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MANCHESTER 1824

Determinants of Integration and Its Impact on the Economic Success of Immigrants: A Case Study of the Turkish Community in Berlin

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January 2009

BWPI Working Paper 70

Brooks World Poverty Institute
ISBN : 978-1-906518-69-1

Creating and sharing knowledge to help end poverty

Abstract

Using new data on 590 Turkish households in Berlin, we investigate the determinants and impact of integration on economic performance. We find that the usual suspects, such as time spent in Germany and education, have positive impact, while networks have no impact on integration. There is strong evidence that political integration and the degree of full integration promote income. Using endogenous switching regression models, we show that local familial networks increase the income of unintegrated migrant groups only, while transnational networks decrease it. We also find that education is more welfare-improving for integrated than non-integrated immigrants.

Keywords: Integration, Economic success, Ethnic networks, Turkish migrants, Berlin

Acknowledgements

This paper is part of a wider research led by Hulya Ulku and funded by the Nuffield Foundation, concerning the remittances, savings, social and economic networks and integration of Turkish households in Berlin. We would like to thank the Nuffield Foundation for their financial support. We also would like to thank Oded Stark, Ira N. Gang, Uma Kothari, Thankom Arun, Tanja Müller, Ingrid Tucci and Natalia Weisshaar, as well as the participants of the DIW Research Seminar, IZA Summer School and World Economic Congress for their helpful comments, and the research assistants Zeycan Yesilkaya, Fatma Goksu, Cagri Kahveci, Beyhan Yildirim, Deniz Erkan, Rut-Maria Gollan and Alper Yenilmez for their vigorous and excellent work on interviews and data entry.

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1. Introduction

When the German chancellor Angela Merkel set up a national 'Integration Summit' in July 2006, expectations for better integration were fuelled among ethnic minorities, religious groups and political actors. This event was supposed to introduce intensive communication among all actors involved in the integration process. Until the adoption of a new immigration law in 2005, the official policy refused to perceive Germany as a country of immigration and had thus for a long time neglected the need for integration.[1] Behind the recent efforts to bring integration on the political agenda were the fears of radicalism and terror flashpoints in Germany (SPIEGEL online, 2007). Additional political pressure was generated when the educational rankings of the OECD revealed that children of immigrants suffer from structural disadvantages in Germany (OECD, 2007a: 174ff.). Most of the public debate focused on the political desirability of integration; the understanding that ethnic and cultural heterogeneity may be socially costly if realised in parallel societies developed only recently.[2] For instance, von Loeffelholz (2001) has estimated the foregone macroeconomic benefits from non-integration of ethnic minorities at one to two percent of GDP in Germany, mostly due to high unemployment among low-skilled migrants. On the micro level, immigrants in some cases faced the paradoxical situation of having restricted access to the labour market while being entitled to social assistance with a potentially counterproductive incentive structure (OECD, 2007b).

Until recently the economic literature on migration and integration has been dominated by neoclassical thinking, focusing on the cost-benefit calculations of migrants. In recent years, however, the topic has attracted new attention in the field of cultural economics. Ethnicity and culture, it is argued there, may impact people's preferences and behaviour and thus lead to deviations from what is expected in neo-classical thinking. Owing to both strands of literature, our paper deals with differences in the strategies of economic agents and asks whether ethnicity may mobilise alternative resources for economic action of immigrants.[3] Generally speaking, we argue that an immigrant chooses between integration into the host country—with better access to the labour market—and joining or

[1] It has to be noted that in 2004 about 500 million Euro of the Federal budget were ascribed for measures fostering integration (OECD, 2007: 210). However, no comprehensive integration policy was formulated.

[2] In Germany, the sociologist Wilhelm Heitmeyer introduced the notion of the ''parallel societies'' in the 1990s.

[3] By immigrant we mean either a migrant or a descendent of a migrant. The nature of immigration to Germany differs markedly with that of ''classic'' immigration countries such as the USA or Canada. Labour-induced immigration peaked in the 1960 under the *Gastarbeiter* regime. Initially, immigrants predominantly from Turkey, Yugoslavia, Greece and Italy, were supposed to return after several years. The recruitment of guest workers from Turkey was initiated in 1961, through a bilateral agreement. When Germany's economic post-war success came to a halt, the recruitment of guest workers was stopped in 1973. In the following years, immigration continued, however, in the framework of family reunification (Zimmermann, 1996).

remaining in an ethnic network—with better access to ethnic goods, ethnic labour market niches and informal insurance mechanisms. In this paper we reformulate the issue of integration in economic terms and conduct an in-depth economic analysis of the interrelationships between integration and economic success, with a special focus on the role of transnational and local ethnic networks—an issue almost entirely ignored in the economic and political debate in Germany.

We employ newly developed data, collected from 590 Turkish households residing in Berlin, to analyse the determinants of the integration of Turkish immigrants into the German polity, society and economy, and the impact of this integration on their economic welfare. Different from the existing literature, we take into account the role of local and transnational networks on both the integration and economic success of Turkish immigrants. In addition, we account for three different forms of integration to assess their relative importance in economic success. Specifically, we aim at providing an empirical and conceptual analysis of the following questions: 1. What determines integration? 2. Does integration help economic success of immigrants? 3. Do ethnic and transnational networks affect integration and income? 4. Do the impacts of ethnic or transnational networks for gaining economic success differ by integration status? 5. Do the integration and network channels of income generation differ over the distribution of migrants' unobserved abilities?

Our study fits well in the rapidly growing literature on the economic success of immigrants and the impact of their choices to integrate into the host country on their economic performance. It contributes to the existing literature in four ways. The first novelty of the paper is the use of an up-to-date comprehensive data set on the Turkish population in Berlin collected in mid 2007, which allows us to distinguish among many different characteristics of the Turkish community in Berlin, such as their sub-ethnic characteristics, familial, local and transnational networks, and social links to their home country. The second contribution of this study to the literature is that we combine the 'ethnic identity' literature with the 'network formation and maintaining' literature in the analysis of the determinants of economic success. In particular, by using an endogenous switching regression model, we provide an analysis of the joint impact of integration and the familial, local and transnational networks on the economic success of migrants, and investigate their effect over the distribution of immigrants' unobserved characteristics. Third, different from the existing literature on migrants in Germany that mainly use national level data, our data allows us explicitly to take into account the interactions of the above-mentioned variables prevailing at the local level. Finally, our analysis focuses exclusively on Turkish migrants. To the best of our knowledge, there is no study providing an economic analysis of the determinants and the interrelationships between integration and economic success entirely in the context of Turkish immigrants, the largest migrant group in Germany, which is characterised by a certain degree of heterogeneity.

The main findings of our analysis confirm the existence of determinants of integration known from the literature. Personal characteristics, such as education, being female head of household, years since migration, being born in Germany, are positively associated with integration, and familial, local or international networks have no impact. We find that, among the three integration variables on political, social and economic integration, only political integration has a significant impact on economic success. However, we find strong evidence that the degree of integration, which is measured as the combination of all of the above three forms of integration, has a strong positive impact on economic success. This implies that it is not the partial integration, but the high level integration in all of the above three dimensions that has a strong impact on income. We also find that familial networks—having a larger extended family in Germany—is positively associated with economic achievements, while maintaining a transnational ethnic network is negatively associated with it. When investigating the effect of both integration into the host country and networking over the distribution of unobserved ability, it turns out that integration is a positive determinant of economic success in upper quantiles only. Less able Turkish immigrants do not receive an economic integration premium, while networking helps their economic position.

Given that Berlin holds—in absolute terms—the largest and most heterogeneous Turkish population in Germany (Schönwälder and Söhn, 2007) and that data collection is carried out carefully using random sampling methodology, to some extent, our findings can be generalised to the Turkish population residing in Germany. We would also like to stress the limitations of our analysis. Given that we use cross-sectional data, inter-temporal analysis taking into account unobservable characteristics of immigrants is beyond the scope of this paper. Further, we do not deliver an analysis of endogenous ethnic enclave formation.

The remainder of the paper is structured as followed: In Section 2 we give an overview of the theoretical background of our analysis and a review of the relevant literature. Section 3 introduces the new data set and the methodology employed. In Section 4 we present descriptive and regression results, before we conclude with policy-relevant implications.

2.1. Integration of migrants

The literature on integration of immigrants is faced with the problem of defining the multidimensional concept of integration, and measuring an appropriate outcome variable. The larger part of publications has focused on subjective integration measures, such as self-assessed assimilation, since objective indicators (except for citizenship) seem difficult to define (Dustmann, 1996; Zimmermann, 2007; Constant et al., 2006). In our paper we understand integration as membership of a specific society and gaining

access to its political, economic and social resources, and we measure these three dimensions using objective indicators.

