Can trade, aid, foreign direct investments and remittances curb migration from Turkey?

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Abstract

In this study we examine the macro-determinants of Turkish migration to Germany over the period 1969–2004 by means of cointegration analysis. We find that trade and factor flows indeed influence migration and play a role in managing Turkish migration in the short as well as in the long run. However, the income differential between Turkey and Germany is the most important factor in determining migration flows and the effects of trade and factor flows on migration in the short as well as in the long run are mixed. Therefore, we argue that migration could be better managed when the dynamic gains from trade and factor flows are considered.

Keywords: Trade, Aid, Remittances, Migration, FDI.

Introduction

Today, over 5% (3.5 million) of the Turkish population lives in Europe, that is, more than four-fifths of Turkish emigrants abroad. The largest Turkish population is in Germany, with a total of 2 million emigrants. Of all the nationals living abroad, one-third emigrated for employment reasons. Turks have the largest share in Germany, with 27% of the total number of foreigners. This is equal to 5% of the Turkish labour force.

Although the level of emigration from Turkey is not as intensive as in earlier decades, migration pressure still remains. Martin (1991) argues that the intensity of emigration pressures from Turkey can be understood by comparing the percentage of young Turkish men who migrated during the peak emigration years with the percentage of young men who would emigrate today if they could. Between 1969 and 1973, nearly 700,000 workers went abroad. There were nearly 4 million men in the 20–35 age group at that time, so about 17% of Turkey's young men emigrated during the peak 5 years of emigration. Today, there are 18.5 million people in the 20-35 age group and 9.5 million of them are men. Thus, 20 to 50% of these young men would emigrate if they could. Given the recent trends in female migration and high unemployment rates for unskilled as well as skilled labour, emigration pressure appears to remain high. Indeed, the emigration potential from Turkey was seen to be the most important concern with the recognition of Turkey as a candidate for accession at the Helsinki European Council in December 1999 and at the start of the accession negotiations between the European Union and Turkey in October 2005.

This study is motivated by this concern and investigates whether we can benefit from trade and factor flows in order to manage migration from Turkey. Therefore, the purpose of this study is to analyse the macro-determinants of Turkish migration and to assess their implications for managing Turkish migration. Several studies exist that estimate the macro-determinants of migration from Turkey in order to assess the migration potential. However, each study delivers different results based

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on the same set of explanatory variables in a gravity model[1] (see Flam 2003; Lejour et al. 2004; Togan 2004; Quasier and Reppegather 2004; Erzan et al. 2006).[2] Turkish migration to Europe (and Germany) has been restricted during the period under investigation, and therefore it is not surprising to reach different results in each study. In this study, therefore, we follow a different approach and try to analyse whether we can manage migration from Turkey with trade and factor flows. The main contributions of this paper are as follows. Firstly, the analysis is based on an empirical model for Turkish migration to Germany for the period 1969–2004, given that the majority of Turkish migration in Europe has been towards Germany. Second, in addition to the traditional determinants of migration, such as income and employment differences, we also incorporate the effects of trade and factor flows, such as aid, remittances and foreign direct investments, into our model. Third, we analyse short- as well as long-run determinants by means of cointegration analysis.

In the traditional trade models, both trade and international factor mobility are driven by differences in factor proportions between countries. Countries with a high ratio of capital to labour will export capital-intensive goods, import labour-intensive goods, invest abroad and be attractive for migration. Trade in goods in these models will reduce the incentive for factor movements and will lead to the exact equalization of factor prices across countries. Trade and factor flows are substituted. Thus, international trade narrows the wage gap and reduces the incentives to migrate. The same applies to capital flows. If indeed we find that trade and factor flows substitute for migration then we can propose an optimal combination of trade, aid, remittance and migration policy that will avoid massive labour inflows from Turkey with the accession. This policy will be very attractive for the receiving countries, because the movement of goods and services between countries through trade is more welcome than the movements of people, since migrants put additional fiscal burdens on others and these external costs create social tension. Thus, by exporting labour-intensive goods Turkey in effect exports labour embodied in its exports and hence there will be no need for migration in this approach.

