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THE IMPACT OF THE GLOBAL CRISIS
ON ILLEGAL MIGRATION AND REMITTANCES:
THE TURKISH CORRIDOR

Refik Erzan

CARIM Analytic and Synthetic Notes 2009/38

***Series on the Impact of the Economic Crisis
Demographic and Economic Module***



CARIM
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for Applied Research on International Migration

Analytic and Synthetic Notes – Demographic and Economic Module

**Series on the Impact of the Economic Crisis
on South and East Mediterranean Migration**

CARIM-AS 2009/38

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The Turkish Corridor**

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The Euro-Mediterranean Consortium for Applied Research on International Migration (CARIM) was created in February 2004 and has been financed by the European Commission. Until January 2007, it referred to part C - “*cooperation related to the social integration of immigrants issue, migration and free circulation of persons*” of the MEDA programme, i.e. the main financial instrument of the European Union to establish the Euro-Mediterranean Partnership. Since February 2007, CARIM has been funded as part of the AENEAS programme for technical and financial assistance to third countries in the areas of migration and asylum. The latter programme establishes a link between the external objectives of the European Union’s migration policy and its development policy. AENEAS aims at providing third countries with the assistance necessary to achieve, at different levels, a better management of migrant flows.

Within this framework, CARIM aims, in an academic perspective, to observe, analyse, and predict migration in the North African and the Eastern Mediterranean Region (hereafter Region).

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The CARIM carries out the following activities:

- Mediterranean migration database;
- Research and publications;
- Meetings of academics;
- Meetings between experts and policy makers;
- Early warning system.

The activities of CARIM cover three aspects of international migration in the Region: economic and demographic, legal, and socio-political.

Results of the above activities are made available for public consultation through the website of the project: www.carim.org

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Abstract

This paper aims to estimate the direction and magnitude of the impact of the global economic crisis both on illegal migration and remittances through the Turkish corridor to the EU. Regarding the former, results are ambiguous due to the fact that growth in the EU will likely be affected more severely than in the peripheral countries. With respect to the impact on migrants' remittances, the idea is that the EU slowdown, which will reduce the financial capacity of immigrants, will dominate over the increased need for funds at home, curtailing the remittances received by developing countries. The prospected magnitude of this decline may differ considerably across recipient countries.

Résumé

Cet article propose d'estimer l'impact de la crise économique mondiale sur l'ampleur de la migration illégale ainsi que sur les transferts financiers des émigrants à travers le couloir turc de migration vers l'Union Européenne. S'agissant des migrations irrégulières, les résultats sont plutôt ambigus. Cela tient au fait que la croissance économique de l'Union Européenne sera probablement affectée plus sévèrement que celle des pays périphériques. Pour ce qui concerne les transferts, l'idée est que le ralentissement économique de l'Union européenne, qui réduira la capacité financière des immigrants et donc les transferts d'épargne vers les pays d'origine, accroîtra le besoin de ressources financières dans les pays en développement. Cependant, l'ampleur de cette baisse peut différer considérablement selon les pays.

I. Introduction

The global economic crisis that started in the financial sector has been transmitted to the real sector, substantially reducing output of nearly all countries. According to the latest World Bank projections, global GDP will fall by 1.7% in 2009, the first decline in world output since the Great Depression and World War II¹. The contraction in high income countries are expected to be greater, 2.9%, in the Euro area 2.7%. The output of developing countries will grow only 2.1% compared to 5.8% in 2008. Their overall growth, excluding China and India would be zero. Developing countries in Europe & Central Asia and Latin America & the Caribbean are expected to shrink and GDP growth will be low in the remaining regions and sub-regions. Thus, the current global crisis is not only the most severe one but also the most synchronized slowdown in recent history.

What will be the likely impact of the crisis on migratory pressures, particularly towards the EU through Turkey? Will the illegal transit migration over Turkey increase?

The other question tackled concerns the workers' remittances. The IMF and the World Bank project that the private capital flows to developing countries will dry up and official aid will suffer a major drop.² Remittances are known to be more resilient and stable. They have an investment aspect and a consumption component. When the need for support increases among the families left behind, to what extent will the migrants be able to sustain the remittances while their jobs are in danger and their incomes on the decline? The question is particularly interesting as the economic downturn in the sending and host countries are synchronized.

The study makes an attempt to shed light onto these questions by reviewing the recent data and studies and by making empirical estimations. The crucial ingredients in these estimations are the growth projections for the EU and the peripheral countries made by international organizations such as the IMF and the World Bank.

In Section II, an attempt is made to estimate the magnitude of the illegal transit migration through Turkey based on economic developments in the EU and its periphery.

Similarly, Section III reviews the effects of economic conditions on workers' remittances in the host and home countries and analyzes the impact of the current crisis.

Section IV makes some concluding remarks on the studies' findings and suggests possible extensions. Appendices provide detailed data sources and estimation results.

II. Illegal Transit Migration through Turkey

An increasing number of people have been flowing into Turkey since the end of the Cold War. These waves of people were mostly coming to Turkey for temporary stays thanks to a liberal visa regime and only a fraction of them have been overstaying their visas (see, Kirisci 2005). The influx of people also included, refugees, illegal migrants - transit migrants as well as those with Turkey as their final destination. People who entered Turkey legally but overstayed their visas (or their visa exempt stays), those whose asylum application were rejected but stayed on and those who entered the country by illegal ways make up the stock of illegal migrants (see, Kirisci 2008). Certainly, there can be no statistics on the stock of illegal migrants. However, there are statistics on people who were apprehended for violating Turkey's visa regulations. These statistics are compiled by the Foreign Nationals Department of the Turkish Ministry of the Interior (MOI) since 1995. The number of people apprehended for illegal presence since 1995 was about 750,000 as of end of 2008. This is a relatively small figure considering that over 20 million people who enter Turkey on an annual basis.

¹ World Bank, Global Economic Prospects, Forecast Update, March 30, 2009.

² IMF (2009a and 2009b), World Bank (2009a and 2009c).

The number of people apprehended for illegal presence gives us an approximation for the stock of illegal immigrants in the country. For instance, Icduygu (2000) suggests that one in three illegal migrants is caught by the security forces.

Illegal transit migrants constitute a subset of those illegal migrants. Although it is not possible to identify them with certainty among the stock of illegal migrants - more precisely among those who were apprehended - their country of origin gives a strong indication according to Kirisci (2007 and 2008). Nationals of Afghanistan, Algeria, Bangladesh, Egypt, Iran, Iraq, Morocco, Libya, Pakistan, Syria and Tunisia constitute the bulk of this category.³

Based on Kirisci's identification, illegal migrants from these eleven countries who were apprehended by the security forces were assumed to be illegal transit migrants.

Table 1. Illegal Transit Migrants Apprehended in Turkey by Origin

	1995	1996	1997	1998	1999	2000	2001	2002
Afghanistan	24	68	81	921	2,476	8,746	9,701	4,246
Algeria	27	25	69	207	102	430	305	542
Bangladesh	113	322	301	2,408	1,193	3,228	1,497	1,81
Egypt	4	12	99	29	94	382	184	182
Iran	252	362	364	1,116	5,281	6,825	3,514	2,508
Iraq	2,128	3,319	5,689	14,237	11,546	17,28	18,846	20,926
Lebanon	1	0	1	10	75	196	121	110
Morocco	28	53	93	295	369	1,401	849	603
Pakistan	708	435	307	1,798	2,65	5,027	4,829	4,813
Syria	78	86	144	476	776	1,399	782	462
Tunisia	3	48	81	44	76	255	216	191
TOTAL	3,366	4,73	7,229	21,541	24,638	45,169	40,844	36,393

	2003	2004	2005	2006	2007	2008	TOTAL
Afghanistan	2,178	3,442	2,363	3,665	6,614	9,138	53,663
Algeria	378	397	375	144	46	77	3,124
Bangladesh	1,722	3,271	1,524	2,313	981	753	21,436
Egypt	222	257	137	80	51	44	1,777
Iran	1,62	1,265	1,141	972	1,107	1,124	27,451
Iraq	3,757	6,393	3,591	6,412	9,384	4,185	127,693
Lebanon	98	150	56	94	58	34	1,004
Morocco	361	402	171	138	124	91	4,978
Pakistan	6,258	9,396	11,001	3,508	6,97	8,688	66,388
Syria	623	1,097	983	1,238	1,383	779	10,306
Tunisia	274	301	300	292	113	40	2,234
TOTAL	17,491	26,371	21,642	18,856	26,831	24,953	320,054

Source: Foreign Nationals Department, Ministry of Interior

³ Kirisci (2007 and 2008) discusses in detail characteristics of illegal migrants by country of origin. Transit migrants do not belong to a time invariant group with respect to their nationalities. However, with some exceptions such as Iran, most of the illegal migrants that can be classified as transit persons come from countries that Turkey requires visas.