In the literature, social and political integration are mainly associated with exposure to the host country and the consequent habituation to new tastes and rules (Dustmann, 1996). An underlying assumption of this approach is that integration is a natural process without alternatives. Integration efforts have hardly been explained by incentive structures or networks (DeVoretz 2008). We believe that integration is attractive for an immigrant to the extent that it promises economic success, i.e. opens up labour market chances or is expected to be associated with a better future for the immigrant's children. Where labour market discrimination prevails, the payoffs from integration are expected to be small.[4]

Empirical studies focus on three key factors as determinants of integration: time exposure, geographic exposure and social exposure. Years since migration is often used to measure the exposure to the host culture and is generally positively associated with integration (Dustmann, 1996; Constant and Massey, 2002). In several studies, age at entry into the host country is used as a proxy for adaptability, as older immigrants are expected to be highly habituated to the country of origin, while younger migrants face fewer problems in getting used to the new environment. In the same vein, pre-migration characteristics, such as education in the home country, tend to hamper integration (Constant et al. 2006). Similarly, place of residence matters for integration, as it is associated with inter-ethnic contact opportunities. In more or less homogenous enclaves we observe both less incentive and also less opportunity for integration (Chiswick and Miller, 1996).[5] Borjas (1995), for instance, found slow convergence of human capital endowments of immigrant groups towards natives, due to the intergenerational transmission of human capital inside ethnic enclaves. As the data sources are limited for Germany, the economic literature has been reluctant to evaluate the impact of residence on integration.[6] We understand social exposure as established contacts to host country institutions (Yang, 1994). Children in school age, for instance, have been found to improve parents' integration (Dustmann, 1996). Having close German friends fosters integration (Constant et al., 2006), while transnational family ties significantly reduce it (Constant and Massey, 2002). The fact that transnational family context impacts migrants' integration strongly qualifies pure human capital approaches.

[4] The notable exception in the economic literature connected to incentives consists of papers on return migration as the efforts to integrate might be reduced by future return plans (cp. the discussion on return selectivity in Borjas and Bratsberg, 1996).

[5] However, Yang (1994) argues that information flows about naturalisation are more easily shared in ethnic enclaves thus fostering integration.

[6] In the geographic literature, Anita Drever (2004) has found that ethnic enclaves in Germany do not generally have detrimental effects on immigrants' integration.

The relationship of ethnic networks with integration has naturally received much attention in sociology in the context of the social capital literature. The proponents of social capital theory argue that membership in horizontal networks can improve social trust and thus foster political integration of immigrants (cp. Coleman, 1990; Putnam, 2000). In a series of publications, the determinants of political and social integration have been studied. Haug (2003) finds that social integration into Germany, which she proxies by inter-ethnic friendships, is higher among men and later migration cohorts. Berger et al. (2004) investigate the determinants of political integration among ethnic communities in Berlin and argue that—after controlling for general political interest—better educated and cross-ethnic network members are better integrated, while membership of an ethnic network alone does not improve integration. In a comparable study on Amsterdam, Tillie (2004) finds that ethnic network membership does increase integration, but that women are generally less integrated.

2.2. Economic success of migrants

Much of the literature on the economic success of immigrants is concerned with the analysis of the immigrants' labour market performance in comparison to the 'native' population or to earlier cohorts of immigrants (Borjas, 1994). Traditionally, the economic success of immigrants has been studied against the background of human capital theory and segmented labour market theory. However, recent developments in cultural economics have added the concepts of ethnicity and integration to this literature.

Human capital theory understands migration as an investment strategy of migrants who try to enhance their productivity after arrival. Chiswick (1978) argues that migrants lose on economic status upon arrival in the destination country but can improve their disadvantaged economic position by acquiring human capital specifically for the labour market in the destination country. The most cited positive determinants of economic success are human capital (Chiswick and DebBurman, 2004), language proficiency (Espenshade and Fu, 1997) and labour market experience (Chiswick et al., 1997). For Germany, the economic success of immigrants is well documented, especially in the fields of employment (Kogan, 2004) and self-employment (Constant and Zimmermann, 2006).

Segmented labour market theory argues that, due to their initial endowments, migrants tend to be employed in the labour-intensive sector of the economy, where they might never catch up with natives (Piore, 1979). This literature has empirically analysed migrants' economic failure in the labour market and points out that discrimination in access to specific occupations causes a (persistent) wage gap. However, after controlling for occupational status, the empirical findings of this literature are similar to those of the human capital approach (Constant and Massey, 2005 for Germany; Adsera and Chiswick, 2007 for Europe). Both provide evidence for a narrowing earnings gap between natives

and immigrants, due to relatively high returns to education, while adaptation to the host country only matters for human capital theory.

From a cultural economics perspective, ethnic and social variety may be economically beneficial as heterogeneous societies are endowed with more diverse preferences, abilities and problem-solving strategies (Alesina and La Ferrara, 2004). However, variety can only enhance productivity if social interaction takes place. Having social interaction with friends and colleagues from the host country increases information flows for opportunities in the public labour market and for access to capital from mutual lending. As noted in the literature, sequential interaction can also build up trust and foster economic performance (Lorenz, 1999).

Although the literature links integration to various forms of economic indicators, it is rarely examined as a determinant of economic success. Among the few such studies, Dustmann (1996) found that subjective assimilation is insignificant in determining economic success. More objective measures of integration seem to play a significant but weak role in determining economic behaviour (Zimmermann, 2007). However, in most of this literature, integration remains an exogenous fact and is not placed inside an individual's utility maximisation. This may coincidentally result in stereotype ascriptions of immigrants. We argue that the integration variable is an outcome of other endogenous processes, and needs to be understood well before employing it as a determinant of economic behaviour and success.

We believe that ethnic networks are an important determinant of the economic behaviour of migrants as well as their integration efforts. Ethnic networks can have several advantages for their members: trading inside the enclave might be easier, e.g. due to lower transaction costs (Lazear, 1999), job opportunities are faster and more efficiently shared (Topa 2001), discrimination is absent and the demand for ethnic goods can be easily met. The disadvantages of ethnic networks may lie in potential human capital externalities, in limited labour market options, or in the development of specific welfare use cultures (Borjas and Hilton, 1996; Bertrand et al., 2000). For instance, remaining in the ethnic network could prevent the migrant from ever integrating and thus potentially leads to a lower income-generating path if wages in the open labour market are higher. This seems especially realistic if immigrants work mostly in a segmented labour market (cp. Piore 1979).[7] Following from this, an immigrant will integrate into the host society only if (i) the costs are smaller than the expected gain from integration, and if (ii) the gains from integrating minus the foregone gains from remaining in the ethnic network are positive (cp. Yang 1994; DeVoretz 2008). Comparing gains and costs from integrating and networking raises the question of whether ethnic networks can substitute for integration, an issue that has recently gained attention in sociological literature (Fong and Ooka 2002).

[7] Our reasoning is supported by findings of Constant and Massey (2005) that discrimination of ethnic minorities is more likely to appear in access to the German labour market than in the wage-setting mechanism inside the labour market.

In brief, the findings of the existing literature on integration and economic success suggest that both integration and economic performance are mainly driven by the demographical features of migrants (such as time spent in the host country, age, language proficiency, education level and labour market experience), characteristics of households, exposure to social and cultural life in the host country, and social networks of the migrants. Although the majority of studies acknowledge the interlinkages between integration and economic success, few have studied these two variables simultaneously. In addition, empirical analysis of the impact of local and transnational networks on both integration and economic performance has been underdeveloped in the literature. Thus our paper aims to fill these gaps, by providing a joint analysis of the determinants of integration and economic performance and taking into account the impact of local and transnational networks of the migrants on both integration and economic success.

3. Data and methodology

3.1. Data

Virtually all studies on immigrants' economic behaviour and success in Germany are based on the German Socio-Economic Panel (GSOEP). Despite the strength of longitudinal data for the analysis of economic outcomes of migrants, the number of observations in GSOEP data is too small for an in-depth analysis of integration and economic success of single migrant communities. The total number of migrant individuals surveyed in GSOEP during 1996-2004 is 1,280, which includes all major migrant groups in Germany. Among these individuals only 430 are Turkish. Our data include 590 Turkish households residing in Berlin as of 2007. Furthermore, the information on immigrants' social networks, their households and familial linkages in the host and home country, and behavioural choices are covered in more detail in our data than in the GSOEP data.

Data collection was conducted during May to June 2007 in eight major districts of Berlin, which hold 98.2 percent of the Turkish population of Berlin.[8] The distribution of the Turkish population across these districts and the number of interviews conducted in each district are provided in Table 1. Berlin has been chosen as the focal point of the study as it holds the largest Turkish population in Europe outside Turkey. In addition, Berlin is one of the most cosmopolitan cities in Germany, which enables us to cover households from different socio-economic backgrounds.