In addition, if aid, remittances and foreign direct investments are used for productive investments, they can create employment and contribute to economic growth. However, economic growth and an increase in income are likely to increase migration pressure in the short run by making migration accessible to unskilled migrants with low incomes and low access to credit markets. Therefore, the short-run effects of trade and factor flows might differ from the long-run effects that cause a policy dilemma. Indeed, we find that trade is effective in reducing Turkish migration in the long run, but in the short run it increases it. In contrast, aid reduces Turkish migration only in the short run, and has no long-run effect. Remittances increase Turkish migration in the short as well as in the long run. However, foreign direct investments have no short- or long-run effects.

Section 2 describes the hypotheses that relate trade, aid, remittances and foreign direct investments to migration. Section 3 introduces the empirical model. In Section 4 the econometric methodology is described and the empirical results are presented. Section 5 concludes and makes policy recommendations.

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[1] The main exogenous variables in gravity models are the stock of existing migrants in the host country, income discrepancies and unemployment rate differentials.
[2] For a literature review on estimating potential Turkish migration to the EU see Pacaci-Elitok (2010).

Hypotheses

Trade

Following the traditional trade models (such as the Heckscher–Ohlin international trade model), we assume factor price equalization so that the wages of skilled workers and unskilled workers and the return to capital will be the same everywhere. In these models, free trade is a substitute for people having to move and leads to the equalization of factor prices. Furthermore, if labour moves from a labour-abundant country where the productivity and wages are low to one where labour is scare and wages are high, then the output will increase and the economy will grow. Therefore, our first hypothesis is:

Hypothesis 1: Increase in trade reduces the incentive to migrate.

However, economic growth in the labour-abundant country will depend on how fast it acquires the knowledge, ideas and technology that the advanced countries have. Thus, wages will only rise if productivity increases, and this will depend on the investment in technology and education. Trade is not only the exchange of goods, but also promotes competition and investment in education and infrastructure, therefore creating an opportunity to exploit economies of scale and transfer knowledge, technology and ideas. Overall, these dynamic rather than static effects of trade might dominate and deliver different results for the effects of trade on migration. Therefore, we also take into account the dynamic effects of trade:

Hypothesis 2: The dynamic effects of trade can deter migration.

Furthermore, in the short run, export growth can certainly generate income for the poor, as many unskilled would-be migrants, such as in the Turkish case, are unable to finance their migration cost out of their low-wage income. Hence, economic growth with trade and an increase in income are likely to increase migration pressure in the short run by making migration accessible to unskilled workers with low incomes and low access to credit markets. The increase of migration with trade liberalization in the short run has been called a *migration hump* (see Martin 1993 and Martin and Taylor 1996). Similarly, an increase in imports with trade liberalization may drive local firms from the market, thus eliminating the jobs directly or indirectly linked to them, and increase migration pressure. Therefore, we form the third hypothesis as:

Hypothesis 3: Increase in trade can increase migration in the short run.

Thus, an increase in income due to exports might enable some unskilled workers with low income to afford the cost of migration. In addition, the displacement and disruptions that accompany development can also temporarily increase the incentive for migration in the short run. Schiff (1994) proposes a theoretical model that generates complementarity between trade and migration due to migration costs and capital market imperfections. Morrison and Zabin (1994) show that indeed the trade reforms in Mexico had a positive impact on migration to the US. Likewise, Faini and Venturini (1994) find that the EU's trade-related association agreements with North Africa and the Middle East led to more rather than less migration in the short to medium term. Lopez and Schiff (1998) deconstruct migration patterns by skill composition and show a temporary increase in immigration in the short run.

Aid

If development aid is used for economic development and human capital formation, then aid can help to keep the population at home. For example, the investment of development aid in human capital results in higher productivity, which is translated into the increasing returns to scale effect and labour productivity increases continuously.

Therefore, the fourth hypothesis is:[3]

Hypothesis 4: Aid by providing financial means to increase economic development can reduce the incentive to migrate.