Figure 1. Illegal Transit Migrants Apprehended in Turkey by Origin

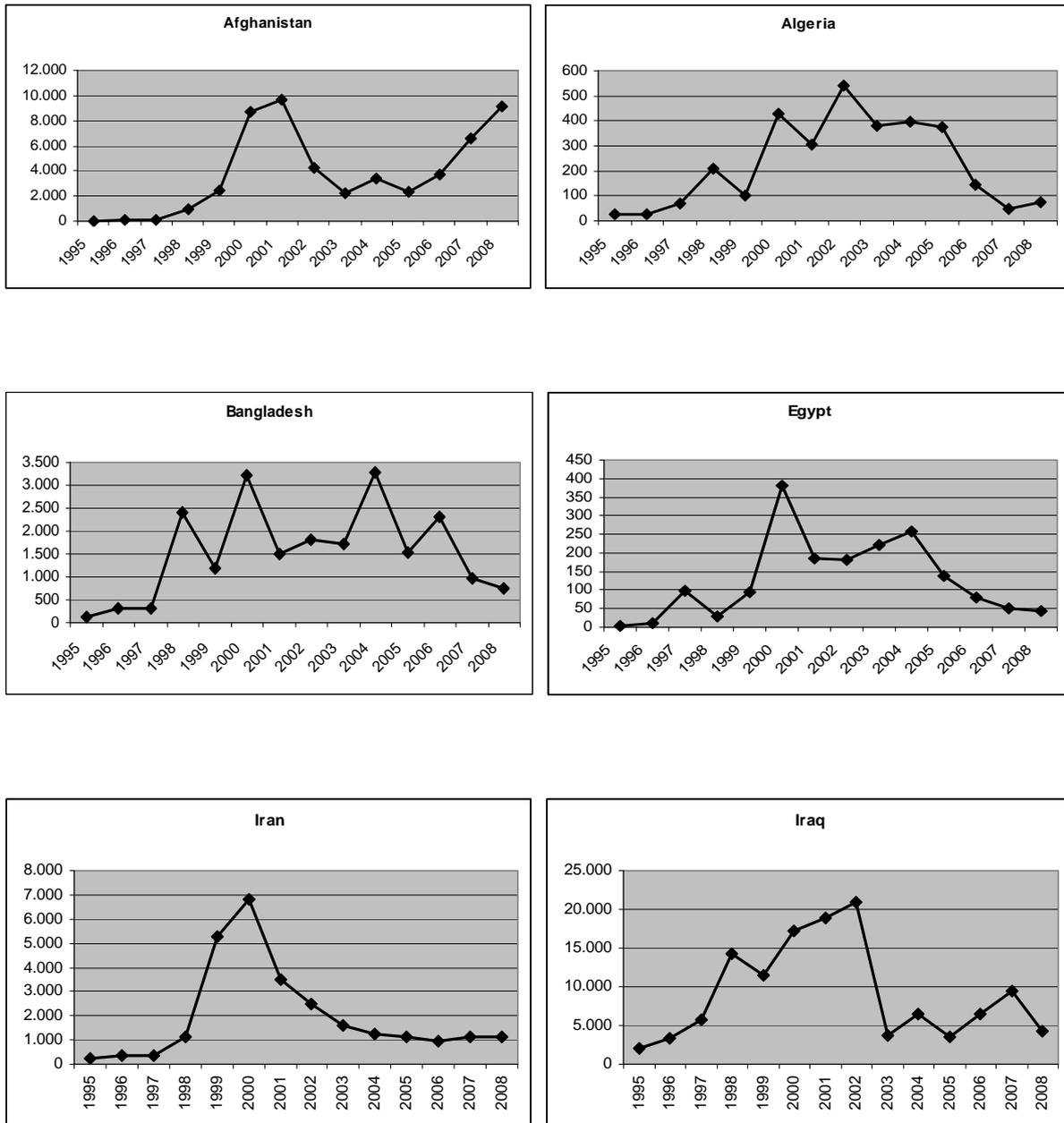
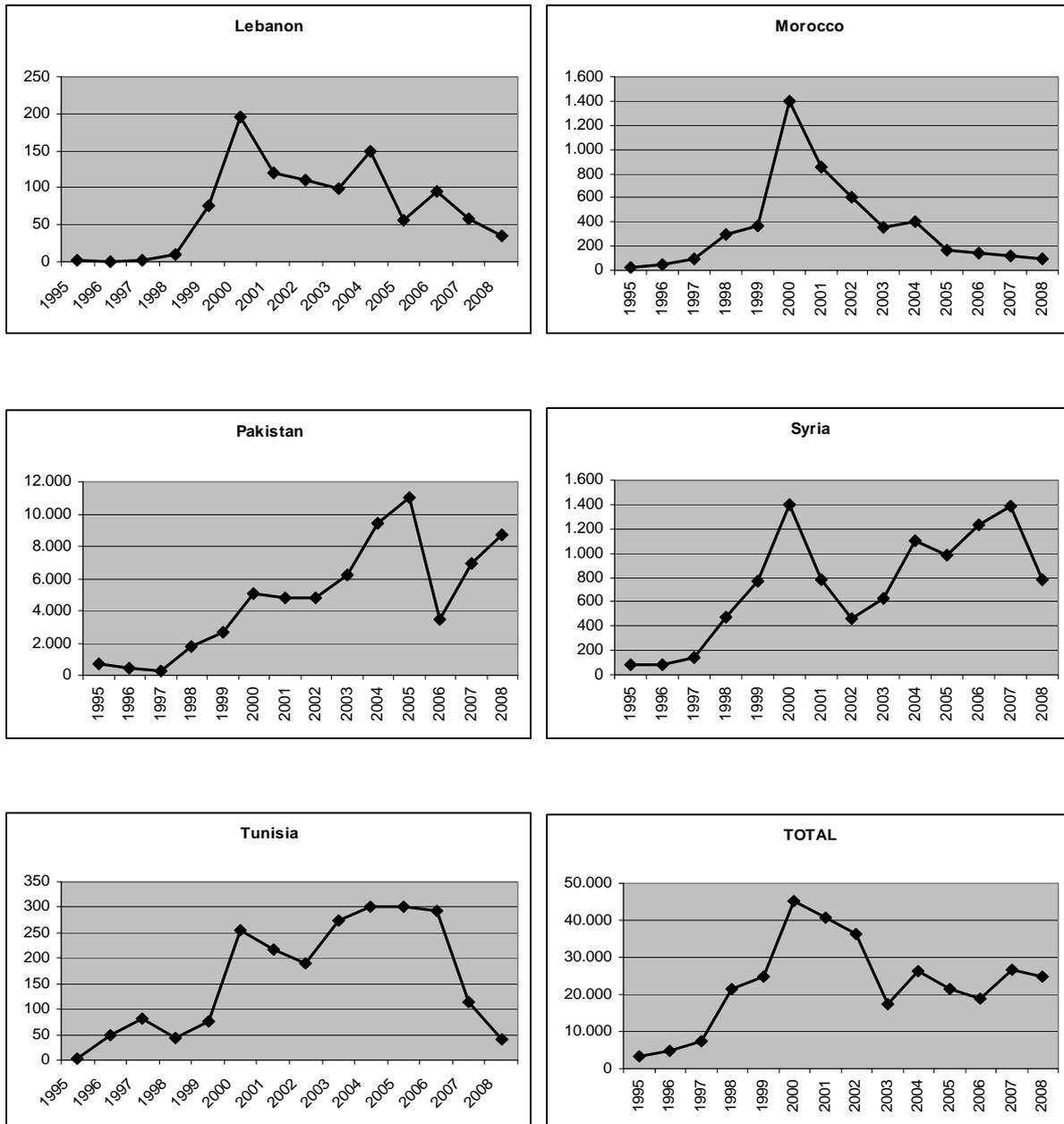


Figure 1. Illegal Transit Migrants Apprehended in Turkey by Origin (cont.)



Source: Foreign Nationals Department, Ministry of Interior

Based on Icduygu’s estimate, the annual statistics could then be multiplied by a factor of three to give an approximate number of transit migrants at any point in time. Those who are not apprehended presumably reach the Western borders of Turkey or the coastline and make it to the EU soil unless their journey ends with a disaster.⁴ In the absence of such statistics, we use the OMI figures on the number of apprehended people originating from the 11 North African, Middle Eastern and Asian

⁴ The sparse information on the ordeal of these people on the high seas can be found in Kirisci (2008). Those who are arrested by the Turkish Coast Guard are included in the OMI statistics.

countries as a proxy of the actual flow of illegal transit migrants over Turkey. These numbers which are available from 1995 through 2008 are given in Table 1 and the corresponding Figure 1.⁵

During this period, the largest number of illegal transit migrants apprehended was from Iraq. Iraq was followed by Pakistan, Afghanistan, Iran and Bangladesh. The separate graphs for the eleven countries depict spikes, some corresponding to the wars and civil strife. Nevertheless, the standard migration literature should be relevant for analyzing the remaining variances and for predicting the eventual impact of the current crisis on migratory pressures.

Model

Traditional theories on determinants of migration generally predict that emigration rate is negatively correlated with average earnings in the source country, and with migration costs, and positively correlated with mean earnings in the host country. The income level in the source country can also have a mitigating effect through the mechanism known as “poverty trap”. In this case, the decline in income of the source country may actually reduce migratory pressures if people are too poor to afford the financial costs of migration.⁶ This argument may be of particular importance in the case of illegal transit migration which is largely carried out by organized crime gangs (see, e.g. Icduygu 2000 and Kirisci 2008). Their services often run several thousand dollars per person.