In data collection, we employed a stratified random sampling strategy, with respondents being chosen with probability proportional to size (PPS) of the Turkish community in the

[8]These districts are Kreuzberg, Mitte, Neukoelln, Tempelhof/Schoeneberg, Spandau, Reinickendorf, Charlottenburg/Wilmersdorf and Steglitz/Zehlendorf,

districts. The interviews were conducted after random selection rules of interviewees, mostly in public spaces, (i.e. parks, streets, in front of houses), and at typical meeting points of the Turkish population (such as cafés, shops, mosques, clubs etc.). The interviewers were employed through a competitive application and interview procedure. They were all post-graduate students, fluent in both Turkish and German, and had experience in conducting interviews. They were also provided training on the properties of random sampling, interview techniques and manners. To ensure standardisation of the data collected by different interviewers, pilot interviews were conducted by the project leader in the presence of all interviewers. Furthermore, throughout the duration of the data collection process, we held regular meetings with the interviewers to internalise their feedback and ensure the quality and timely delivery of data collection.

Table 1. Distribution of the Turkish residents in Berlin and the Turkish households included in the data

	Total residents	Total foreigners	Turkish residents	Turkish residents % of total foreign residents	Turkish residents % of total residents	Number of house-holds in database
Berlin total	3,328,291	444,027	120,684	27.18	3.63	589
Kreuzberg	250,184	57,635	23,535	9.41	40.83	106
Mitte	315,205	86,108	30,153	9.57	35.02	145
Neukoelln	301,953	66,069	26,451	40.04	8.76	143
Tempelhof/Schoeneberg	329,450	50,801	13,707	26.98	4.16	70
Spandau	217,821	22,789	7,258	31.85	3.33	30
Reinickendorf	246,607	22,998	6,370	27.70	2.58	46
Charlottenburg/ Wilmersdorf	217,821	55,337	7,344	13.27	2.38	33
Steglitz/Zehlendorf	284,972	28,618	3,409	11.91	1.20	17

Note: In Mitte proportional sampling is carried out within Tiergarten, Wedding, and Moabit, which include 15, 100 and 30 households, respectively. In the analysis the more affluent districts, which are mainly located in West Berlin, are referred to as West. These districts are: Tempelhof/Schoeneberg, Spandau, Reinickendorf, Charlottenburg/Wilmersdorf and Steglitz/Zehlendorf.

Source: Statistical Office Berlin (2003)

Given that one of the main objectives of the project was to assess the remittances of the Turkish migrants, only the households who are sending money home are included in the sample. However, the interviewers were asked to keep a report of the persons who responded as not sending money back home. The interviewers reported that, on average, out of every ten Turkish individuals approached, three did not send any money home, and thus are not included in the survey. Since the area of data collection included all major districts of Berlin where Turkish migrants reside, and since the data was

collected through a random sampling strategy, it is reasonable to state that our data is representative of the Turkish community residing in Berlin and sending money to Turkey.

The data set comprises detailed information on demographics, socio-economic background, social and economic behavioural variables, and local and transnational networks of heads of households and their household members. However, our data set also has some limitations. First, it covers one city only, which restricts the scope for generalisations, even though Berlin holds the largest community of Turkish migrants in Europe. Second, the sampling framework might potentially lead to an under-representation and self-selection of women, as they might be less likely to be present in public spaces. We aimed to reduce this problem by hiring a gender-balanced group of Turkish interviewers with clear instructions at several interviewer trainings on how best to conduct random selections. Third, the data set is a cross-section survey, and thus we cannot track immigrants over time.

3.2. Methodology

In this section we discuss issues of operationalising the concepts of main interest, namely different forms of integration, economic success and ethnic networks, and provide an overview of the variables used in the multivariate analysis. The variables used in our analysis, and their theoretical expected impact on integration and economic success, are reported in Table 2. We consider three dimensions of integration: political, social and economic. Under political integration we understand the process under which a migrant receives access to political and social rights. A good measure of this integration is *citizenship,* which grants voting rights unavailable to non-Germans. In our sample, almost 40 percent of respondents hold German citizenship (Table 3a). Social integration comprises social connections with the host country and is proxied with a variable counting the number of *close German households* who were ready to lend money to the respondent if he/she found himself/herself in serious financial troubles. Having German friends reflects access and contact to the people; it confirms knowledge of and trust in Germans and Germany.[9]

Economic integration means the process of gaining the economic power to freely participate in social life, to be ordinarily protected against health risks and income fluctuations and to be able to offer ordinary education to children as well as care for elderly people. We are aware of the fact that this category is somewhat problematic, as having enough income or insurance reflects economic success rather than integration. To resolve this issue, we use having 'a *German boss* or *German employee'* as proxy, as

[9] The interviewers often reported on the following stereotype: When asking the question about German households who would quite surely lend money to the Turkish household in need, many respondents answered that Germans did not help each other, so why should they help Turks in financial troubles?

these might increase the likelihood of economic integration, the decision to stay longer in Germany and to install the focus of life in Berlin. Thus, four variables are used as a proxy for different types of integration and the degree of integration: (i) a binary political dimension outcome (citizenship), (ii) a binary social integration outcome (having close German friends), (iii) a binary outcome proxying economic integration (having a German boss or German employee), (iv) an index variable, named as *integration index*, consisting of the summation of all three dimensions of integration, ranging from zero (totally non-integrated) to three (integrated in all dimensions).

Table 2. Expected signs of theoretical variables

Category	Variables	Outcome variables	
		Integration	Economic success
Demographic	Female	o	+/-
	Age	+	+
	Age squared	-	-
	Married	o	+
Human capital	Years of schooling	+	+
	Education in Germany	+	+
Exposure to host country	Time spent in Germany	+	+
	Born in Germany	+/-	+
Control variables	Household size	-	+/-
	Number of working household members	o	+
Networks	Familial: number of family members in Germany	+/-	+
	Local: number of close Turkish friends in Germany	+/-	+
	Transnational: number of close Turkish friends in Turkey	-	-
Links to Turkey	Siblings in Turkey	-	o
	Parents in Turkey	-	o
	Spouse in Turkey	-	o
	Children in Turkey	-	o
Culture	Turk	+/-	+/-
	Alevite	+	+/-

We measure economic success as 'per adult equivalent household income' and analyse it at the household rather than individual level, arguing that resources are shared inside households and that labour decisions are taken interdependently. Thus, the economic success of an individual consists of their own net monthly income plus the (pooled) net monthly income of other household members, adjusted for per adult equivalent. Here net income refers to the income after tax, social security and pension contributions. The sample average net household monthly income (not adjusted for per adult equivalent) is 1,856 € (Table 3b).

The explanatory variables used in the analysis of integration comprise demographic characteristics of the head of household (age, years of education, gender, being born in

Germany, marital status, years since migration, and return intention to Turkey); household characteristics (size of household and having spouse and children in Turkey); financial conditions (per adult equivalent household income); social ties to Turkey (having parents and siblings in Turkey); and networks (familial and local networks in Germany and networks in Turkey).[10] We measure familial networks in Germany by the number of family members in Germany, which includes parents, siblings, aunt/uncles and cousins. Local and transnational networks are proxied by the number of close Turkish friends in Germany and Turkey who could provide financial help to the household in times of difficulties. We have also taken into account the ethnic and religious backgrounds of the migrants, as cultural differences among these groups may affect integration differently (Table 2).[11]

Table 3a. Frequency tables of binary variables

	N	% in total respondents
German citizenship	590	39.66
Close German friends	590	18.31
German boss	590	33.22
German employees	590	3.73
German education	590	47.29
Female head of household	590	15.25
Own house in Germany	590	9.83
Fixed assets in Turkey	590	58.47
Born in Germany	590	16.10
Married	590	72.37
Return plans	590	42.71
Full-time employed	590	35.76
Own business	590	11.36
Unemployed	590	18.64
Turkish ethnic origin	590	78.81
Alevite	590	25.25
Rural origin	590	7.12
Kreuzberg	590	17.97
Neukoelln	590	24.24
Mitte	590	24.58
West	590	33.22

Source: Ulku (2007); authors' calculations.

[10] See Tables 3a and 3b for the summary statistics of these key variables.

[11] Sunnism and Alevism are the two dominant sub-religions in Turkey. Unlike in Sunni or Shiite Islam, Alevites do not generally follow the Islamic Sharia Law and their religious practice is mainly based on humanistic and universal philosophical principles. This leads us to the proposition that their cultural distance to the host country might be smaller compared to other religious orientations and that they might be more motivated to integrate into the destination society. Similarly, between the two dominant ethnic groups from Turkey (Kurdish and Turkish) Kurdish migrants might have a greater incentive to integrate due to the less favourable political environment in Turkey.

Table 3b. Summary statistics for the full sample

Variable	N	Min	Max	Mean	p50	Sd
Income	590	500	7000	1856.36	1750.0	1033.04
Age	590	21	81	41.95	40.0	12.22
Years of education	590	0	18	10.87	10.0	3.81
Time spent in Germany	588	0.3	43	25.20	28.0	10.52
Number of close Turkish friends in Germany	581	0	100	4.47	3.0	7.11
Number of close Turkish friends in Turkey	579	0	100	1.98	0.0	5.46
Number of household members	590	1	12	3.25	3.0	1.62
Number of working household members	590	0	7	1.16	1.0	0.87
Number of family members in Germany	590	0	106	11.52	9.0	11.85
Number of close family members in Turkey	588	0	18	2.83	2.0	2.75
Children/spouse in Turkey	588	0	9	0.20	0.0	0.88
Number of foreigners in the family	589	0	6	0.33	0.0	0.76
Frequency of visits to Turkey	587	0	17	10.09	11.0	2.31
Integration index	582	0	3	0.98	1.0	0.88

Source: Ulku (2007); authors' calculations.