In addition, aid[4] or official development assistance (ODA) is not only the transfer of funds that combine loans and grants but also the provision of technical assistance or capacity building. Therefore, aid will be more beneficial if it introduces ideas and knowledge and improves practices that increase the overall size of the resources available for growth and poverty reduction. When aid is accompanied by ideas, policies and capacity building, then it can contribute to the long-run economic growth and eliminate the wage differences between Turkey and the West; therefore, it can reduce migration. However, the share of the "short impact" of aid to Turkey such as budget and balance of payments support and infrastructure investments is higher than the share of aid for productive sectors such as agriculture and industry; see Uygur (1992) and OECD (2007). In the 1960s and 1970s, aid had been used to finance investments in the manufacturing sector, but in the 1980s and 1990s, aid was used to a greater extent to finance the interest bills, principal repayments and trade deficits as well as investment in energy and infrastructure. Thus, the relative neglect of productive industrial investments can make aid detrimental to long-run economic growth and employment creation. Therefore, the short-run effects of aid on Turkish migration might differ from the long-run effects due its structure, type and magnitude. Indeed, Russell and Teitelbaum (1992) also argue that the long-run effect of aid on migration differs from the short-run effect. In addition, Schiff (1994) shows that foreign aid raises labour income and improves workers' ability to cover the costs of migration and therefore increases migration as in the trade liberation case. Therefore, we consider an additional hypothesis for aid and leave the conclusion to be determined by the empirical model:

Hypothesis 5: The short-run effect of aid might differ from the long-run effect.

Foreign Direct Investments

As argued by Faini et al. (1999) and Hazari and Sgro (2001), international capital flows and migration are substitutes, if foreign direct investments (FDI) enhance the productivity of host countries and promote economic development through positive externalities. However, a country's capacity to take advantage of FDI depends on the development of its financial markets or its educational level (absorptive capacities). We can form the following hypothesis given that Turkey has a high absorptive capacity:

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[3] Hatzipanayoutou and Michael (2006) argue a link between international migration and foreign aid. Goldin and Reinert (2006) claims that aid, by encouraging economic development, reduces the incentive to migrate (see also Faini and Venturini 1993). Angelucci (2004) empirically shows that the aid policy called Progresa in Mexico increased international migration.

[4] Aid in this paper refers to official development assistance (ODA).

Hypothesis 6: Foreign direct investments, by increasing productivity and thereby wages, discourage migration.

However, the foreign direct investments in Turkey are constrained by lumpy sunk costs and high tax obligations.[5] Capital inflows, which are attracted by the potentially high returns, can increase productivity, generate trade and therefore increase the domestic demand for labour (see Lucas 1990). Thus, capital flows and trade are complements in this capital-inducing-exports development view.[6] However, if this relationship works in reverse, i.e., a fall in FDI, leading to a reduction in trade, it also increases emigration. Low capital inflows to Turkey during the period under investigation but high trade flows to Germany might be reinforcing each other. In addition, the complementarity of capital inflows with trade will generate additional trade that will increase the domestic demand for labour. However, economic development has an inverted U-curve effect on migration, steeply increasing in the initial phases of development and later gradually decreasing; see Massey (1991). Therefore, we consider the following possibility as the seventh hypothesis:

Hypothesis 7: The increase in foreign direct investments can have a positive impact on migration in the short run, but a negative effect only in the long run.

Remittances

If remittances are used for productive investment in the home country, they can create employment and contribute to economic growth; see Kapur (2003) and Ratha (2003). Therefore, remittances reduce the incentive to migrate.[7] Our eighth hypothesis therefore is:

Hypothesis 8: Remittances, by providing capital in home countries, promote investment and help create jobs and therefore reduce the incentive to emigrate.

However, Barajas et al. (2009) find a robust and significant positive impact of remittances only on long-term growth, and often find a negative relationship between remittances and growth.[8] The impact of remittances on economic growth in the home country depends on the political, institutional, economic, social and legal conditions. Under unfavourable conditions, remittances will not lead to investments and development, but instead encourage further migration. Indeed, Karagöz (2009) finds that the per capita GDP and workers' remittances ratio to GDP are negatively correlated over the period from 1970 until 2005 in Turkey. This result is consistent with Chami et al.'s (2003) moral hazard argument that remittances decrease the work and productivity of the remittance-receiving families, which in turn reduces the labour supply of the whole country.

In summary, the above hypotheses based on theoretical and empirical studies do not provide a definite answer to whether trade (and factor flows) and migration are

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[5] Erdal and Tatoglu (2002) show that the highly volatile currency discouraged FDIs to Turkey for the period 1980–1998.

[6] Akgüc-Alici and Sengun-Ucal (2003) did not find any significant positive spill overs from FDIs to export in Turkey for the 1987(I)–2002(IV) period. Thus, there is no correlation between FDIs and exports.