GDP per capita is a good proxy for average earnings in a country. Employment rates in the home and foreign countries proxy the probability of finding jobs which is important in the determination of expected income. As employment series could be constructed for only 8 out of 11 countries in the sample, two alternative specifications were estimated: one with relative GDP per capita growth in the destination - EU - versus the home country ($\ln(gdp_{ft}/gdp_{ht})$), and relative employment growth ($\ln(emp_{ft}/emp_{ht})$); the other using only the relative GDP per capita growth. In both specifications the GDP per capita of the country of origin is added to capture financial to meet costs of migration.

$$\ln(m_{ht}) = \alpha_h + \beta_1 \ln(emp_{ft}/emp_{ht}) + \beta_2 \ln(gdp_{ft}/gdp_{ht}) + \beta_3 \ln(gdp_{ht}) + u_{ht} \quad (1)$$

and

$$\ln(m_{ht}) = \alpha_h + \beta_1 \ln(gdp_{ft}/gdp_{ht}) + \beta_2 \ln(gdp_{ht}) + u_{ht} \quad (2)$$

where t stands for the year, h is the country of origin and f the foreign country or the destination, namely the EU; m_h is the number of transit immigrants apprehended divided by the population of their countries of origin. Details and sources of data are given in Appendix I).

Estimation results

As the available data pertained to a relatively short period, 1995 to 2008, the estimation was done with cross-country time series pooled data.⁷ A good fit was obtained when both sides, i.e. the dependent variable and the explanatory variables were used in logarithmic form. The estimated coefficients were significant and the overall explanatory power of the model was very high. The summary results of the estimations are in Table 2, while detailed test statistics are given in Appendix II.

⁵ The totals do not fully match with that of Kirisci (2008) since the 2008 figures are also incorporated here. Furthermore, Kirisci assumed that those apprehended with “unknown origin” also belonged to illegal transit migrants. This latter group was ignored in the current study as it does not lend itself to further analysis.

⁶ See, e.g. Peridy (2006) for a review of the literature on the determinants of migration, including more recent contributions to theory.

⁷ As estimation method “contemporaneous covariances - cross-section SUR” was used. This class of covariance structures allows for conditional correlation between the contemporaneous residuals for cross-section and, but restricts residuals in different periods to be uncorrelated. Common slopes were assumed for all countries but intercepts were allowed to be country specific.

Table 2. Regression Results for Illegal Transit Migrants Apprehended 1995- 2008

Model 1 - 8 countries	Coefficients	S.E	P-value
$\text{Ln}(\text{emp}_{ft}/\text{emp}_{ht})$	1.62	0.68	0.020
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	16.65	1.97	0.000
$\text{Ln}(\text{gdp}_{ht})$	6.81	0.99	0.000
With dummy			
$\text{Ln}(\text{emp}_{ft}/\text{emp}_{ht})$	1.46	0.70	0.039
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	10.43	2.29	0.000
$\text{Ln}(\text{gdp}_{ht})$	5.64	1.07	0.000
Dummy (2000-2002)	0.69	0.18	0.000
Model 2 - 11 countries	Coefficients	S.E	P-value
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	5.89	0.64	0.000
$\text{Ln}(\text{gdp}_{ht})$	4.17	0.55	0.000
With dummy			
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	4.61	0.68	0.000
$\text{Ln}(\text{gdp}_{ht})$	3.58	0.62	0.000
Dummy (2000-2002)	1.08	0.13	0.000

Note: See Appendix II for test statistics.

The estimation of model (1) had to be done with 8 countries out of the group of 11, excluding Afghanistan, Iraq and Lebanon for which no employment data could be constructed. The signs of all three coefficients were highly significant and had expected signs. Growth differential in employment had a relatively small coefficient (1.6) where GDP growth differential had a coefficient of 16.7. A higher growth in the EU area compared to the home country – put differently lower growth at home – would trigger an important migratory response. For example, a one percent growth rate difference in GDPs in favor of the EU would lead to a nearly 17% increase in the growth rate of migratory flows. Obviously, if this GDP growth difference happens to be in favor of the home country, it implies an equal reduction in migration. Finally, the coefficient for the last term was about 6.8, implying that GDP growth in the home country had an additional positive impact by facilitating paying for migration costs. The total impact can be calculated by the summation of the three effects.

In the estimation of model (2) all 11 countries were covered as data for employment were not required. The major difference in results was the reduction in the size of the coefficient for GDP differences from 16.7 to 5.9. In explaining the difference, more important than the lack of the employment term was the exclusion of Afghanistan and Iraq from the estimations, countries which experienced military invasion during the period under study. The coefficient for the GDP growth in the home country – the term capturing the financial boost to pay for migration costs – was 4.2, not much smaller than the coefficient of the GDP growth differential (5.9).

Observing spikes for the years 2000, 2001 and 2002 in the number of total illegal transit migrants apprehended, the estimation of both models were modified by adding a dummy variable which took the value of 1 in these three years and 0 in the others. Such a modification could be justified on the grounds of non economic events or changes in the transit routes or more strict law enforcement.⁸ This modification has improved the fit of the estimations (see Appendix II) and reduced the size of the coefficient for the GDP growth differential.

Predictions

On the basis of the estimations reported above, what can be predicted concerning the impact of the global crisis on illegal transit migration? The estimation of the parameters required heroic assumptions. The growth forecasts during the global crisis, reported in Table 3, are equally courageous and may contain major estimation error.

Table 3. GDP Growth Estimates and Forecasts

	GDP growth (%)	
	Estimate 2008	Forecast 2009
AFGANISHTAN	7,5	3,5
ALGERIA	3,2	2,2
BANGLADESH	6,2	4,5
EGYPT	7,2	4,0
IRAN	5,2	3,0
IRAQ	n.a.	n.a.
LEBANON	7,0	4,0
MOROCCO	5,0	3,9
PAKISTAN	5,8	1,0
SYRIA	4,8	2,6
TUNISIA	4,9	2,4
EU Euro area	-0,7	-2,7

Note: Data sources in Appendix I.

The predictions on the number of illegal transit migrants based on the estimation results given in Table 2 and the GDP forecasts of Table 3 are reported in Table 4. Concerning model (1) predictions, as forecasts for employment rates were not available, the term on employment growth differential had to be disregarded. The fact that the size of this coefficient was relatively small compared to that for the relative GDP growth implies that this omission would not have a very serious effect.

To follow the predictions given in Table 4, take the case for Pakistan. The forecast for real GDP will grow in 2009 for Pakistan is 1%, compared to a 2.7% *contraction* in the Euro Area. According to model (1) the number of irregular migrants from Pakistan would *shrink* by 55%.

The employment effect – which is not reported in Table 4: Suppose that the crisis leads to a greater employment reduction in Pakistan, for example 8%, and, 4% in the Euro Area. This would affect migration by +6.5%. The net effect would be a reduction by 48.5%

⁸ Better law enforcement would increase the ratio of illegal persons apprehended without necessarily affecting the flow of illegal transits at the same rate. Kirisci (2008) mentions improvements in law enforcement in the early 2000s.

From Table 4, when the predictions were modified by the use of the dummy for 2000-2002, in the Pakistani example, the reduction in migrants fell 55% to 33%. According to model (2), this number was considerably less, a reduction of 18%, and finally, the dummy adjustment brought this figure down to 13%. Nevertheless, the model predicted a fall rather than an increase in the number of illegal migrants because of the poorer GDP forecasts for the EU.

Table 4. Model Predictions on Change in Illegal Transit Migrants

	Model (1)	Model (1)+dummy	Model (2)	Model (2)+dummy
	Estimated percentage change in number of migrants in 2009	Estimated percentage change in number of migrants in 2009	Estimated percentage change in number of migrants in 2009	Estimated percentage change in number of migrants in 2009
AFGHANISTAN	n.a.	n.a.	-0,22	-0,16
ALGERIA	-0,67	-0,39	-0,20	-0,15
BANGLADESH	-0,89	-0,50	-0,24	-0,17
EGYPT	-0,84	-0,47	-0,23	-0,17
IRAN	-0,74	-0,43	-0,21	-0,16
IRAQ	n.a.	n.a.	n.a.	n.a.
LEBANON	n.a.	n.a.	-0,23	-0,17
MOROCCO	-0,83	-0,47	-0,23	-0,16
PAKISTAN	-0,55	-0,33	-0,18	-0,13
SYRIA	-0,71	-0,41	-0,20	-0,15
TUNISIA	-0,69	-0,40	-0,20	-0,15
<i>Weighted average</i>	<i>-0,60</i>	<i>-0,36</i>	<i>-0,20</i>	<i>-0,15</i>

Note: Based on Table 2 results and Table3 forecasts. In models (1) and (1) + dummy, the relative employment effect was omitted in the computations due to non availability of employment forecasts.

The last row of Table 4 gives the weighted predictions, weights being calculated using the number of illegal transit immigrants apprehended in 2008. Predictions based on alternative estimations yielded reduction in the number of migrants in the range of 60% to 15%.

Estimations with all illegal migrants apprehended

To scrutinize the relevance of the model and the nationality coverage of illegal transit migrants, the model was also estimated using the number of illegal migrants apprehended from all sources with exception of Europe (not the Caucasus) and the Americas.⁹ This broad group of illegal migrants from 26 countries contained the suspected transit migrants but also all other categories.¹⁰

⁹ African, Asian and Caucasus countries from which a total of 1,000 or more persons were apprehended in Turkey during 1995-2008 – countries of origin in other continents, namely, Europe (excluding the Caucasus) and the Americas were disregarded. Mongolia and Somalia were excluded from the analysis due to non availability of economic data.

¹⁰ These categories include immigrants working illegally in Turkey or doing other small scale commercial activities (see Kirisci 2008). The ex Soviet block countries of Europe were excluded from the analysis because of their particular characteristics (see Kirisci 2008).