The determinants of economic success consist of variables quite standard to the income generation process of households, such as life cycle effects, demographic characteristics of the head of household, and the size and composition of household (Table 2). The impact of integration on income has been analysed using all four above-mentioned measures of integration. Local, familial and transnational networks are all included in the analysis. We expect local and familial networks to promote economic success in Germany and the transnational networks to impede it, as the earlier two shift the focal point of economic and social activities to Germany, while the latter shifts it to Turkey. All regressions also include the religious and ethnic backgrounds of the migrants, as well as their district of residency.

3.3. Econometric modelling

To estimate the determinants of integration and economic success of the Turkish migrants, we first employ ordinary and ordered Probit and Ordinary Least Squares (OLS) estimations as baseline regressions and then conduct Seemingly Unrelated Regression (SUR) and Full Information Maximum Likelihood Regression (FIML) to take into account simultaneity between income and integration. To investigate the role of integration and networks under varying levels of unobserved characteristics, we also conduct a quantile regression analysis.

We estimate the determinants of integration for individual *i* which are measured by binary variables using the following reduced form Probit model:

$$I_i(\Pr = 1) = \alpha Y_i + \beta X_i + \varepsilon_i \qquad (1)$$

The dependent variables are the binary variables for political, social and economic integration, which are proxied by German citizenship, having close German friends and having German boss or employee, respectively. The error ε is assumed to be normally distributed and orthogonal to all explanatory variables which comprise income *Y* as well as ethnic networks, individual demographic characteristics, and family context variables, including transnational ties (all summed up in *X*). In this, as in all applications that follow, standard errors are heteroscedasticity corrected.

In addition to the above three binary integration variables, we also employ an integration index that covers all three types of integration. The index ranges from 0 to 3, which takes 0 for no, 1 for low, 2 for medium and 3 for high integration. As is standard in many empirical applications of ordered variables, we employ an ordered probit model (cp. Dustmann, 1996), which takes the following form[12]:

$$I^* = X\beta + \varepsilon \qquad (2)$$

where *I** is the unobserved level of *integration index*. We can only observe the score of our *integration index w* ranging between 0 and 3 and expressing different, ordinally sortable levels of integration. The ordered probit model makes use of 'censoring' (Greene, 2003: 736) and the probability that the function ranges between two of the following ordinally sorted unobservable thresholds η:

$$k_c = \begin{cases} 0 \Rightarrow No \quad Integration & if \quad I^* \le \eta_1 \\ 1 \Rightarrow Low \quad Integration & if \quad \eta_1 < I^* \le \eta_2 \\ 2 \Rightarrow Medium \quad Integration & if \quad \eta_2 < I^* \le \eta_3 \\ 3 \Rightarrow Full \quad Integration & if \quad \eta_3 < I^* \end{cases} \qquad (3)$$

We first estimate the determinants of economic success with respect to integration variables, the ethnic networks and other control variables using standard baseline OLS of the following reduced form:

$$\ln Y_i = \alpha I_i + \beta X_i + \varepsilon_i \qquad (4)$$

[12] As explained previously in the text, the *Integration* index takes the value 3 if the respondent has German citizenship, a German boss/employee and if the household has German friends; it takes value 2 if respondent satisfies only two, 1 if respondent satisfies only one of these three criteria, and takes 0 values if respondent does not have either of these criteria.

where economic success is measured as the natural log of per adult equivalent household income and *X* includes demographic, human capital and family information. Again, the error is assumed to be iid. To improve upon OLS results we have also employed SUR analysis, which allows correlation across the error terms of income and integration equations, which in turn leads to more efficient estimators than OLS. However, SUR will result in biased estimators if there is an endogeneity between income and integration. Thus, to ensure the robustness of our findings, we have also employed FIML regression technique, which takes into account this endogeneity. More specifically, immigrants belong to either an integrated or non-integrated group, with the counterfactual state being unobserved. As we would be interested in differences of welfare determinants by integration status, we can estimate a switching regime with two-step least squares which, however, yields inconsistent and inefficient estimates. Maddala (1983) has proposed a methodology to solve the equation system simultaneously by FIML estimation. The base for the welfare regressions in both integration states is the 'criterion function', according to which individuals are sorted into integrated and non-integrated groups of immigrants:

$$I_i = 1 \quad if \quad \delta X_i + u_i > 0$$
$$I_i = 0 \quad if \quad \delta X_i + u_i \leq 0$$

The error term u_i and the error terms of the two welfare regression equations (ε_{1i} and ε_{2i}) are assumed to have a trivariate normal distribution (Lokshin and Sajaia, 2004).

Finally, in order to assess the association of income with integration and the networks at different levels of unobserved ability of immigrants, we conduct quantile regression analyses at different quantiles of the error distribution of the income equation. A simple approach to investigate whether integration has a stronger or weaker impact on income for less or more able immigrants (i.e. unobserved ability is interpreted as residual of the estimation) is to estimate a semi-parametric quantile regression model similar to equation (5) over the error distribution. We estimate the relationship conditioned on the explanatory variables $Q\theta$ (Yi| Xi) at different quantiles θ rather than at the sample mean as in OLS, which results in lower sensitivity to outliers (Koenker and Hallock, 2001).

4. Empirical analysis

This section provides an econometric analysis of the determinants of integration and income and the interlinkages between these two variables. Before moving on to the multivariate results, we utilise the descriptive statistics to provide some stylised facts about the main features of integrated and unintegrated immigrants. As seen from Table 4, better-integrated persons are younger, female and not married, when not controlling for any other characteristics. Being born in Germany or having received an education degree is significantly more common among the better-integrated immigrants. Similarly, better-

integrated migrants have higher income and education levels than less integrated migrants.

Table 5a shows results for the level of integration and densities of ethnic networks by income quintiles to account for potential welfare implications. Integration indicators are positively associated with income quantiles, while local and international networks are u-shaped in income. Table 5b reports integration and economic success indicators for first and second generation immigrants. Immigrants of the second generation perform significantly better only in the political and social sphere. Their economic integration is relatively disappointing and may be explained by their relatively weak educational success (Riphahn, 2003).

Table 4. Means and frequencies of main variables by the degree of integration

	Fully integrated	Non-integrated
Variable	Mean	Mean
Income	2213.2	1597.3
Per capita income	982.1	633.9
Income per adult equivalent (Oxford scale)	1193.8	786.9
Age	39.4	42.9
Years of education	13.9	10.0
Time spent in Germany	29.2	22.8
Number of close Turkish friends in Germany	4.5	4.1
Number of close Turkish friends in Turkey	1.4	1.7
	% in fully integrated Frequency	% in non-integrated Frequency
Male	52.9	77.5
German education	85.3	30.7
Born in Germany	38.2	7.0
Married	61.8	76.0
Return plans	14.7	44.0
Turk	76.5	83.0
Alevite	32.4	20.5

Fully integrated: If the respondent has all of these: German citizenship, close German friends, German boss/German employee.
Non-integrated: If the respondent does not have any of the above.
Note: Total numbers of observations of fully integrated are 34, while non-integrated are 200.
Source: Ulku (2007); authors'calculations.

Table 5a. Integration and ethnic networks by income quantile

	German citizenship (%)	Close German friends (%)	Having German boss/ employee (%)	Close Turkish friends in Germany	Close Turkish friends in Turkey	Family network
Quantile 1	33.9	14.8	30.4	4.7	2.0	12.2
Quantile 2	30.1	17.1	35.8	4.3	1.7	11.0
Quantile 3	40.7	17.9	39.0	4.3	1.7	11.7
Quantile 4	46.0	22.1	40.7	4.0	2.4	9.4
Quantile 5	51.0	21.6	39.2	5.0	2.2	13.2
Total	39.9	18.6	37.0	4.4	2.0	11.5

Source: Ulku (2007); authors' calculations.

Table 5b. Integration and ethnic networks by immigrant generation

	German citizenship (%)	Close German friends (%)	Having German boss/ employee (%)	Close Turkish friends in Germany	Close Turkish friends in Turkey	Family network
First generation	34.8	16.4	36.2	4.5	2.0	10.6
Second generation	66.7	30.1	40.9	4.1	1.8	16.1

Note: First generation immigrants are born outside Germany and live in Germany at least for 25 years; second generation immigrants are born in Germany.
Source: Ulku (2007); authors' calculations.