[7] It is shown that remittances alleviate poverty (see Adams and Page 2005) and promote human and physical capital accumulation, economic growth and economic development (see Ziesemer 2006 and Adenutsi 2010). See also, for extensive empirical literature on the impact of remittance, Gosh (2006).

[8] Similarly, Osang (2006) shows that remittances contribute little to the observed variation in per capita income. Only once the sample is restricted to the top half of all countries do remittances have a positive impact on economic development.

complements or substitutes. Furthermore, the short-run effects of trade and factor flows on migration might differ from the long-run effects. Therefore, a rigorous empirical analysis is required to identify the sign and magnitude as well as the short- and long-run effects of trade and factor flows on migration that we aim for in this study.

An empirical model

Turkish migration to Germany is modelled in a standard empirical form; see Hatton (1995).

$$\ln M_t = \alpha_0 + \alpha_1 \ln(Y_{ft}/Y_{ht}) + \alpha_2 U_{ft} + \alpha_3 U_{ht} + \alpha_4 \ln\left(\frac{A_t}{GNI_t}\right) + \alpha_5 \ln T_t$$
$$+ \alpha_6 \ln\left(\frac{MXG_t}{TXG_t}\right) + \alpha_7 \ln\left(\frac{R_t}{Y_{ht}}\right) + \alpha_8 \ln\left(\frac{FDI_t}{Y_{ht}}\right) + \varepsilon_t \tag{1}$$

In (1), $\ln M_t$ denotes the log of the gross inflow of Turkish migrants to Germany, expressed as a share of the home population.[9]

The $\ln(Y_{ft}/Y_{ht})$ is the log of the income in the host country divided by the income in the home country, measured as per capita GDP in purchasing power parity terms. This variable captures the pecuniary incentive to migrate that arises from the income differential.

U_{ft} is the unemployment rate in Germany. The German migration policies have become more restrictive during the periods of high unemployment in Germany (Mayda and Patel 2004).

The U_{ht} term is the unemployment rate in Turkey. It represents a simple push factor. The unemployment rate enters the empirical model individually rather than as a difference term, in line with (for example) Borjas (1987, 1999), Hatton (1995), Pedersen et al. (2006), Péridy (2006), Clark et al. (2007) and Mayda (2009).

$\ln\left(\dfrac{A_t}{GNI_t}\right)$ is the overseas development aid to GNI ratio.

$\ln T_t$ is a proxy for the intensity of economic cooperation between Turkey and Germany, calculated as the log of the share of the trade volume (sum of exports and imports) between the two countries in the total trade volume of Turkey with all its trading partners. The volume of trade between the two economies represents a variety of measures such as the financial and informational constraints associated with migration, the level of business linkages between economies and uncertainty.[10]

$\ln\left(\dfrac{MXG_t}{TXG_t}\right)$ is the share of Turkish manufacturing exports to Germany in the to-

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[9] The log-log model is also preferred by Lundborg (1991), Faini and Venturini (1995) and Pederson et al. (2008). The dependent variable and the explanatory variables are transformed to logarithms. The parameters of the log-log model have an interpretation as elasticities, which are much easier to interpret.
[10] See Akkoyunlu (2009) for more information.