Table 5. Regression Results with all Illegal Migrants Apprehended from Africa, Asia and the Caucasus, 1995- 2008

Model 1 - 22 countries	Coefficients	S.E	P-value
$\text{Ln}(\text{emp}_{ft}/\text{emp}_{ht})$	2.13	0.70	0.003
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	4.42	1.31	0.001
$\text{Ln}(\text{gdp}_{ht})$	5.96	0.85	0.000
With dummy			
$\text{Ln}(\text{emp}_{ft}/\text{emp}_{ht})$	1.77	0.68	0.010
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	3.75	1.24	0.003
$\text{Ln}(\text{gdp}_{ht})$	6.00	0.82	0.000
Dummy (2000-2002)	1.46	0.12	0.000
Model 2 - 26 countries	Coefficients	S.E	P-value
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	5.55	0.96	0.000
$\text{Ln}(\text{gdp}_{ht})$	6.05	0.64	0.000
With dummy			
$\text{Ln}(\text{gdp}_{ft}/\text{gdp}_{ht})$	5.91	0.93	0.000
$\text{Ln}(\text{gdp}_{ht})$	6.51	0.63	0.000
Dummy (2000-2002)	1.36	0.10	0.000

Note: For the list of countries and data, see Appendix I, for test statistics Appendix III.

Estimation results with this larger, diluted group are reported in Table 5. A comparison of results with those in Table 2 reveals that the coefficient for the relative GDP growth term was considerably smaller. More importantly, the size of the coefficient of the home countries' own GDP growth was larger than the latter coefficient in all estimations. These results give some support to the identification of illegal transit migrants by source of origin. For illegal immigrants in general, EU growth as an attraction force was not so strong. Their financial capacity to venture the immigration enterprise was more important.

III. Workers' Remittances

Many developing countries rely on workers' remittances as a major source of external finance. Remittances to developing countries had reached double digit annual growth rates and were considered as a relatively stable source by the recipient countries. In many instances, they were also counter-cyclical. This was due to the fact that crises in the developing world were of the home grown. The current crisis has originated from the industrial countries and is affecting the developing countries severely through both the financial and trade channels with almost immediate impact. There is very little phase difference if any.

According to World Bank calculations, remittance flows have sharply decelerated in the second half of 2008. Nevertheless, total remittances received by developing countries reached \$305 billion in 2008, increasing about 9% from 2007. The World Bank (2009a) projected that these remittances could

decline 5% in 2009 in the base case scenario and 8.2% in the low case scenario. The low case scenario depicts a prolonged recession where not only incomes of migrants fall but immigration restrictions tighten and the migrant stocks are negatively affected.

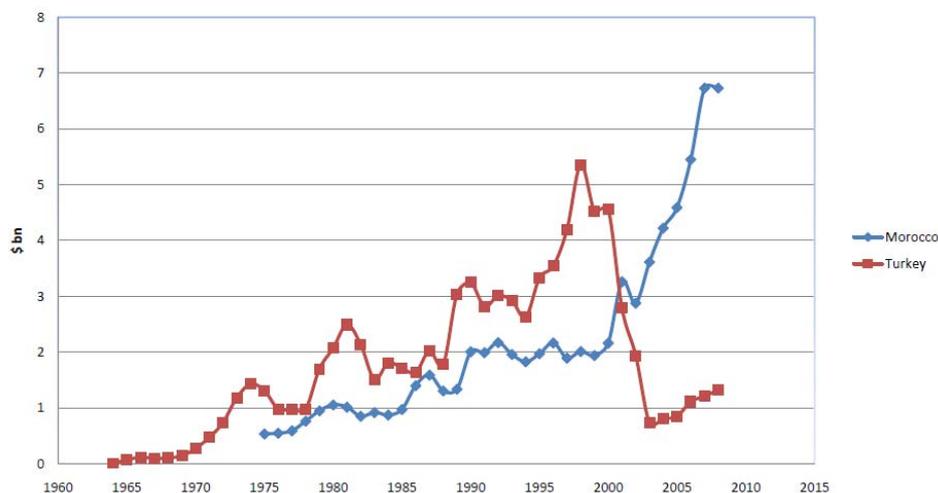
The steepest slowdown in remittances in 2008 was experienced by Sub-Saharan Africa and developing Europe and Central Asia. The World Bank predicts that this latter group will suffer the greatest shortfall in 2009 as well.

When the economy of the host country is growing rapidly, employment prospects for immigrants as well as their earning prospects would increase. Most empirical studies show that this has a positive effect on the level of remittances sent to the home country (the IMF Survey (2005) and Akkoyunlu and Kholodin (2006) - for Turkey) while some find this relation not to be significant, including Sayan (2004 for Turkey).

Economic conditions in the country of origin of the immigrants are also expected to affect remittances. However there may be opposing forces in this relation. If the worker's dominant motive is to invest in the home country, the growth of the economy there would have a positive effect on the level of remittances. However, if the migrant worker's main motive is concern for the relatives in the home country, improvement of the economic situation there would influence the flow of remittances negatively. The IMF Survey (2005) as well as a recent World Bank paper by Mohapatra and Ratha (2007) indicate that a deterioration in home country's economy increases the remittances. Aydas, Neyaptı and Ozcan (2004 for Turkey) and Niimi and Caglar (2006) also corroborate these findings.

Figure 2

Remittances Received by Turkey and Morocco



Source: World Bank Remittances Data Base

On the other hand, Higgins, Hysenbegasi and Pozo (2004) supply evidence on the positive link between remittances and the economy of the home country. Similarly, Sayan, (2004) argues that remittances sent by Turkish workers in Germany were positively related to the real GDP in Turkey. Akkoyunlu and Kholodin (2006 for Turkey) claim that remittances do not react at all to changes in Turkish output.

Some of the above differences in empirical findings stem from differences in the composition of country samples and periods analyzed. Methodological issues including frequency of data (annual vs. quarterly) used and estimation techniques also matter.

The German-Turkish and French-Moroccan corridors are among the major remittance corridors - outflows - between the EU and its periphery.¹¹ The Turkish “guest worker” episode in Germany that started in the early 1960s, essentially ended with the first oil crisis of 1973. From then on, immigrants in the EU originating from Turkey increased mainly by family reunion and family formation, and of course, with net births. Their number is estimated around three million, three quarters residing in Germany (see, e.g. Erzan and Kirisci, 2008). The amount of remittances and their importance for Turkey have changed drastically over the decades. Until 1980s when Turkey had an inward economic orientation, workers’ remittances were the largest source of external funds. In the late 1970s, their size was about half of Turkey’s total export revenue. As depicted in Figure 2, the increase in the magnitude of the remittances continued two more decades, although their share in foreign exchange earnings and foreign savings have declined drastically as a result of Turkey’s outward orientation.

Described by Abadan-Unat (2002) as the “unending migration: from guest-worker to transnational citizenship” the transformation that the Turkish immigrants have gone through was immense. The change in the behavioral patterns of the immigrants during this transition can also be expected to be considerable. In Figure 2, the free fall of the remittances from over \$5 billion to about \$1 billion has to be considered in this context. The crisis of 2001 must have triggered a shift in attitudes concerning the home country. Although the Turkish economy has exhibited record growth over the 2002-2007 period averaging about 7%, the development in the remittance flows pointed to a different regime. Moroccan remittances, also depicted in Figure 2, indicate a different story, implying a different episode, probably a different point in the life cycle of the immigrant communities concerned. The remittances sky rocketed at the turn of the century.

Model

The basic model for the estimation of the remittances incorporates the growth in the home and host countries.¹² Different specifications incorporating the two arguments were tried. The following form was preferred:

$$\text{rem}_{ht} = \alpha_h + \beta_1 \text{Dgdp}_{ft} + \beta_2 \text{Dgdp}_{ht} + u_{ht} \quad (3)$$

where rem_{ht} is remittances, Dgdp is GDP per capita growth, t stands for the year, h is the country of origin and f the foreign host country. The behavior of the agents might respond to changes in economic conditions with a delay. In this case, a better fit might be obtained by using the lagged values ($t-1$) of the explanatory variables. Furthermore, to correct for serial correlation, the lagged value of the dependent variable can be added as an explanatory variable:

$$\text{rem}_{ht} = \alpha_h + \beta_1 \text{Dgdp}_{ft-1} + \beta_2 \text{Dgdp}_{ht-1} + m_{ht-1} + u_{ht} \quad (4)$$

¹¹ The largest remittance corridor appears to be the one between Spain and two Latin American countries, namely Colombia and Ecuador (EC 2007). The Turkish and Moroccan corridors come next in size.

¹² See, e.g. the World Bank (2008).

Estimation results

The model was estimated for the period starting from 1980s - when the orientation of the economy was shifted outwards - until 2008.¹³ Annual and quarterly data were tried. After several runs, yearly data and specification (4) was preferred. Summary results are reported in Table 6 and test statistics in Appendix IV.

