Economic Performance of Turkish Immigrant Men in the European Labour-Market: Evidence from Sweden

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Abstract

This paper uses eleven waves of panel-data to analyse the earnings assimilation of first-generation Turkish immigrant men in Sweden. Employment-probabilities and earnings are estimated in a fixed-effects sample selection model in order to control for both individual effects and panel-selectivity, which arise due to missing earnings-information. Local unemployment rates are used as proxy for varying local market conditions in order to control for the bias caused by equal-period-effect assumption. The results indicate that the earnings of Turkish immigrant men converge to those of natives, but their probability of being employed does not. The assimilation response of Turkish immigrants differs considerably, depending on arrival-cohorts and educational levels.

Key Words: *Immigrants, earnings assimilation, unbalanced panel, sample-selection, local unemployment- rates.*

J.E.L Classification: C33, J15, J61.

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1. Introduction

Turkey has large numbers of immigrants in almost all the European countries. It all started with large waves of guest workers from Turkey to Germany after negotiations between the two governments in 1972 and continued with other large immigrant waves to other European countries such as Sweden. However, little is known about the economical performance of Turkish immigrants in these labour-markets. The primary aim of this paper is to fill this gap by providing empirical evidence of the economical assimilation process of Turkish immigrant men in Sweden.

A number of studies have assessed the economic integration of immigrants; e.g. (Chiswick, 1978; Borjas, 1985, 1989; LaLonde and Topel, 1991, 1992; Baker and Benjamin, 1994; and Duleep and Regets, 1999; for Europe: Aguilar and Gustafson, 1991; Bauer and Zimmermann, 1997; Bell, 1997; Longva and Raaum, 2003. The primary interest of these studies was to determine whether immigrants enter a new labour-market with an earnings difference relative to the natives, and whether their earnings eventually converge towards those of the natives. Besides those which found significant assimilation effects, many of them tied the earnings assimilation to arrival-cohort, region or country of origin, and immigrant status.

A secondary aim is to make methodological contributions to immigrant literature. The 11-wave register-based Longitudinal Individual Data set (LINDA) allows us to use the techniques necessary to overcome various methodological problems that are encountered in the existing literature. By estimating the employment and earnings equations simultaneously and at the same time extending the standard approach with the use of *panel methodology* with a fixed effects model, not only do we correct for sample-selection but also allow for correlation between persistent unobserved individual characteristics and observed ones. Third, we control for the effect of economy-wide conditions with wage-curve methodology (Blanchflower and Oswald,

1994 and Card, 1995). We prefer to use local unemployment rates with which we can avoid the possible bias of assimilation- and cohort-effects emerging as a result of the equality restrictions on the period-effects (Barth *et al*, 2004).

We find that the earnings of Turkish immigrants converge towards that of natives, but the employment probabilities do *not*. An average Turkish male immigrant achieves the earnings-parity with an average native Swede after approximately 30 years. The total number of years needed for full assimilation differs among immigrants with different skill endowments. The earnings assimilation process takes 23, 22 and 15 years for average university, upper and lower-secondary educated Turks, respectively. We also find that the average skill levels of Turkish male immigrants, who arrived after the 1990s, have declined.

The paper is organized as follows: the next section develops the model used and discusses econometric issues, while section 3 contains the data. Section 4 provides the estimation results and Section 5 summarizes and draws conclusions.

2. Econometric Specifications

Our empirical model has two purposes: first, it corrects for potential sample-selection bias, which can arise as a result of either self-selection by the individuals under investigation or sample-selection decisions made by data-analysts. Second, it takes advantage of the panel-aspect of the data in order to control for the unobserved factors that affect the economical performance of immigrants. We estimate a fixed effect sample selection model, by considering the possible correlation between unobserved heterogeneity and observed characteristics of individuals. For example, individual abilities can be correlated with the level of education while personal motivation (in the case of positively selected immigrants) can be correlated with the immigrant status. Under this specification, the income generating process of immigrants I is given by

$$y_{it}^{*I} = x_{it}\beta^{I} + \phi^{I} AGE_{it} + \delta YSM_{it} + \sum_{j} \psi_{j} C_{it}^{j} + \sum_{k} \theta_{k}^{I} \Pi_{it}^{k} + \log UR_{t}^{mI} + u_{i}^{I} + \varepsilon_{it}^{I} \qquad (1)$$