4.1. Analysis of the determinants of integration

The analysis of the determinants of political, social and economic integration, and the degree of integration, has been carried out using Probit, Ordered Probit, Seemingly Unrelated Regression (SUR) and Full Information Maximum Likelihood (FIML) regression techniques. The findings of the baseline analysis of Probit are reported in Table 6. As seen from the table, education, age and being female are positive determinants of all four types of integration. The significant negative impact of squared age points to non-linearities between age and integration. Time spent in Germany and being born in Germany have a positive impact on all integration variables except for social integration, and having a German education has significant impact only on the degree of full integration. The weak impact of German schooling on integration confirms earlier findings from Dustmann (1996). Marital status, being from Turkish ethnic background, and having siblings, parents or children in Turkey have no association with any of the integration variables, while being from an Alevite sub-religious group is

positively associated with political and social integration and negatively associated with economic integration. None of the network variables, including the familial and local networks in Germany and transnational networks in Turkey, is significant in any of the regressions, with the sole exception that having local networks in Germany promotes social integration. Finally, size of household has a significant negative impact only on the degree of full integration, and income has a positive impact on political, economic integration and the degree of full integration, while having no impact on social integration. While larger households provide less contact with the destination society, income seems to enable and stimulate integration.

The results of the SUR analysis of all four integration variables are reported in Table 8, columns 2, 4, 6, and 8. As seen from the table, the findings are very similar to those of Probit. The main differences in the SUR analysis is that education becomes insignificant in the political integration regression; age becomes insignificant in the economic integration regression, while family networks in Germany, and having a spouse in Turkey, become significant, with a negative and positive sign respectively.

The findings of the endogenous switching regression model (FIML), which provide robust estimators in the presence of endogeneity, are reported in the last columns of Tables 9, 10 and 11. As observed from these tables, time spent in Germany, being born in Germany, and being a female head of household are still positive and significant determinants of political integration, while their impact on social integration becomes insignificant. Similarly, years of education continue to be an important determinant of political and social integration, though its impact loses significance on economic integration. An important improvement upon the previous two analyses is that having German education becomes significant in both political and economic integration. Consistent with the Probit regression results, familial networks in Germany and transnational networks in Turkey have no significant impact on any form of integration, while local networks are significant only in social integration with a positive sign. In addition, marital status, size of household, Turkish ethnic group, and having parents in Turkey are not significant in any of the regressions, and having siblings and children in Turkey are only significant in the political integration, with positive and negative signs respectively.

Putting together the findings of Probit, SUR and FIML analyses, we conclude that years of education and being female are the common determinants of all four forms of integration. The former finding is common to several studies for Germany (Dustmann, 1996; Constant et al., 2006), while the latter further adds to the mixed results of this literature. Time spent in Germany, being born in Germany, and having German education are all important determinants of all types of integration except for social integration, which confirms the importance of habituation to the host country (see Dustmann, 1996). We interpret the age coefficients similarly: age has a strong non-linear relationship with political integration and the degree of full integration, and a weak non-

linear relationship with social and economic integration. In terms of the relationship between networks and integration, the results show that neither transnational networks

Table 6. Probit regressions of binary integration indices

	(1)	(2)	(3)	(4)
	Social integration	Political integration	Economic Integration	Integration Index
Income log, AE	0.005	0.130	0.130	0.336
	(0.14)	(2.20)**	(2.20)**	(2.79)***
Time in Germany	-0.002	0.011	0.011	0.010
	(0.71)	(2.52)**	(2.52)**	(1.05)
Born in Germany	0.027	0.555	0.555	0.826
	(0.29)	(6.02)***	(6.02)***	(2.93)***
Education in Germany	0.048	0.094	0.094	0.424
	(1.00)	(1.29)	(1.29)	(2.69)***
Years of education	0.010	0.015	0.015	0.041
	(1.90)*	(1.79)*	(1.79)*	(2.28)**
Age	0.040	0.051	0.051	0.145
	(2.73)***	(2.97)***	(2.97)***	(4.03)***
Age squared	-0.000	-0.001	-0.001	-0.001
	(2.49)**	(3.09)***	(3.09)***	(3.79)***
Female	0.082	0.140	0.140	0.492
	(1.65)*	(2.04)**	(2.04)**	(3.34)***
Married	-0.062	-0.054	-0.054	-0.078
	(1.27)	(0.75)	(0.75)	(0.52)
Alevite	-0.063	0.146	0.146	0.123
	(1.91)*	(2.54)**	(2.54)**	(1.00)
Turk	-0.008	-0.076	-0.076	-0.121
	(0.20)	(1.16)	(1.16)	(0.86)
Family network	-0.002	-0.000	-0.000	0.001
	(1.21)	(0.04)	(0.04)	(0.28)
Local ethnic network	0.014	-0.006	-0.006	-0.000
	(2.98)***	(0.75)	(0.75)	(0.03)
Trans-national ethnic network	0.003	-0.006	-0.006	0.001
	(0.62)	(0.79)	(0.79)	(0.07)
Household size	-0.005	0.035	0.035	0.092
	(0.39)	(1.59)	(1.59)	(2.27)**
Siblings in Turkey	-0.005	0.020	0.020	0.006
	(0.54)	(1.44)	(1.44)	(0.23)
Children in Turkey	-0.042	-0.052	-0.052	-0.105
	(1.12)	(1.24)	(1.24)	(1.56)
Parents in Turkey	-0.006	-0.011	-0.011	0.072
	(0.24)	(0.30)	(0.30)	(0.90)
Spouse in Turkey		0.047	0.047	0.490
		(0.18)	(0.18)	(1.40)
Observations	456	464	464	464

Absolute value of z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%

Note: AE refers to adult equivalent.

nor familial networks in Germany have any significant impact on any integration variables, while having strong Turkish networks in Germany has a positive impact on social integration only. This result indicates that people with wider ethnic networks also have more native friends, suggesting that they have an unobservable characteristic of 'sociality'. In addition, all forms of integration are independent of marital status and being from a particular Turkish ethnic group, while only political integration is positively related to being from an Alevite sub-religious group. We expected this positive impact from being Alevite, but can hardly disentangle whether Alevites tend to value integration comparatively highly (pull for integration) or whether their past political isolation in Turkey has pushed them into integration (push for integration).

4.2. Impact of integration on economic success

After assessing the determinants of integration, in this section we provide an in-depth analysis of the relationship between different forms of integration and income, using OLS, SUR, FIML and quantile regression analyses. We measure economic success by the log transformation of per adult equivalent income. To secure the robustness of our results we have included variables into the model in a stepwise fashion (results not shown). The first column of Table 7 reports the findings for the baseline regression. As seen from the column, years of education and being female are the only significant variables in the basic specification. None of the other socio-economic and demographic variables have a significant impact on income. Both household variables—size and number of working age adults—are significant with the expected signs. While a larger pool of working age adults increases the income generation potential of a household, the pure household size effect is negative as the number of dependents increases. With regards to the social networks, familial networks have a positive impact, transnational networks have a negative impact and local networks have no impact on income. In terms of the remaining variables of interest, we observe that being from a Turkish ethnic background has a positive impact on income, while being Alevite has a negative impact. The overall findings provide support for the studies dictating the positive effect of education and host country education (Chiswick and DebBurman, 2004), and the negative impact of being female on income (Constant and Massey, 2005; Buchel and Frick, 2005). However, neither time spent in Germany nor being born in Germany have any significant impact on income; the former finding is in contrast with international studies, such as Duleep and Regets (1997) and Constant and Massey (2005). We suggest that the difference stems from our choice of the dependent variable, since studies using income rather than wages find less or no impact of years since migration (cp. Buchel and Frick, 2005).

Having assessed the key variables of income, in the remaining columns of Table 7 we report the findings of the OLS analysis that includes political, social, economic and full integration into the model. The important observation is that out of the four integration variables, only political integration and the degree of full integration are significant with a

Table 7. OLS regression of income (log)