Table 6. Regression Results for Remittances to Turkey

Model 3: 1983-2008	Coefficients	S.E	P-value
<i>Constant</i>	2,014	907	0.037
$Dgdp_{ft-1}$	10,995	9,071	0.238
$Dgdp_{ht-1}$	-2,398	2,720	0.386
rem_{ht-1}	0.89	0.15	0.000
<i>With dummy</i>			
<i>Constant</i>	2,997	1,128	0.015
$Dgdp_{ft-1}$	16,357	7,180	0.033
$Dgdp_{ht-1}$	-797	2,216	0.723
rem_{ht-1}	0.87	0.16	0.000
<i>Dummy (2001-2008)</i>	-1,943	540	0.002
Model 4: 2000-2008			
<i>Constant</i>	939	695	0.235
$Dgdp_{ft-1}$	17,814	10,219	0.142
$Dgdp_{ht-1}$	-7,677	3,883	0.105
rem_{ht-1}	0.66	0.21	0.025

Note: For, see Appendix I for data and Appendix IV for test statistics.

The first run, reported for the record, covered the whole period of estimation. While the coefficients were not statistically significant, the German GDP growth appeared to be positively correlated with remittances and the Turkish growth negatively. The apparent break in the series observed in Figure 2 was tested statistically.¹⁴ A break in the remittance series around 2000 could not be rejected.

¹³ Prior to 1980, there was a major wedge between the official and market exchange rates. Hence the real exchange rate was a significant determinant of the - recorded - flow of remittances through official channels.

¹⁴ Test results are below:

The second estimation reported in Table 6 incorporated a dummy variable which took the value of 1 in the period 2000-2001. The dummy was significant at the 1% level denoting a shift in the intercept. German GDP growth had a large positive coefficient and significant at the 5% level. Turkish growth had a negative sign but still insignificant.

Finally, the third estimation reported only covered the 2000-2008 period. Obviously a robust estimation is not possible with such small number of observations. Nevertheless, while German growth had a positive impact, Turkish growth had a negative one.

Predictions

It can be concluded that the impact of growth at home and in the host country on remittances had been changing over time. The home country's need aspect seems to override the investment motivation. Nevertheless, the effect of the host country's economy appears to be the dominating factor.¹⁵ Therefore, short of statistically sound results, rather than a numeric forecast, a negative direction of change can be predicted for Turkey. The latest figures on the first two months of 2009 compared to the same period of 2008 indicate a 23% drop in remittances.

IV. Concluding Remarks

The study made an attempt to estimate the direction and magnitude of the impact of the global economic crisis on illegal migration and remittances in a specific context. Estimations on the impact of the global economic crisis on the magnitude of illegal transit migration through the Turkish corridor to the EU gave ambiguous results due to the fact that growth in the EU will likely be affected more severely than the peripheral countries.

EU slowdown, on the other hand, which will reduce the financial capacity of the immigrants, will likely dominate over the increased need for funds at home, curtailing the remittances received by developing countries. The magnitude of this decline may differ considerably across recipient countries - as the remittance profiles of, e.g. Turkey and Morocco exhibit.

The crucial ingredients in any prediction are the growth projections for the EU and the peripheral countries made by international organizations such as the IMF and the World Bank. These forecasts are being frequently and radically revised downwards as the crisis unravels. Forecasts for developments on the employment front are still very sparse and shaky.

Finally, the flow of illegal migrants through Turkey to the EU - mostly via Greece - was approximated by statistics on those who were apprehended in Turkey. This analysis can be augmented by using the statistics on the actual number of illegal migrants who make it to Greece (presumably through the Turkish corridor) - if such statistics were available by migrants countries of origin, for a sufficient number of years.

(Contd.)

Chow Breakpoint Test: 2000
Null Hypothesis: No breaks at specified breakpoints

Equation Sample: 1983 2008

F-statistic	2.630282	Prob. F(4,18)	0.0686
Log likelihood ratio	11.96711	Prob. Chi-Square(4)	0.0176
Wald Statistic	3.256845	Prob. Chi-Square(4)	0.5158

¹⁵ Given that the coefficient of German growth was several times larger than that for Turkish growth, a fall in the GDPs of similar magnitude would yield a reduction in the flow of remittances. The latest forecast for Turkish GDP is -3.6% in 2009.

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APPENDIX I: DATA DESCRIPTIONS AND SOURCES

Illegal migrants apprehended in Turkey: countries of origin

(African, Asian and Caucasus countries from which a total of 1,000 or more persons were apprehended in Turkey during 1995-2008 – countries of origin in other continents, namely, Europe and the Americas were disregarded.)

Afghanistan	Mauritania
Algeria	Mongolia
Armenia	Morocco
Azerbaijan	Myanmar
Bangladesh	Nigeria
China	Pakistan
Egypt	Palestine
Georgia	Philippines
India	Somalia
Iran	South Africa
Iraq	Syria
Kazakhstan	Tunisia
Kyrgyzstan	Turkmenistan
Lebanon	Uzbekistan

Illegal migrants apprehended

Source: Foreign Nationals Department, Ministry of Interior (MOI)

Employment rate index

An employment rate indexes rather than employment rates themselves were used since data extracted from different sources were hardly comparable. The first date where employment rate was available was set to 100. Employment rate was calculated as the number of people employed as a share of economically active population when data were available. Countries for which employment rate could be calculated accordingly were China, Egypt, Georgia, India, Kazakhstan, Kyrgyzstan, Morocco, Pakistan, Philippines, South Africa, Tunisia, Uzbekistan, Palestine. Using this method, employment rates of Armenia and Azerbaijan turned out to be above 100%. In such cases, employment rate was calculated as “1- unemployment rate”. This was the case for Armenia, Azerbaijan, Bangladesh, Iran, Nigeria, Syria and Turkmenistan. Unemployment rate, in turn, was calculated as the ratio of unemployed people to total economically active population; whenever the unemployment rate itself was unavailable. This latter method was used for Algeria, India and Myanmar. Missing data for Algeria for 1996, 1998, 1999, for Myanmar 2006, for Uzbekistan 2003, for Tunisia 1998, for Egypt 1996 and 1997 were interpolated. Employment rate for Palestine was derived through unemployment

rate and the labor force participation rate. The same index was also calculated for the EU-15. EU data were obtained from the EUROSTAT.

For employment data of the other countries ILO was the main source (main statistics, annual): employment general level, by economic activity, by occupation, by status in employment - paid employment by economic activity, in manufacturing). Countries for which data were available from this source were China (official estimates, 1995-2007), Egypt (official estimates, 1995-2007, 1996 missing), Georgia (labor force survey, 1998-2007), India (labor force survey, 1994-2000, 1999 missing), Kazakhstan (labor force survey for 1995-2000, official estimates for 2001-2007), Kyrgyzstan (labor force survey for 1995-2005, official estimates and interpolation estimate for 2006), Morocco (labor force survey for 2001-2007, labor force survey for urban areas is used to find the ratio of urban employment in overall employment for the years 2001 and 2002. The average ratio in these years were used to project the overall employment between 1995-2000 using the employment level in urban areas as reported by the labor force survey in urban areas), Pakistan (labor force survey, 1995-2007), Philippines (labor force survey, 1995-2007), South Africa (labor force survey, 2000-2007), Tunisia (labor force survey, 1997-2005, 1998 missing), Uzbekistan (official estimates, 1995-2005, 2003 missing).

Unemployment rates for Turkmenistan (1995-2007), from 'key indicators for Asia and the Pacific 2008 report', Asian Development Bank. Armenia (official estimates, 1995-2007), Iran (2000-2007), Azerbaijan (employment office records 1995-2007), Palestine (1999-2007), Algeria (labor force survey, 1995-2007), (1996, 1998, 1999 missing) India (employment office records, 1995-2007), Myanmar (employment office records, 1997- 2007), (2006 missing) all from ILO (labor force participation rate is also used from the same source to calculate Palestine employment rate). For Bangladesh, Nigeria and Syria (2000-2007), data from CIA World Fact Book.

GDP per capita

PPP adjusted GDP per capita in current international dollars. Data compiled from World Economic Outlook 2008 *and updates* except for Iraq and Palestine. Palestinian Central Bureau of Statistics for Palestine (1995-2005) For Iraq (2000-2008) various sources, including www.indexmundi.com. For the EU, GDP per capita in Euro Area was used as a proxy.

Economically active population and population

ILO Economically Active Population Estimates and Projections 1980-2020 (EAPEP), for EU-15, EUROSTAT

Population

World Economic Outlook Database for October 2008 *and updates* (for all countries except Palestine). Palestine data from CIA World Fact Book.

