	Real overvaluation ⁴	index number	1964-1999	Global Development Network Database, World Bank.
INTDIF	Exchange rate depreciation adjusted interest differential		1978-2001	International Financial Statistics, IMF. ⁵
INF	Turkish CPI inflation rate	%	1964-2001	International Financial Statistics, IMF.
GROWTH	Turkish growth rate of GDP at 1987 prices	%	1964-2001	State Planning Institute of Turkey. (website)
EXGOVDUM	Dummy representing periods of military administration		1964-2001	

Notes:

¹Data was obtained from Gokdere (1978) for 1964-1976 and from the annual reports of Ministry of Labor after 1981. For the period from 1977 to 1980 we add the number of recruited workers in that year to the worker stock in the previous year.

²Eleven countries with biggest stock of Turkish workers are selected as host countries. We assign weights to each country according to the stock of Turkish workers in that country. Representative host country GDP is a weighted average of GDPs of the eleven countries.

³BMP is defined as the percentage difference between the average yearly exchange rates of the domestic currency vis-à-vis the foreign currency in the official and parallel (black) markets.

⁴ROV is an index of currency real overvaluation.

⁵INTDIF was calculated as the weighted average, where weights are described in 2, of bilateral, depreciation-adjusted interest differentials on the yearly averages of deposit rates, following the methodology given in Elbadawi and Rocha (1992). If the deposit rate of a host country is not available for a year the weight of that country is distributed to other host countries for that year, proportional with the weights of remaining host countries.

Appendix 4: Correlation Matrix

	Δ LOGREM	Δ LOGREMPw	Δ LOGYHOST	Δ LOGYDOM	Δ BMP	Δ ROV	Δ INTDIF	Δ INF	GROWTH	EXGOVDUM
Δ LOGREM	1,00									
Δ LOGREMPw	0,96	1,00								
Δ LOGYHOST	0,10	0,21	1,00							
Δ LOGYDOM	-0,18	-0,12	0,13	1,00						
Δ BMP	-0,16	-0,17	0,31	0,45	1,00					
Δ ROV	0,16	0,27	0,47	0,42	0,65	1,00				
Δ INTDIF	0,04	-0,07	-0,55	-0,22	0,07	-0,31	1,00			
Δ INF	-0,03	0,10	0,36	-0,37	-0,51	-0,10	-0,30	1,00		
GROWTH	-0,18	-0,12	0,11	1,00	0,43	0,40	-0,22	-0,38	1,00	
EXGOVDUM	-0,26	-0,37	-0,45	-0,36	-0,39	-0,76	0,46	-0,19	-0,33	1,00