Figure 1a. Trends of Model Variables: 1969-2004
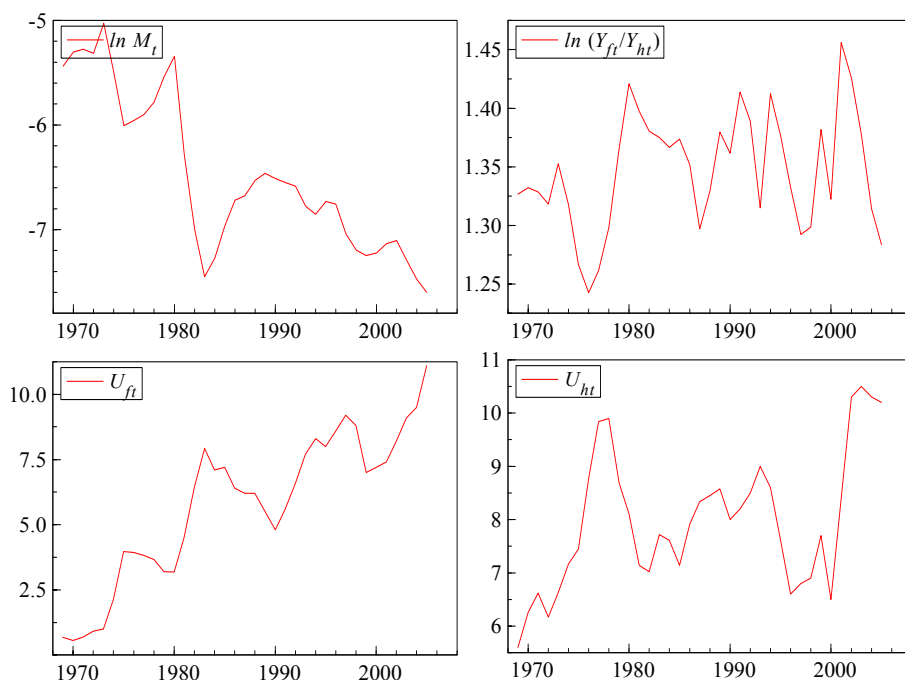
tal Turkish exports to Germany. This variable captures the effects of the expansion of manufacturing exports where Turkey has a comparative advantage in the decision to migrate. In other words, with this variable we test whether trade and migration are substitutes or complements.

$\ln\left(\dfrac{R_t}{Y_{ht}}\right)$ is the log of the ratio between workers' remittances from Germany and the Turkish GDP.

Finally, $\ln\left(\dfrac{FDI_t}{Y_{ht}}\right)$ represents the log of the ratio between the total foreign direct investments in Turkey and the Turkish GDP. As it is shown in Figure 1b, this share has been very small and unstable.

The data on workers' remittances were obtained from the balance sheets of the Bundesbank, while the data on the per capita GDP of Germany and of Turkey were obtained from the OECD. The data on Turkish unemployment, population and trade were gathered from the Turkish Institute of Statistics. The data on Turkish migrants and on German unemployment were obtained from the Federal Statistical Office in Germany. The data on aid and total foreign direct investments were obtained from the World Development Indicators, World Bank.

The annual data cover the period from 1969 to 2004 (see Figure 1a and Figure 1b for the trends of the model variables).

Figure 1b. Trends of Model Variables: 1969-2004
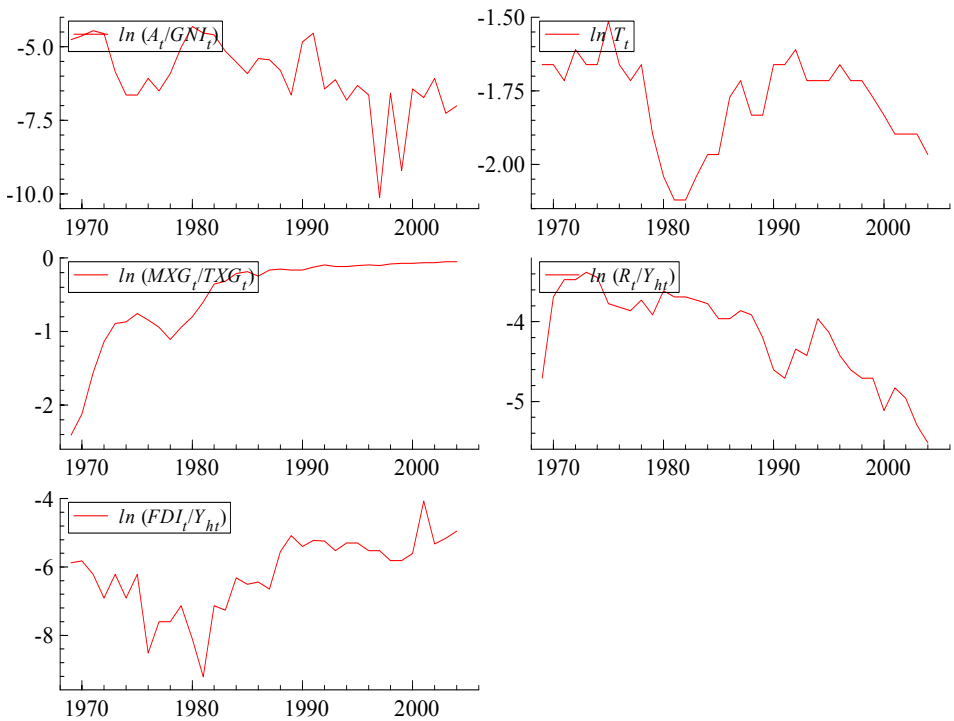
Econometrics results