Remittances

World Bank Remittances Data Base and Central Bank of Turkey

APPENDIX II: ESTIMATION RESULTS FOR IRREGULAR TRANSIT MIGRANTS**Model 1: Employment and GDP (8 countries)**

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Cross-section SUR)

Date: 04/07/09 Time: 19:55

Sample (adjusted): 1995 2007

Included observations: 13 after adjustments

Cross-sections included: 8

Total pool (unbalanced) observations: 84

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EMPEU)-LOG(EMP?)	1.621487	0.682884	2.374471	0.0202
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	16.65235	1.970398	8.451260	0.0000
LOG(GDPPCAP?)	6.808699	0.993399	6.853943	0.0000
_ALG—C	-90.93914	11.46146	-7.934339	0.0000
_BANG—C	-106.7883	12.99339	-8.218667	0.0000
_EGYP—C	-94.49639	11.62144	-8.131209	0.0000
_IRAN—C	-85.36978	11.11602	-7.679886	0.0000
_MORCO—C	-95.53459	11.88007	-8.041588	0.0000
_PAKIS—C	-99.05893	12.29292	-8.058210	0.0000
_SYRA—C	-92.61298	11.74225	-7.887161	0.0000
_TUNUS—C	-89.36649	11.41312	-7.830152	0.0000

Weighted Statistics

R-squared	0.817239	Mean dependent var	-4.113859
Adjusted R-squared	0.792203	S.D. dependent var	5.902190
S.E. of regression	0.989962	Sum squared resid	71.54180
F-statistic	32.64292	Durbin-Watson stat	1.687501
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.887948	Mean dependent var	-4.617245
Sum squared resid	43.86296	Durbin-Watson stat	0.985394

Model 1: Employment, GDP and Dummy (8 countries)

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Cross-section SUR)

Date: 04/07/09 Time: 19:53

Sample (adjusted): 1995 2007

Included observations: 13 after adjustments

Cross-sections included: 8

Total pool (unbalanced) observations: 84

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EMPEU)-LOG(EMP?)	1.466394	0.697128	2.103479	0.0389
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	10.42795	2.287378	4.558909	0.0000
LOG(GDPPCAP?)	5.640325	1.073414	5.254568	0.0000
DUMMY 2000-2002	0.691354	0.182906	3.779825	0.0003
_ALG—C	-70.75746	12.51271	-5.654847	0.0000
_BANG—C	-78.35800	14.38189	-5.448381	0.0000
_EGYP—C	-73.25860	12.71003	-5.763839	0.0000
_IRAN—C	-67.44604	12.10254	-5.572884	0.0000
_MORCO—C	-72.80350	13.02715	-5.588597	0.0000
_PAKIS—C	-74.07162	13.53078	-5.474305	0.0000
_SYRA—C	-70.81139	12.85061	-5.510353	0.0000
_TUNUS—C	-69.46067	12.46675	-5.571676	0.0000

Weighted Statistics

R-squared	0.838038	Mean dependent var	-4.053061
Adjusted R-squared	0.813294	S.D. dependent var	4.469481
S.E. of regression	0.973959	Sum squared resid	68.29885
F-statistic	33.86817	Durbin-Watson stat	1.670107
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.911148	Mean dependent var	-4.617245
Sum squared resid	37.46861	Durbin-Watson stat	1.109745

Model 2: GDP (11 countries)

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Cross-section SUR)

Date: 04/20/09 Time: 18:03

Sample (adjusted): 1995 2008

Included observations: 14 after adjustments

Cross-sections included: 11

Total pool (unbalanced) observations: 141

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	5.887004	0.641240	9.180650	0.0000
LOG(GDPPCAP?)	4.165396	0.549909	7.574700	0.0000
_AFG—C	-51.43434	5.815268	-8.844707	0.0000
_ALG—C	-50.65596	5.661170	-8.947966	0.0000
_BANG—C	-53.04805	5.738066	-9.244936	0.0000
_EGYP—C	-52.43027	5.669036	-9.248533	0.0000
_IRAN—C	-48.52623	5.648662	-8.590748	0.0000
_IRAQ—C	-48.22487	5.710192	-8.445403	0.0000
_LEBAN—C	-48.95144	5.648894	-8.665668	0.0000
_MORCO—C	-51.06928	5.679797	-8.991391	0.0000
_PAKIS—C	-50.78250	5.696526	-8.914643	0.0000
_SYRA—C	-49.24746	5.667413	-8.689584	0.0000
_TUNUS—C	-49.75515	5.660003	-8.790657	0.0000

Weighted Statistics

R-squared	0.883777	Mean dependent var	-1.005216
Adjusted R-squared	0.872881	S.D. dependent var	3.342770
S.E. of regression	0.969964	Sum squared resid	120.4263
F-statistic	81.11083	Durbin-Watson stat	1.792971
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.874329	Mean dependent var	-4.347843
Sum squared resid	130.2156	Durbin-Watson stat	0.627319

Model 2: GDP and Dummy (11 countries)

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Cross-section SUR)

Date: 04/20/09 Time: 18:03

Sample (adjusted): 1995 2008

Included observations: 14 after adjustments

Cross-sections included: 11

Total pool (unbalanced) observations: 141

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	4.613097	0.682411	6.759996	0.0000
LOG(GDPPCAP?)	3.581170	0.618275	5.792193	0.0000
DUMMY 2000-2002	1.082581	0.126795	8.538032	0.0000
_AFG—C	-42.94633	6.510008	-6.596970	0.0000
_ALG—C	-43.78719	6.386644	-6.856057	0.0000
_BANG—C	-45.02108	6.451680	-6.978194	0.0000
_EGYP—C	-45.42417	6.393566	-7.104669	0.0000
_IRAN—C	-41.94606	6.373257	-6.581573	0.0000
_IRAQ—C	-40.92268	6.440134	-6.354321	0.0000
_LEBAN—C	-42.47572	6.371892	-6.666107	0.0000
_MORCO—C	-43.85674	6.402903	-6.849510	0.0000
_PAKIS—C	-43.26272	6.419453	-6.739317	0.0000
_SYRA—C	-42.18426	6.394772	-6.596679	0.0000
_TUNUS—C	-42.92303	6.385613	-6.721833	0.0000

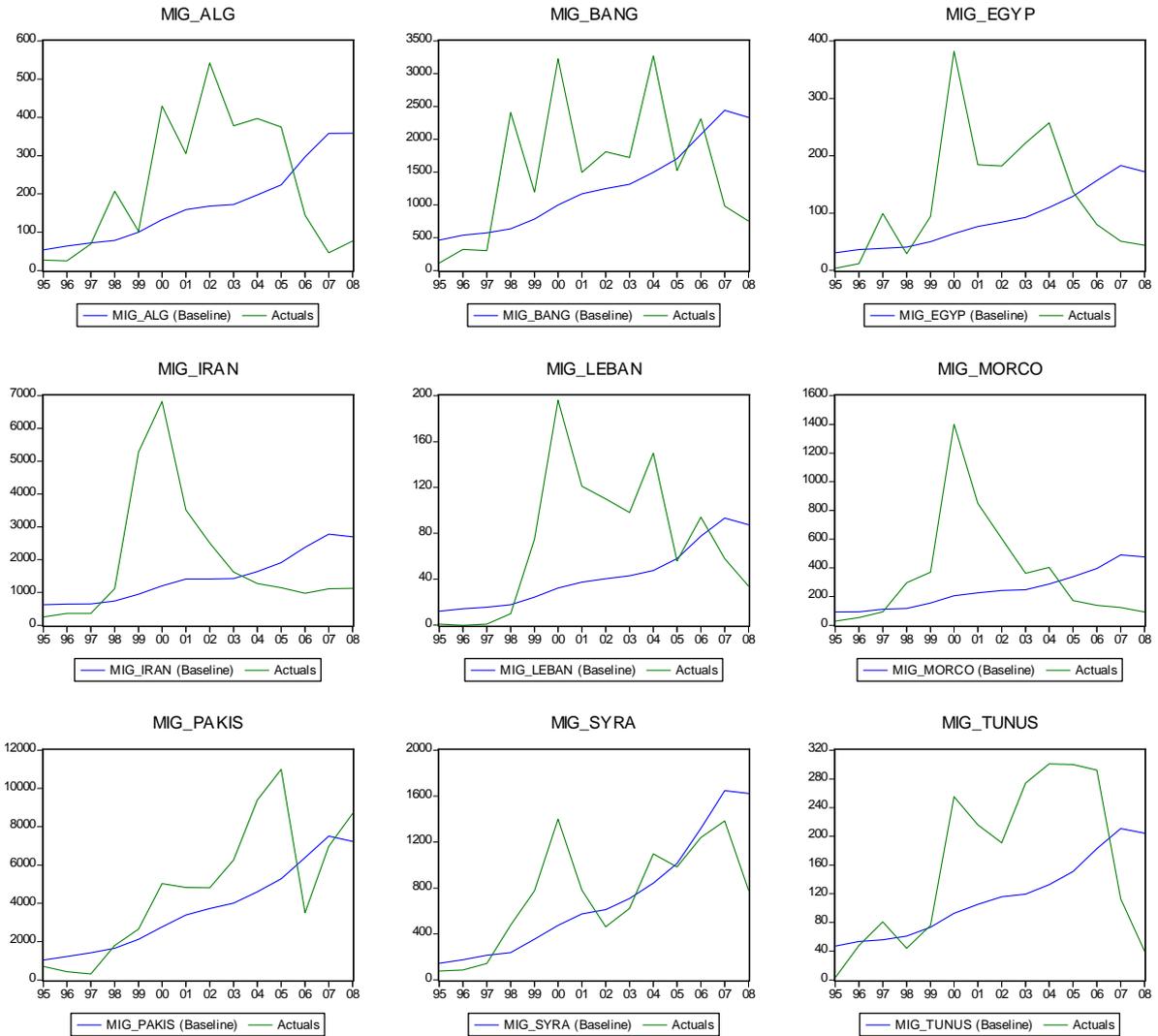
Weighted Statistics

R-squared	0.892032	Mean dependent var	-1.369589
Adjusted R-squared	0.880981	S.D. dependent var	3.408070
S.E. of regression	0.977770	Sum squared resid	121.4163
F-statistic	80.71381	Durbin-Watson stat	1.818160
Prob(F-statistic)	0.000000		