	(1)	(2)	(3)	(4)	(5)
Social integration		0.018			
		(0.37)			
Political integration			0.086		
			(1.98)**		
Economic integration				-0.008	
				(0.19)	
Integration index					0.038
					(1.61)†
Time in Germany	0.003	0.003	0.002	0.003	0.003
	(1.19)	(1.20)	(0.86)	(1.18)	(1.11)
Born in Germany	0.063	0.063	0.020	0.065	0.044
	(0.76)	(0.75)	(0.22)	(0.77)	(0.52)
Education in Germ.	0.085	0.084	0.078	0.086	0.074
	(1.60)	(1.57)	(1.49)	(1.62)	(1.40)
Yrs of education	0.022	0.022	0.021	0.022	0.021
	(4.11)***	(4.02)***	(3.77)***	(4.11)***	(3.77)***
Age	0.016	0.015	0.012	0.016	0.012
	(1.34)	(1.25)	(1.05)	(1.35)	(1.01)
Age squared	-0.000	-0.000	-0.000	-0.000	-0.000
	(1.40)	(1.32)	(1.10)	(1.41)	(1.09)
Female	-0.096	-0.097	-0.106	-0.095	-0.108
	(1.89)*	(1.91)*	(2.06)**	(1.87)*	(2.09)**
Married	-0.004	-0.003	-0.001	-0.004	-0.002
	(0.08)	(0.06)	(0.02)	(0.07)	(0.04)
Alevite	-0.067	-0.066	-0.078	-0.067	-0.068
	(1.75)*	(1.71)*	(2.00)**	(1.75)*	(1.80)*
Turk	0.113	0.113	0.117	0.113	0.114
	(2.43)**	(2.42)**	(2.49)**	(2.43)**	(2.42)**
Household size	-0.168	-0.168	-0.169	-0.168	-0.168
	(12.17)***	(12.14)***	(12.41)***	(12.09)***	(12.23)***
Number of working household members	0.238	0.238	0.235	0.238	0.232
	(7.69)***	(7.67)***	(7.78)***	(7.66)***	(7.43)***
Family network	0.003	0.003	0.003	0.003	0.003
	(1.93)*	(1.95)*	(1.92)*	(1.93)*	(1.89)*
Local ethnic network	0.008	0.007	0.008	0.007	0.007
	(1.39)	(1.32)	(1.43)	(1.36)	(1.35)
Trans-national ethnic network	-0.010	-0.010	-0.010	-0.010	-0.010
	(2.03)**	(2.04)**	(1.86)*	(2.00)**	(1.99)**
Constant		6.135	6.212	6.119	6.209
		(22.00)***	(22.61)***	(22.55)***	(22.08)***
Observations	466	466	466	466	466
R-squared	0.41	0.41	0.41	0.41	0.41

Robust t statistics in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%; † significant at 0.11%. Note: income refers to per adult equivalent (AE) income.

positive sign (though the latter is significant only marginally). Although the findings of OLS reported above provide support for the theoretical and empirical body of work, with regards to the impact of integration, education and networks on income, OLS will yield biased and inefficient estimators if integration and income are determined together. To address this issue we have also conducted SUR and FIML analyses. The findings of the SUR analysis of income, which provides more efficient estimators than OLS, are reported in the first, third, fifth and the final columns of Table 8. The only difference in the SUR analysis is that it improves the significance level of political integration and the degree of integration.[13] The findings for all the remaining variables are similar to those obtained in the OLS analysis.

To further assess the robustness of our findings we have also carried out FIML regression analysis, which not only improves the efficiency of the estimators, but also yields unbiased coefficients in the presence of endogeneity. Tables 9, 10 and 11 report the findings that assess the impact of political, social and economic integration on income.[14] The first column of each table reports the findings for the 'unintegrated' group and the second column reports the findings for the ''ntegrated' group. In all tables, *rho0* indicates the correlation between the error term from the income equation of the unintegrated group and the error term from the criterion function, while *rho1* shows the correlation between the error from the income equation of the integrated group and the criterion function. Thus the value and sign of *rho*s are of special interest as they provide information on the interdependence of integration on income.

Table 9 shows the results of the FIML analysis of the impact of political integration on income. As seen at the bottom of this Table, *rho0* is negative and significant, while *rho1* is positive and significant, implying that unobservable characteristics of those migrants who are politically integrated are positively correlated with income (e.g. ability). In other words, an integrated immigrant earns more than a randomly chosen immigrant from the sample. Regarding the impact of other variables on income within politically integrated and unintegrated groups, the table shows that the years of education promotes income in both groups, though the magnitude of this impact is three times higher in the integrated group. Interestingly, in the latter group only, having German education yields an income premium and age has a non-linear impact on income. Another interesting finding is that the impact of familial networks is significant only in the unintegrated group, suggesting that they might be a substitute for integration in promoting income. The control variables, such as size of household and the number of working household members, are significant in both groups with expected signs.

[13] That the degree of full integration promotes economic success is consistent with the findings of Ulku (2008), who uses the same data and finds that the degree of integration increases the amount of savings of Turkish migrants in Berlin.

[14] We have not included the degree of full integration into our FIML model as it requires the selection variable (i.e. integration) to be binary.

Table 8. SUR regression of income (log) using individual integration indices

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Income	Political integration	Income	Economic integration	Income	Social integration	Income	Integration index
Social Integration	0.169							
	(4.32)***							
Political Integration			0.035					
			(0.90)					
Economic integration					0.034			
					(0.69)			
Integration index							0.095	
							(4.26)***	
Income (log), AE		0.209		0.102		0.028		0.444
		(4.26)***		(2.01)**		(0.69)		(5.13)***
Time in Germany	0.002	0.009	0.003	0.010	0.003	-0.004	0.003	0.005
	(0.57)	(2.54)**	(1.03)	(2.49)**	(1.17)	(1.28)	(0.99)	(0.73)
Born in Germany	-0.019	0.514	0.060	0.240	0.066	-0.008	0.019	0.538
	(0.22)	(4.62)***	(0.69)	(2.09)**	(0.77)	(0.09)	(0.22)	(2.73)***
Education in Germ.	0.072	0.072	0.082	0.061	0.082	0.069	0.056	0.281
	(1.40)	(1.16)	(1.59)	(0.96)	(1.59)	(1.39)	(1.08)	(2.58)***
Yrs of education	0.020	0.010	0.022	0.013	0.022	0.010	0.019	0.024
	(3.53)***	(1.54)	(3.92)***	(1.82)*	(3.94)***	(1.85)*	(3.41)***	(1.97)**
Age	0.010	0.037	0.016	0.019	0.016	0.034	0.007	0.093
	(0.85)	(2.75)***	(1.38)	(1.36)	(1.34)	(3.15)***	(0.62)	(3.93)***
Age squared	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.000	-0.001
	(0.91)	(2.89)***	(1.46)	(1.68)*	(1.44)	(2.96)***	(0.76)	(3.65)***
Female	-0.111	0.127	-0.096	0.109	-0.095	0.090	-0.123	0.365
	(2.23)**	(2.19)**	(1.92)*	(1.83)*	(1.90)*	(1.93)*	(2.46)**	(3.57)***
Married	0.008	-0.046	-0.003	0.068	0.003	-0.064	0.005	-0.052
	(0.15)	(0.77)	(0.05)	(1.09)	(0.06)	(1.31)	(0.10)	(0.48)
Alevite	-0.085	0.131	-0.065	-0.002	-0.063	-0.064	-0.069	0.079
	(2.03)**	(2.70)***	(1.54)	(0.04)	(1.50)	(1.62)	(1.67)*	(0.92)
Turk	0.119	-0.074	0.110	0.003	0.111	-0.004	0.114	-0.104
	(2.62)***	(1.35)	(2.42)**	(0.05)	(2.44)**	(0.09)	(2.52)**	(1.08)
Household size	-0.170	0.042	-0.168	0.011	-0.168	-0.002	-0.170	0.087
	(12.06)***	(2.34)**	(11.87)***	(0.58)	(11.90)***	(0.13)	(12.02)***	(2.75)***
Number of working HH members	0.230		0.236		0.237		0.224	
	(10.03)***		(10.12)***		(10.23)***		(9.68)***	
Family network	0.003	-0.001	0.003	0.001	0.003	-0.002	0.003	-0.000
	(1.75)*	(0.31)	(1.73)*	(0.41)	(1.79)*	(1.38)	(1.69)*	(0.02)
Local ethnic network	0.008	-0.005	0.008	-0.011	0.007	0.015	0.007	0.001
	(1.49)	(0.80)	(1.43)	(1.68)*	(1.26)	(2.81)***	(1.30)	(0.10)
Trans-national ethnic network	-0.009	-0.003	-0.010	0.006	-0.010	0.004	-0.009	-0.001
	(1.68)*	(0.55)	(1.87)*	(0.87)	(1.86)*	(0.73)	(1.77)*	(0.09)
Siblings in Turkey		0.014		-0.014		-0.007		-0.001
		(1.21)		(1.12)		(0.74)		(0.04)
Children in Turkey		-0.028		-0.004		-0.009		-0.044
		(1.09)		(0.15)		(0.42)		(0.95)
Spouse in Turkey		0.046		0.306		-0.113		0.200
		(0.26)		(1.69)*		(0.79)		(0.64)
Parents in Turkey		-0.007		0.029		-0.010		0.048
		(0.21)		(0.88)		(0.39)		(0.85)
Observations	464	464	464	464	464	464	464	464

Absolute value of z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%
Note: income refers to per adult equivalent (AE) income.