The modelling is based on the general-to-specific modelling approach,[11] which aims to build empirical models that are economically sensible and statistically satisfactory (see Hendry 1995; Campos and Ericsson 1999; and Hoover and Perez 1999).[12] The main advantage of the general-to-specific approach is that the simplified model is either the correct specification or close to it and the test statistics such as t-ratios in the simplified model are well-behaved.

The general-to-specific approach is based on reduction: starting with a general congruent[13] statistical model and reducing it to a parsimonious econometric model that is theory consistent and encompasses both the general model and other competing models.

Initially, a general model with two lags for the gross inflows of Turkish migrants to Germany, expressed as the share of the home population, $\ln M_t$ and a set of explanatory variables from the hypothesis above, is estimated. As a next step the

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[11] General-to-specific modelling suffers from allegations that it mines the data pejoratively. Campos and Ericsson (1999) discuss these allegations and Akkoyunlu (2009) shows how these allegations are easily refuted in the context of an empirical migration model.
[12] Akkoyunlu (2009) adopts the same approach and explains the approach in more detail. The current study in addition includes foreign direct investments in order to test the hypothesis described above.
[13] A congruent model satisfies several criteria such as white-noise and innovation errors, homoskedasticity, constant parameters and weakly exogenous conditioning variables, etc.

cointegrating relationship between variables is found. The solved long-run equation, as well as the error correction mechanism (ECM), is given below.

$$\ln M_t = -8.387 + 5.444 \ln\left(\frac{Y_{ft}}{Y_{ht}}\right) + 0.013\, U_{ft} + 0.236\, U_{ht}$$

(SE) (3.607) (2.869)   (0.065)   (0.054)
[t]   [-2.33] [1.90]   [0.20]   [4.35]

$$-0.028 \ln\left(\frac{A_t}{GNI_t}\right) + 2.693\, \ln T_t - 0.854 \ln\left(\frac{MXG_t}{TXG_t}\right) \qquad (2)$$

(SE) (0.069)   (0.799)   (0.321)
[t]   [-0.405]   [3.37]   [-2.66]

$$+ 0.799 \ln\left(\frac{R_t}{Y_{ht}}\right) - 0.009 \ln\left(\frac{FDI_t}{Y_{ht}}\right)$$

(SE) (0.198)   (0.134)
[t]   [4.03]   [-0.07]

$$ECM = \ln M_t + 8.387 - 5.444*\ln\left(\frac{Y_{ft}}{Y_{ht}}\right) - 0.013*U_{ft} - 0.236*U_{ht}$$

$$+ 0.028*\ln\left(\frac{A_t}{GNI_t}\right) - 2.693*\ln T_t + 0.854*\ln\left(\frac{MXG_t}{TXG_t}\right) \qquad (3)$$

$$- 0.799*\ln\left(\frac{R_t}{Y_{ht}}\right) + 0.009*\ln\left(\frac{FDI_t}{Y_{ht}}\right)$$

WALD test $\chi^2(8) = 806.66\ [0.00]\ **$

In the long run, relative income, the unemployment rate in Turkey, trade intensity and workers' remittances contribute positively and significantly to migration from Turkey, while manufacturing exports, aid and unemployment in Germany contribute negatively to migration from Turkey to Germany. Aid is not significant in the long run; this might be due to its structure, type and magnitude. Likewise, the small magnitude and unstable pattern of foreign direct investments can explain their insignificant effect on migration flows.