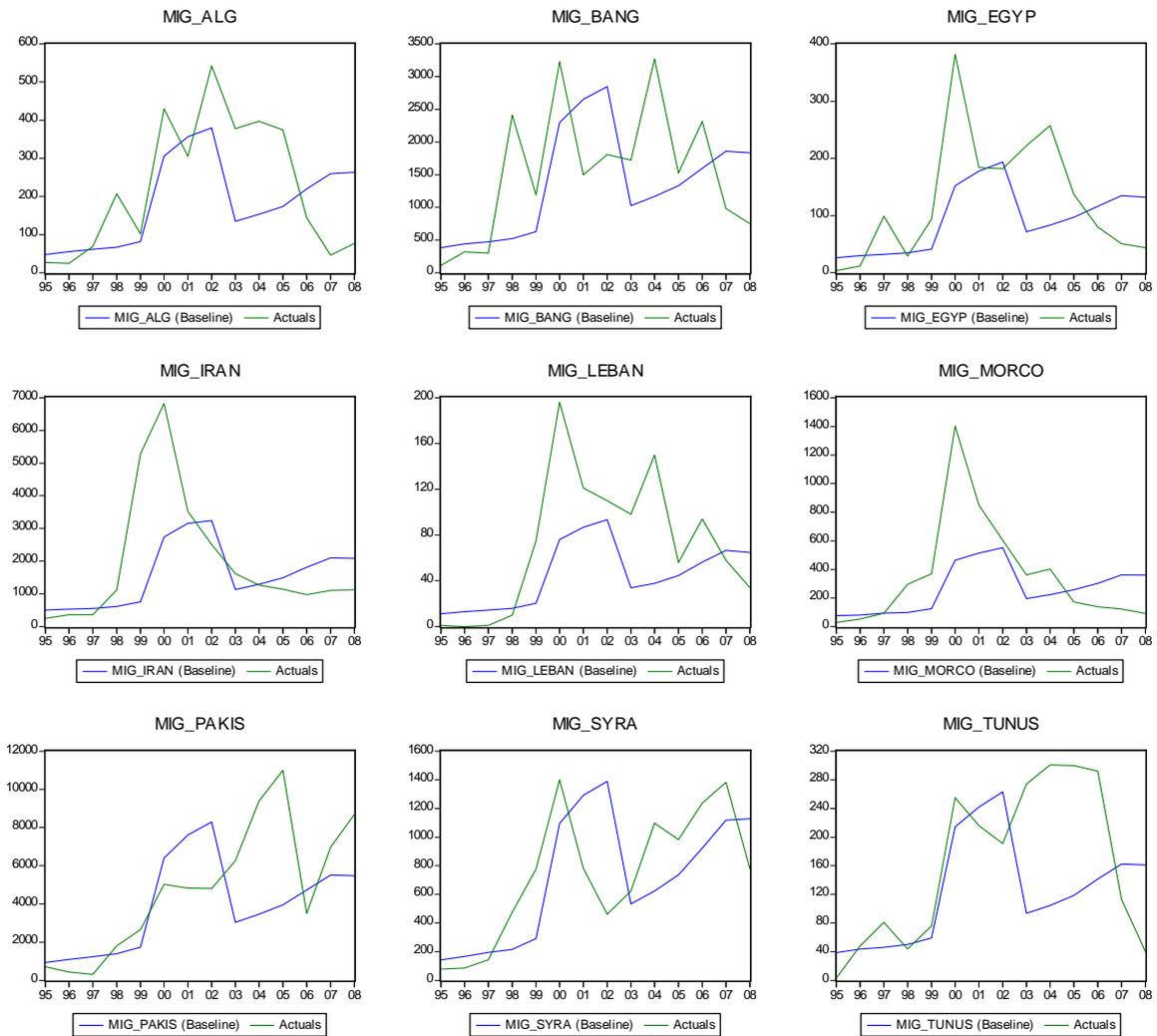
Unweighted Statistics

R-squared	0.916083	Mean dependent var	-4.347843
Sum squared resid	94.37035	Durbin-Watson stat	0.879259

Illegal Transit Migrants Apprehended: Actual and Fitted Values (no dummy)



Illegal Transit Migrants Apprehended: Actual and Fitted Values (dummy 2000-2002)



APPENDIX III: ESTIMATION RESULTS WITH ALL ILLEGAL MIGRANTS FROM AFRICA, ASIA AND THE CAUCASUS

Model 1: Employment and GDP (22 countries)

Dependent Variable: LOG(MIG?/POP?)
 Method: Pooled EGLS (Period SUR)
 Date: 04/07/09 Time: 19:43
 Sample (adjusted): 1995 2007
 Included observations: 13 after adjustments
 Cross-sections included: 22
 Total pool (unbalanced) observations: 213
 Linear estimation after one-step weighting matrix
 Period weights (PCSE) standard errors & covariance (d.f. corrected)
 Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EMPEU)-LOG(EMP?)	2.132514	0.695234	3.067334	0.0025
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	4.416753	1.309182	3.373674	0.0009
LOG(GDPPCAP?)	5.962736	0.849607	7.018232	0.0000
_ALG—C	-63.33923	9.366980	-6.761969	0.0000
_ARM—C	-59.94473	9.673558	-6.196761	0.0000
_AZER—C	-60.31086	9.542439	-6.320277	0.0000
_BANG—C	-60.44222	10.14265	-5.959216	0.0000
_CHINA—C	-66.40857	9.591224	-6.923889	0.0000
_EGYP—C	-64.41451	9.446179	-6.819107	0.0000
_GEORG—C	-58.67343	9.633765	-6.090394	0.0000
_IND—C	-65.25870	9.833012	-6.636695	0.0000
_IRAN—C	-62.82437	9.235642	-6.802383	0.0000
_KAZAK—C	-63.22145	9.280084	-6.812595	0.0000
_KYRG—C	-59.89621	9.929956	-6.031871	0.0000
_MORCO—C	-62.18782	9.571648	-6.497086	0.0000
_MYNA—C	-63.01608	10.29912	-6.118591	0.0000
_NIGER—C	-63.87851	9.964357	-6.410700	0.0000
_PAKIS—C	-60.55726	9.762626	-6.202968	0.0000
_PALES—C	-59.28389	9.992611	-5.932773	0.0000
_PHILLIP—C	-64.32918	9.652821	-6.664288	0.0000
_SAR—C	-66.01364	9.245269	-7.140262	0.0000
_SYRA—C	-61.27233	9.546290	-6.418444	0.0000
_TUNUS—C	-62.24301	9.334792	-6.667852	0.0000
_TURKMEN—C	-60.53078	9.629138	-6.286210	0.0000
_UZBEK—C	-61.62791	9.819919	-6.275806	0.0000

Weighted Statistics

R-squared	0.905489	Mean dependent var	-5.016370
Adjusted R-squared	0.893424	S.D. dependent var	3.834812
S.E. of regression	0.886599	Sum squared resid	147.7790
F-statistic	75.04986	Durbin-Watson stat	1.890103
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.768209	Mean dependent var	-5.004895
Sum squared resid	362.4342	Durbin-Watson stat	0.738067

Model 1: Employment, GDP and Dummy (22 countries)

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Period SUR)

Date: 04/07/09 Time: 19:33

Sample (adjusted): 1995 2007

Included observations: 13 after adjustments

Cross-sections included: 22

Total pool (unbalanced) observations: 213

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(EMPEU)-LOG(EMP?)	1.768863	0.678846	2.605690	0.0099
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	3.752326	1.237535	3.032096	0.0028
LOG(GDPPCAP?)	5.996640	0.816852	7.341159	0.0000
DUMMY 2000-2002	1.457280	0.119824	12.16179	0.0000
_ALG—C	-62.86799	8.968416	-7.009933	0.0000
_ARM—C	-58.98662	9.239677	-6.384057	0.0000
_AZER—C	-59.51943	9.132695	-6.517181	0.0000
_BANG—C	-58.96873	9.660622	-6.104031	0.0000
_CHINA—C	-65.64294	9.170234	-7.158262	0.0000
_EGYP—C	-63.84480	9.041439	-7.061353	0.0000
_GEORG—C	-57.86960	9.211113	-6.282585	0.0000
_IND—C	-64.03126	9.393013	-6.816903	0.0000
_IRAN—C	-62.77150	8.841457	-7.099678	0.0000
_KAZAK—C	-63.02453	8.884886	-7.093454	0.0000
_KYRG—C	-58.63134	9.477508	-6.186367	0.0000
_MORCO—C	-61.39438	9.155096	-6.706033	0.0000
_MYNA—C	-60.83613	9.813527	-6.199211	0.0000
_NIGER—C	-62.52863	9.495043	-6.585397	0.0000
_PAKIS—C	-59.47183	9.329526	-6.374582	0.0000
_PALES—C	-57.89739	9.549762	-6.062705	0.0000
_PHILLIP—C	-63.46367	9.236123	-6.871246	0.0000
_SAR—C	-65.87803	8.852365	-7.441856	0.0000
_SYRA—C	-60.67291	9.122061	-6.651228	0.0000
_TUNUS—C	-62.03806	8.951237	-6.930669	0.0000
_TURKMEN—C	-59.94066	9.189735	-6.522567	0.0000
_UZBEK—C	-60.33684	9.398300	-6.419974	0.0000

Weighted Statistics

R-squared	0.940540	Mean dependent var	-6.453833
Adjusted R-squared	0.932591	S.D. dependent var	4.713474
S.E. of regression	0.913279	Sum squared resid	155.9728
F-statistic	118.3198	Durbin-Watson stat	1.773518
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.898413	Mean dependent var	-5.004895
Sum squared resid	266.4800	Durbin-Watson stat	1.090700

Model 2: GDP (26 countries)

Dependent Variable: LOG(MIG?/POP?)