Table 9. FIML estimation of income (log) using political integration

	DV: Income		Political
	Unintegrated	Integrated	Integration
Time in Germany			0.022
			(2.26)**
Born in Germany	-0.119	0.177	1.353
	(1.22)	(1.47)	(4.12)***
Yrs of education	0.014	0.043	0.043
	(2.02)**	(4.11)***	(2.15)**
Education in Germany	0.029	0.196	0.416
	(0.46)	(2.05)**	(2.29)**
Age	0.001	0.073	0.146
	(0.05)	(1.78)*	(3.08)***
Age squared	-0.000	-0.001	-0.002
	(0.11)	(1.64)	(3.03)***
Female	-0.098	-0.026	0.309
	(1.37)	(0.28)	(1.85)*
Married	0.070	-0.076	-0.146
	(1.14)	(0.79)	(0.83)
Alevite	-0.140	0.127	0.329
	(2.69)***	(1.52)	(2.27)**
Turk	0.044	0.268	-0.161
	(0.66)	(3.02)***	(0.95)
Household size	-0.180	-0.157	0.036
	(9.82)***	(5.92)***	(0.68)
Family network	0.003	0.003	0.001
	(1.67)*	(0.75)	(0.23)
Local ethnic network	0.008	0.013	-0.014
	(1.21)	(1.35)	(0.79)
Trans-national ethnic network	-0.005	-0.017	-0.015
	(1.04)	(1.56)	(0.86)
Number of working HH members	0.198	0.263	
	(5.25)***	(6.10)***	
Siblings in Turkey			0.074
			(2.44)**
Children in Turkey			-0.233
			(2.60)***
Spouse in Turkey			0.132
			(0.29)
Parents in Tukrey			-0.023
			(0.31)

Rho0: -0.63** (se: 0.21) ; Rho1: 0.85*** (se: 0.10)
Wald test of independence, Chi square: 14.37 (p=0.000)
Observations: 464
Robust z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%.
Note: Time in Germany was removed from the income equation as the model did not converge when it is included in the regression.
Note: Income refers to per adult equivalent (AE) income

The findings of the analysis for social integration are reported in Table 10. As the table shows, *rho0* is significant with a negative sign, while *rho1* is insignificant, suggesting that socially unintegrated migrants earn less than a randomly chosen migrant from the sample, while a migrant from the socially integrated group earns about the same as those. Different from the political integration results, here years of education promotes income only for the socially unintegrated group, while having German education does not have an impact on either group's income. In terms of the impact of networks on income, having larger familial networks in Germany promotes income only for the socially unintegrated while having transnational networks reduces the income for both groups. Moreover, being a female head of household leads to lower income only in the socially unintegrated group, and there is an income premium for being Turk and Alevite in the integrated group.

Finally, Table 11 presents the findings of the impact of economic integration on income. As observed from the values of *rhos*, unobservables of both integrated and unintegrated groups are negatively correlated to income, though the unintegrated group is more disadvantaged, as evidenced by the larger negative value of *rho0*. The underlying unobservable factor might be associated with the discrimination of immigrants in the labour market. Another explanation might be found in specific job affiliations with German employers, such as low-skilled and low-paid manual work. Years of education, age, and age squared are significant only in the integrated group with expected signs. Consistent with the findings of the other two integration variables, having familial networks promotes income only for the unintegrated group. However, this time in addition to the familial networks, having local networks also has a positive impact on income in the unintegrated group, while having transnational networks has a negative impact. In addition, similar to the findings in social integration, the female heads of households earn less in the economically unintegrated group.

The key findings of the FIML regression analysis can be summarised as follows. Objective integration (i.e. measured using an objective criterion) has a positive impact on income and thus complements findings on subjective integration by Dustmann (1996); years of education promotes income, though more so in the integrated group which confirms findings reported in Zimmermann (2007) that adaptation to the destination country matters for economic success; age has a positive non-linear impact on income only in economically and politically integrated groups, and thus reinforces the fact that standard human capital factors play a stronger role for integrated immigrants; women have income disadvantages in socially and economically unintegrated groups; the familial network in Germany is an important determinant of income in all three types of unintegrated groups, and transnational networks either have negative or no impact on income; while the family seems like a substitute for integration, transnationality especially hinders the well-integrated; being from a Turkish ethnic background leads to higher income in all three forms of integrated groups, while being from the Alevite sub-religious group leads to lower income in unintegrated groups.

To gain an understanding of how integration and networks affect income at the different levels of income quantile, we have also reported in Figure 1 the impact of different forms of networks on income using quantile regressions. The effect of family networks in Germany on income exhibits a u-shaped pattern. Only at the bottom of the error distribution, the effect is highly significant with an estimated income return of an additional family member of half a percent. Having the family network increased by ten persons thus contributes to individual income by a substantial five percent. On the top of the distribution (around the 80th percentile) there is also a weakly significant positive effect of family networks. These results suggest that the family is a security net for the less well-endowed immigrants, but may also help the better off, most probably through job and business networks.

Transnational ethnic networks have a negative return for income generation, with an increasingly negative effect over the distribution of unobservables. In all three equations, the effect becomes significant in the third quarter of the distribution at around minus one percent for an additional friend in Turkey. Thus, while transnational ethnic networks worsen income generation of immigrants in Germany (we cannot find any evidence for transnational income generation) the effect is statistically different from zero for the better- but not for the best-endowed immigrant population.

The impact of local ethnic networks on income generation, on the other hand, is characterised by an inverted u-shape. The effect is consistently significant only in the second quarter of the distribution, with a premium of around 1.5 percent for every additional Turkish friend in Germany. Taken together with the results from the family networks, we can conclude that local networks (of family members or friends) mainly serve those less endowed, while integration has a much less pronounced positive effect for income generation. Further, the latter effect comes only into effect in the upper percentiles of the error term distribution.

Taking together the above results, we reach the following conclusions. While the pay-offs from integration are higher for households in the higher quintiles of unobserved ability, pay-offs from ethnic networks and familial linkages in Germany are significant only in lower parts of the distribution. This provides support for our idea stressing the potential trade-off between integration and ethnic network maintenance. In particular, the results offer evidence that integration might be costly for lower income households, who then decide to increase their economic outcome by staying in local networks, while higher income households have incentives to reap the benefits from the integration premium. These results may shed some empirical light on the theoretical ambiguity of whether integration helps or hampers economic success. Transnational Turkish networks, on the other hand, lower the economic success of the households predominantly at medium and upper levels of the ability distribution. We take this as an indication that preserving strong transnational ties is accompanied by lower economic effort in Germany. As noted earlier, this can be explained by the costs of maintaining the transnational network (as an example one could

consider that making visits to Turkey reduces labour supply). Finally, being married and owning business in Germany increase income at all parts of the distribution, though the benefits from marriage are especially high at the lower part of the distribution.

Table 10. FIML estimation of income (log) using social integration

	DV: Income		DV: Social
	Unintegrated	Integrated	integration
Time in Germany	0.004	0.007	0.000
	(1.01)	(0.99)	(0.03)
Born in Germany	0.066	-0.192	0.330
	(0.64)	(0.78)	(0.95)
Yrs of education	0.012	0.025	0.059
	(1.74)*	(1.48)	(2.54)**
Education in Germany	0.059	-0.023	0.348
	(0.90)	(0.13)	(1.43)
Age	-0.005	-0.001	0.134
	(0.34)	(0.01)	(1.56)
Age squared	0.000	-0.000	-0.001
	(0.26)	(0.02)	(1.54)
Female	-0.141	-0.121	0.293
	(2.14)**	(0.98)	(1.57)
Married	0.078	-0.017	-0.195
	(1.25)	(0.14)	(0.91)
Alevite	-0.065	0.305	-0.278
	(1.44)	(2.61)***	(1.62)
Turk	0.082	0.243	0.017
	(1.43)	(2.47)**	(0.10)
Household size	-0.163	-0.201	-0.037
	(10.13)***	(5.48)***	(0.56)
Family network	0.005	0.002	-0.007
	(2.68)***	(0.52)	(1.15)
Local ethnic network	-0.003	0.000	0.062
	(0.37)	(0.01)	(3.50)***
Trans-national ethnic	-0.013	-0.019	0.010
network	(2.01)**	(1.67)*	(0.57)
Number of working	0.251	0.163	--
household members	(7.42)***	(2.51)**	
Siblings in Turkey			-0.017
			(0.37)
Children in Turkey			-0.105
			(1.01)
Spouse in Turkey			-3.915
			(1.81)*
Parents in Turkey			0.101
			(0.95)

Rho0: -0.83*** (se: 0.18) Rho1: -0.75 (se: 0.38); Wald test of independence of equations: 4. 73 (0.09); Observations: 464

Robust z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%. Note: Income refers to per adult equivalent (AE) income

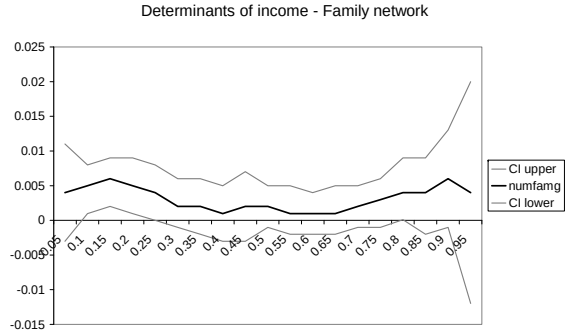
Table 11. FIML estimation of income (log) using economic integration