In the long run, the income differential and trade intensity are the most significant variables in explaining migration flows from Turkey to Germany. Thus, a 10% increase in the income differential increases the gross migration inflows by 54.44 percentage points, a very significant effect. Likewise, a 10% increase in trade intensity increases the gross migration inflows by 26.93 percentage points.[14]

The appendix reports the correlation between trade and factor flows (aid, remittances and foreign direct investments). The correlation is only high between the

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[14] This is a large effect, especially when compared to the finding reported in other studies (see Mitchell and Pain 2003; Pedersen et al. 2006 and Péridy 2006). This result can be explained by the fact that Germany is Turkey's biggest trading partner.

ratio of workers' remittances from Germany and Turkish GDP, $\left(\dfrac{R_t}{Y_{ht}}\right)$, and is the share of Turkish manufacturing exports to Germany in the total Turkish exports to Germany, $\left(\dfrac{MXG_t}{TXG_t}\right)$. There could be several reasons to explain this high and negative correlation between these two variables. We need a separate investigation to identify the causality between these variables, which requires further modelling and testing that are outside the scope of this study. However, the coefficient on remittances is robust in our model even if we include other variables such as the share of Turkish manufacturing exports to Germany in the total Turkish exports to Germany, as in this study, or exclude these additional variables, as in Akkoyunlu and Siliverstovs (2007) and Akkoyunlu et al. (2007).

There are a few steps in the reduction of the final (conditional) model from the general specification and these reductions[15] are performed automatically with Pc-Gets[16] (the corresponding standard errors and t-ratios are reported in parentheses below the coefficient estimates).

$$\Delta \ln M_t = 0.048 + 0.207\, \Delta \ln M_{t-1} + 1.607\, \Delta \ln\left(\dfrac{Y_{ft}}{Y_{ht}}\right) - 0.098\, \Delta U_{ft}$$

(SE)	(0.020)	(0.093)	(0.534)	(0.028)
[t]	[2.35]	[2.23]	[3.01]	[-3.52]

$$- 0.102\, \Delta U_{ft-1} - 0.050\, \Delta \ln\left(\dfrac{A_t}{GNI_t}\right)_{-1} + 0.499\, \Delta \ln\left(\dfrac{MXG_t}{TXG_t}\right)_{-1}$$

(SE)	(0.034)	(0.017)	(0.136)	
[t]	[-3.01]	[-2.87]	[3.67]	(4)

$$+ 0.111\, \Delta\Delta U_{ht} + 0.359\, \Delta\Delta\ln\left(\dfrac{R_t}{Y_{ht}}\right) + 0.033\, \Delta\ln\left(\dfrac{FDI_t}{Y_{ht}}\right)$$

(SE)	(0.026)	(0.073)	(0.025)
[t]	[4.25]	[4.93]	[1.33]

$$- 0.659\, ecm_{t-1}$$

(SE)	(0.066)
[t]	[-9.91]

$R^2 = 0.915$ F(10,23) = 24.61 [0.00] $\hat{\sigma}$ = 0.098 DW = 1.49

RSS = 0.22325 for 11 variables and 34 observations

F_{ar} (2,21) = 1.813 [0.19] F_{arch} (1,21) = 1.089 [0.31]

153

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[15] The reductions are also called a reduction sequence, which involves many linear transformations (differencing, creating differentials etc.) as well as eliminations of insignificant variables. In this process, the statistics reported comprise: the residual sum of squares, the equation standard error, the Schwarz criterion for each model in the sequence, F-tests of each elimination conditional on the previous stage, etc.

[16] The corresponding standard errors are reported in parentheses below the coefficient estimates. The error-correction term is highly significant and has the expected sign.

$$\chi^2_{nd} \ (2)= 3.19 \ [0.21] \ F_{hetero} \ (20,2) = 0.08 \ [0.99]$$

$$F_{reset} \ (1,22) = 2.03 \ [0.54] \ T = 34 \ (1971\text{-}2004)$$

The income differential is also the most important determinant of migration flows in the short run: a 10% increase in the change in the income differential will increase the change in migration inflows by almost 16%.[17] The importance of the income differential suggests that until the income gap is reduced, the pressure to migrate will remain. The availability of jobs in Turkey as well as in Germany matters in the short run. The share of manufacturing exports to Germany in the total exports to Germany increases migration flows in the short run, which can be interpreted with the migration hump. Thus, an increase in income due to exports might enable some unskilled workers with low income to afford the cost of migration. In addition, the displacement and disruptions that accompany development can also increase migration temporarily.

The aid policy is only effective in reducing migration flows in the short run, but this effect is small. Hence, financial assistance is not a durable long-run solution to reduce migration pressure. However, if aid is conditional on good policies and has a higher share of technical assistance and training that would transfer expertise and know-how, increase investment in productive sectors and hence help human capital development and accelerate job creation and economic growth so that the income difference between Turkey and Germany is reduced, only then can aid policies have a long-lasting effect.