Method: Pooled EGLS (Period SUR)

Date: 04/07/09 Time: 19:45

Sample (adjusted): 1995 2008

Included observations: 14 after adjustments

Cross-sections included: 26

Total pool (unbalanced) observations: 316

Linear estimation after one-step weighting matrix

Period weights (PCSE) standard errors & covariance (d.f. corrected)

Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	5.547436	0.956425	5.800178	0.0000
LOG(GDPPCAP?)	6.050001	0.643350	9.403900	0.0000
_AFG—C	-62.05866	7.674162	-8.086702	0.0000
_ALG—C	-66.27231	6.983382	-9.490001	0.0000
_ARM—C	-63.50919	7.168893	-8.858995	0.0000
_AZER—C	-63.63127	7.092146	-8.972075	0.0000
_BANG—C	-64.84998	7.450379	-8.704252	0.0000
_CHINA—C	-69.76388	7.128237	-9.786975	0.0000
_EGYP—C	-67.54753	7.034197	-9.602734	0.0000
_GEORG—C	-62.57239	7.143326	-8.759559	0.0000
_IND—C	-69.18287	7.283164	-9.499013	0.0000
_IRAN—C	-65.01667	6.871519	-9.461762	0.0000
_IRAQ—C	-62.36136	7.242335	-8.610670	0.0000
_KAZAK—C	-65.81294	6.925277	-9.503293	0.0000
_KYRG—C	-64.16624	7.350517	-8.729486	0.0000
_LEBAN—C	-65.73317	6.830766	-9.623104	0.0000
_MAUR—C	-63.41184	7.325429	-8.656400	0.0000
_MORCO—C	-65.53327	7.114663	-9.211015	0.0000
_MYNA—C	-67.28621	7.603168	-8.849759	0.0000
_NIGER—C	-67.64784	7.330835	-9.227850	0.0000
_PAKIS—C	-64.23701	7.241746	-8.870377	0.0000
_PALES—C	-63.80928	7.327172	-8.708581	0.0000
_PHILLIP—C	-67.90080	7.176174	-9.461978	0.0000
_SAR—C	-68.02676	6.896321	-9.864210	0.0000
_SYRA—C	-64.13514	7.062745	-9.080767	0.0000
_TUNUS—C	-65.39932	6.965906	-9.388487	0.0000
_TURKMEN—C	-64.22122	7.151040	-8.980682	0.0000
_UZBEK—C	-65.56077	7.292377	-8.990315	0.0000

Weighted Statistics

R-squared	0.910725	Mean dependent var	-5.549166
Adjusted R-squared	0.902356	S.D. dependent var	4.841192
S.E. of regression	0.900574	Sum squared resid	233.5777
F-statistic	108.8148	Durbin-Watson stat	1.913985
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.760782	Mean dependent var	-4.800264
Sum squared resid	625.8897	Durbin-Watson stat	0.549603

Model 2: GDP and Dummy (26 countries)

Dependent Variable: LOG(MIG*/POP*)
 Method: Pooled EGLS (Period SUR)
 Date: 04/07/09 Time: 19:30
 Sample (adjusted): 1995 2008
 Included observations: 14 after adjustments
 Cross-sections included: 26
 Total pool (unbalanced) observations: 316
 Linear estimation after one-step weighting matrix
 Period weights (PCSE) standard errors & covariance (d.f. corrected)
 Cross sections without valid observations dropped

Variable	Coefficient	Std. Error	t-Statistic	Prob.
LOG(GDPPCAPEU)-LOG(GDPPCAP?)	5.913578	0.932897	6.338941	0.0000
LOG(GDPPCAP?)	6.514925	0.629756	10.34515	0.0000
DUMMY 2000-2002	1.364333	0.099039	13.77576	0.0000
_AFG—C	-66.71713	7.510467	-8.883220	0.0000
_ALG—C	-71.11563	6.834545	-10.40532	0.0000
_ARM—C	-68.33963	7.017879	-9.737932	0.0000
_AZER—C	-68.46262	6.944150	-9.859036	0.0000
_BANG—C	-69.56108	7.290288	-9.541610	0.0000
_CHINA—C	-74.66490	6.979332	-10.69800	0.0000
_EGYP—C	-72.40458	6.884866	-10.51648	0.0000
_GEORG—C	-67.38431	6.992617	-9.636493	0.0000
_IND—C	-73.97638	7.128246	-10.37792	0.0000
_IRAN—C	-69.92531	6.725633	-10.39684	0.0000
_IRAQ—C	-67.13088	7.087726	-9.471427	0.0000
_KAZAK—C	-70.78532	6.778386	-10.44280	0.0000
_KYRG—C	-68.86243	7.200813	-9.563146	0.0000
_LEBAN—C	-70.70828	6.686111	-10.57540	0.0000
_MAUR—C	-68.29952	7.171003	-9.524402	0.0000
_MORCO—C	-70.34553	6.963448	-10.10211	0.0000
_MYNA—C	-71.71801	7.446749	-9.630782	0.0000
_NIGER—C	-72.39259	7.173887	-10.09113	0.0000
_PAKIS—C	-69.01093	7.087073	-9.737579	0.0000
_PALES—C	-68.64935	7.179852	-9.561388	0.0000
_PHILLIP—C	-72.71875	7.021585	-10.35646	0.0000
_SAR—C	-72.95097	6.754023	-10.80111	0.0000
_SYRA—C	-68.98777	6.911662	-9.981358	0.0000
_TUNUS—C	-70.28092	6.818102	-10.30799	0.0000
_TURKMEN—C	-69.09749	6.999839	-9.871298	0.0000
_UZBEK—C	-70.36567	7.135883	-9.860822	0.0000

Weighted Statistics

R-squared	0.929529	Mean dependent var	-6.244296
Adjusted R-squared	0.922653	S.D. dependent var	5.509847
S.E. of regression	0.915228	Sum squared resid	240.4034
F-statistic	135.1991	Durbin-Watson stat	1.830053
Prob(F-statistic)	0.000000		

Unweighted Statistics

R-squared	0.849849	Mean dependent var	-4.800264
Sum squared resid	512.2176	Durbin-Watson stat	0.726050

APPENDIX IV: ESTIMATION RESULTS FOR REMITTANCES**1983-2008**

Dependent Variable: REMITTANCES

Method: Least Squares

Date: 04/30/09 Time: 10:33

Sample (adjusted): **1983 2008**

Included observations: 26 after adjustments

Convergence achieved after 8 iterations

White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	2013.920	906.6704	2.221226	0.0369
GERGROWTH(-1)	10994.68	9071.251	1.212036	0.2384
TURGROWTH(-1)	-2398.250	2719.922	-0.881735	0.3875
AR(1)	0.890317	0.146351	6.083454	0.0000
R-squared	0.773566	Mean dependent var		2476.346
Adjusted R-squared	0.742689	S.D. dependent var		1268.676
S.E. of regression	643.5465	Akaike info criterion		15.91250
Sum squared resid	9111346.	Schwarz criterion		16.10606
Log likelihood	-202.8626	Hannan-Quinn criter.		15.96824
F-statistic	25.05290	Durbin-Watson stat		1.384370
Prob(F-statistic)	0.000000			
Inverted AR Roots	.89			

1983-2008 with Dummy 2001-2008

Dependent Variable: REMITTANCES RECEIVED

Method: Least Squares

Date: 04/29/09 Time: 23:27

Sample (adjusted): 1983 2008

Included observations: 26 after adjustments

Convergence achieved after 18 iterations

White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	2997.306	1127.899	2.657425	0.0147
GERMANGROWTH(-1)	16357.16	7179.603	2.278282	0.0333
TURKISHGROWTH(-1)	-797.1255	2216.141	-0.359691	0.7227
DUMMY(2001-2008)	-1942.724	539.5678	-3.600519	0.0017
AR(1)	0.874797	0.155647	5.620401	0.0000
R-squared	0.857374	Mean dependent var		2476.346
Adjusted R-squared	0.830208	S.D. dependent var		1268.676
S.E. of regression	522.7690	Akaike info criterion		15.52720
Sum squared resid	5739035.	Schwarz criterion		15.76914
Log likelihood	-196.8536	Hannan-Quinn criter.		15.59687
F-statistic	31.55967	Durbin-Watson stat		1.669282
Prob(F-statistic)	0.000000			
Inverted AR Roots	.87			

2000-2008

Dependent Variable: REMITTANCES

Method: Least Squares

Date: 04/30/09 Time: 10:34

Sample: 2000 – 2008

Included observations: 9

Convergence achieved after 9 iterations

White Heteroskedasticity-Consistent Standard Errors & Covariance

	Coefficient	Std. Error	t-Statistic	Prob.
C	939.2376	695.4343	1.350577	0.2347
GERGROWTH(-1)	17813.77	10219.00	1.743201	0.1418
TURGROWTH(-1)	-7677.343	3883.382	-1.976973	0.1050
AR(1)	0.662867	0.208379	3.181056	0.0245
R-squared	0.887628	Mean dependent var		1701.111
Adjusted R-squared	0.820205	S.D. dependent var		1255.514
S.E. of regression	532.3659	Akaike info criterion		15.69364
Sum squared resid	1417068.	Schwarz criterion		15.78130
Log likelihood	-66.62139	Hannan-Quinn criter.		15.50448
F-statistic	13.16504	Durbin-Watson stat		1.618385
Prob(F-statistic)	0.008269			
Inverted AR Roots	.66			