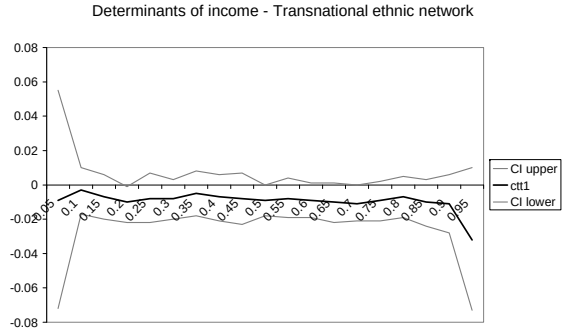
	DV: Income		DV: Economic
	Unintegrated	Integrated	Integration
Time in Germany	0.000	-0.002	0.029
	(0.00)	(0.34)	(2.63)***
Born in Germany	-0.095	0.043	0.775
	(0.80)	(0.26)	(2.46)**
Yrs of education	0.007	0.032	0.050
	(0.84)	(3.55)***	(2.51)**
Education in Germany	0.058	0.033	0.248
	(0.81)	(0.36)	(1.37)
Age	-0.006	0.042	0.060
	(0.38)	(1.95)*	(1.36)
Age squared	0.000	-0.000	-0.001
	(0.36)	(1.93)*	(1.61)
Female	-0.135	-0.142	0.292
	(1.79)*	(1.57)	(1.72)*
Married	-0.057	-0.021	0.209
	(0.78)	(0.23)	(1.19)
Alevite	-0.110	0.059	0.012
	(2.08)**	(0.87)	(0.09)
Turk	0.014	0.243	0.057
	(0.22)	(3.22)***	(0.35)
Household size	-0.169	-0.147	0.012
	(9.28)***	(5.39)***	(0.24)
Family network	0.004	-0.001	0.003
	(2.06)**	(0.30)	(0.56)
Local ethnic network	0.012	0.009	-0.024
	(1.65)*	(0.80)	(1.35)
Trans-national ethnic network	-0.014	-0.009	0.008
	(2.01)**	(1.11)	(0.44)
Number of working household members	0.245	0.197	
	(7.68)***	(2.98)***	
Siblings in Turkey			-0.040
			(1.24)
Children in Turkey			-0.006
			(0.08)
Spouse in Turkey			1.151
			(2.89)***
Parents in Turkey			0.145
			(1.63)

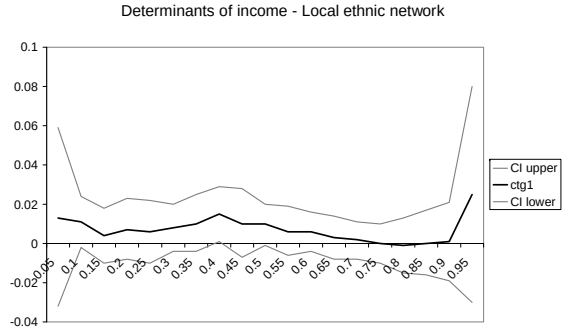
Rho0: -0.75*** (se: 0.19); Rho1: -0.61*** (se: 0.21)
Wald test of independence of equations: chi square: 9.26 (p=0.01)
Observations: 464
Robust z statistics in parentheses * significant at 10%; ** significant at 5%; *** significant at 1%. Note: Income refers to per adult equivalent (AE) income.

Figure 1. Impact of networks on income over different income quantiles

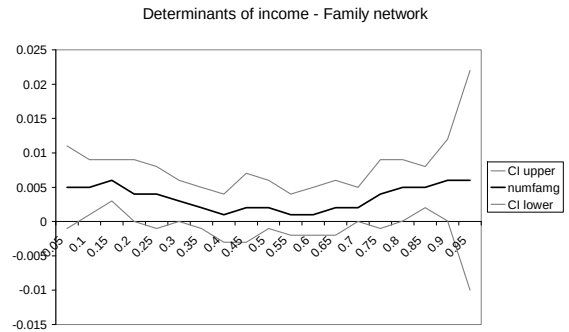
Economic integration equation

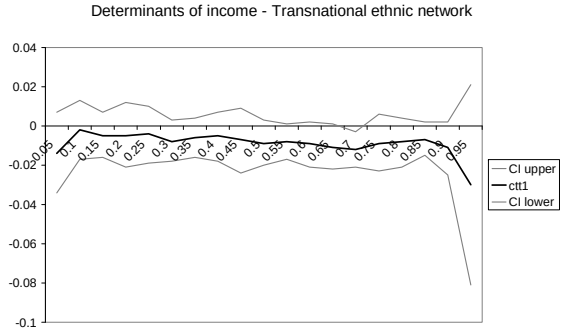


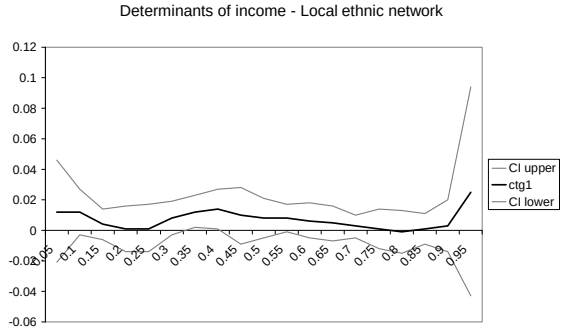




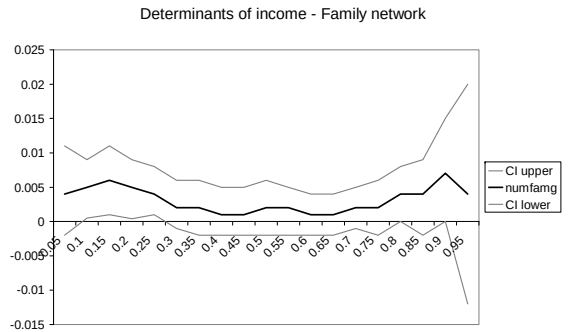
Political integration equation

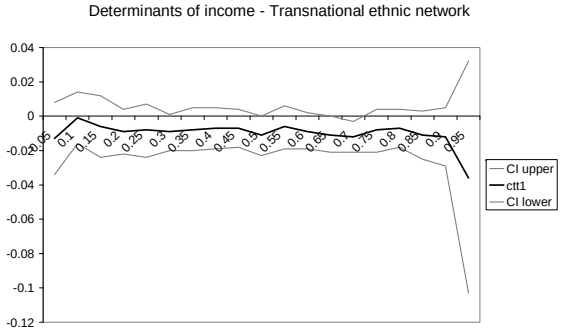


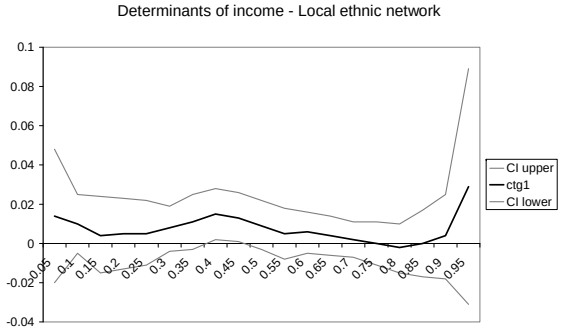




Social integration equation







5. Conclusion and policy implication

Our analysis offers a couple of important insights for the scientific debate on the interlinkages between integration, networks and economic success of immigrants and in their policy implications. First, education turns out to be the key determinant of both integration and economic success. Education raises the chances to become integrated into the host country, purely by opening up a wider array of options and enabling people to efficiently collect and process information. Education may also increase openness and adaptability to new surroundings, thus easing and fostering the access of immigrants to further education opportunities, and to social, economic and political participation. Additionally, higher education not only leads to higher returns on the labour market, but also increases the mobility of labour and decreases the volatility of future income streams, resulting in higher and stable incomes and relaxing the welfare constraints on integration. Our results indicate that education, in combination with integration, can significantly improve the welfare position of immigrants.

Second, our results provide evidence that deeper integration leads to higher levels of economic success. However, with regards to the separate impacts of political, social and economic integration on economic success, only political integration measured by 'holding German citizenship' had a significant impact on the income levels of Turkish immigrants. Only when we combine all three integration indicators, which allows us to assess the impact of the higher degree of integration on income, are we able to obtain a consistently significant relationship between income and degree of integration. This in fact might suggest that in order to have significant economic success brought about by integration, some combination of all three forms of integration might be necessary. Thus, the policies aiming at integration might need to focus on all three forms of integration if the aim is to aid migrants' economic wellbeing.

Third, the integration and network channel of income generation differs across different levels of unobserved ability. While integration helps the better-endowed, the integration premium for less-able immigrants is zero. Local ethnic networks work like an insurance scheme for the latter. A state fostering integration has to sharply increase economic incentives for migrants. Investments into education and real access to promising labour market spheres require a straight political strategy and enduring efforts.

Fourth, local familial networks foster economic success, indicating that ethnic niches may be economically advantageous and may partly substitute for missing integration. This result confirms our idea that people prefer integration only if economic incentives exist. In support of migrant self-organisation, the state could make better use of migrant initiatives, local knowledge and coverage. To succeed with a serious integration policy, an open policy dialogue, as initiated by the 2006 integration summit, is a prerequisite rather than a final solution.

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