Foreign direct investments are not significant in the long run as well as in the short run. This can be explained by their small magnitude and high volatility. More importantly, while their long-run impact is negative, their short-run impact is positive. Thus, foreign direct investments' effect is similar to that of trade, first increasing migration and later decreasing it.

Remittances have a strong positive effect on migration in the short run as well as in the long run. The results support the hypothesis that remittances fuel migration. Hence, remittances to an economy are the harbinger of migration from the economy. Expected and permanent income effects, liquidity constraints, demonstration,[18] signalling, portfolio revision and other considerations raise the possibility that an economy that receives more remittances will generate more migration. Furthermore, remittances increase the income differentials between families with members who have migrated and other families and hence lead to an increase in migration incentives. In addition, in the recent period, there has been a shift from first-generation migrant workers reuniting with their families to the formation of new families by the second generation. There is a tendency for first-generation migrants, particularly those originating from rural areas, to marry off their children to relatives or acquaintances in Turkey. Many young men in Turkey are willing to pay high bride prices for migrants' daughters because marrying into a Turkish family in Germany offers prospects of a residence permit and access to the German labour market. Thus, in the future we can expect an increase in remittance to increase

154

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[17] Mitchell and Pain (2003) also find a strong short-run effect of relative income.
[18] Arnold (1992) also argues that spending remittances mainly on consumer expenditures changes the expenditure patterns of the migrant households and creates a "demonstration effect" on non-remittance-receiving households.

migration. However, these results are based on the fact that remittances are used to finance consumer expenditures in Turkey.[19] Therefore, once the use of remittances is diverted to the use of productive investments, then remittances can hinder migration. In this process, the government policies can support return migrants in establishing their own businesses by providing the necessary information on productive investment opportunities.

Conclusions

This study investigates whether trade and factor flows can play a role in managing migration from Turkey. The study shows indeed that trade, aid, foreign direct investments and remittances have effects on Turkish migration. However, the best way to manage economic migration is to generate rapid economic growth with productive employment opportunities and therefore to raise incomes in the country of origin, given that the income differential is the most significant variable in explaining migration flows from Turkey to Germany in the short as well as in the long run. Thus, until the income gap is reduced, the pressure to migrate will remain.

A trade policy that would bring jobs to Turkey has a role to play in the long run, but in the short run will increase migration. In addition, aid is significant only in the short run for reducing migration inflows. This might be associated with its small magnitude and its high volatility. The levels of development assistance are indeed small and declining compared with other financial flows such as remittances. Development aid takes the form of financial assistance and technical cooperation. The first concerns the provision of finance in the form of grants and credits; the latter is the availability of professional exports to developing countries. The majority of foreign assistance to Turkey takes the form of grants and credits. Most of these loans are used for investments in the physical infrastructure, such as energy, communications and transport and community services, rather than in productive sectors such as education, agriculture and industry. However, aid that contributes to poverty alleviation through employment creation, human capital formation and income generation can only dampen the pressures to migrate. Therefore, we need to change the structure of aid in order to have a significant effect on migration. Likewise, the use of remittances needs to be directed to productive investments. According to Abadan-Unat (1976) and Barisik et al. (1990), more than 50% of the remittances were used for consumption and housing investment. The rest was invested in land in urban and rural areas. Only a small fraction was invested in the industry and service sectors. The current foreign direct investments in Turkey are too small to have any impact. However, given that Turkey has a high absorptive investment capacity, the right government policies, by increasing foreign direct investments and therefore trade, can reduce the migration incentives, especially in the long run. Furthermore, the structure of aid and the use of remittances can also become more efficient with the right government and international policies. Indeed, aid and remittances can provide liquidity, release credit constraints and stimulate investments, depending on a favourable social, political and economic environment.

This study suggests that trade and factor flows can indeed be effective in managing migration from Turkey. However, the policy makers need to take into account

155

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[19] It is widely criticized that remittances fuel consumption rather than investment in other countries; see Durand et al. (1996) and Taylor et al. (2005).

the mixed effects of trade and factor flows on migration in the short as well as in the long run.

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158