$$r_{it}^{I} = 1\{z_{it}\gamma^{I} + v_{i}^{I} + \omega_{it}^{I} > 0\}$$

$$y_{it}^{I} = y_{it}^{*I} * r_{it}^{I}$$

where, i denotes the individual; t denotes the time period; y_{it}^{*} denotes the log of latent earnings; x_{it} and z_{it} are vectors of socio-demographic characteristics such as educational attainment, marital status, and non-labour income; *AGE* denotes the age of the individual; *YSM* is years since immigration;[1] C denotes arrival-cohort; Π is also an indicator variable indicating income in year t; UR_{t}^{m} is the local unemployment rate for municipality m in year t; r_{it} is a selection-indicator measuring the benefit of being employed relative to unemployed; u_{i} and v_{i} are unobserved persistent individual-specific effects; ε_{it} and ω_{it} are idiosyncratic error-terms and $\beta, \psi\ \theta, \eta, \phi, \delta$ and γ are vectors of unknown parameters of interest. It is assumed that $E(u_{i} \mid x_{it}) \neq 0$; ε_{it} and ω_{it} are idiosyncratic error terms; r_{it} is a sample selection indicator which measures the additional benefits of being employed over not being employed. We also estimate the same model given in (1) for otherwise comparable natives by excluding the arrival-cohorts and year since migration, which are not applicable in the case of native Swedes. The exclusion restriction adopted in this paper is that the non-labour income may affect employment but not earnings[2].

The model in equation (1) is underidentified. The period-effect is a linear combination of the

[1] The model also includes the squared-age and squared-years since immigration; (but not shown in (1), for simplicity).

[2] The same approach was used by Field-Hendry and Balkan (1991).

arrival-cohort and years since migration[3]. Therefore, an additional restriction has to be imposed, i.e. either the period effects are the same for both immigrants and natives or the cohort- effects are the same across different arrival-cohorts. The restriction imposed in this paper is that the period-effect is equal for the immigrants and native Swedes. However, as shown in Barth *et al* (2004), equal period-effect restriction can produce biased estimates of assimilation- and cohort-effects, if the overall macroeconomic conditions have either a positive or negative trend. Sweden experienced an economic crisis after the 1990s and unemployment rates show a positive trend during the period that covers the range of our sample. Hence, following the wage-curve methodology, we use the local unemployment rates in order to avoid the possible bias.

The conditional mean function of the model is

$$E[y_{it} \mid x_{it}, r_{it=1}] = \beta' x_{it} + \lambda \frac{\phi(\gamma' z_{it})}{\Phi(\gamma' z_{it})} \tag{2}$$

where $\lambda = \rho\sigma_{\varepsilon}$ and $\sigma_{\omega} = 1$ due to the normalization restriction. The initial earnings difference (Δy), evaluated on the mean values of the cohorts, is given as follows:

$$\Delta y_j = E^I[y_{it} \mid r_{it} = 1, AGE(t_0 + t), YSM(t), C_j, \mathbf{X}_j, \mathbf{Z}_j] \tag{3}$$

$$- E^N[y_{it} \mid r_{it} = 1, AGE(t_0 + t), \mathbf{X}_j, \mathbf{Z}_j]\,|_{t=0, t_0=a, C_j=1, \bar{\mathbf{X}}_j, \bar{\mathbf{Z}}_j}$$

where *AGE* and *YSM* are continuous non-linear functions of time. t_0 denotes the initial age for immigrants (I) and natives (N); $\mathbf{X}$ and $\mathbf{Z}$ are the matrices of the control variables in the earnings and the selection equations, respectively, $\mathbf{X}$ being a strict subset of $\mathbf{Z}$. C_j indicates the j arrival cohort. Then, the marginal rate of assimilation (*MRA*), which reveals the rate of convergence between an immigrant group and native Swedes, is given as:

[3] In any given cross-section, the calendar year in which the cross-section observed is the sum of years since migration in the host country and the calendar year in which the individual immigrated.

$$\hat{MRA}_j(t) = \frac{\partial E^I}{\partial t} - \frac{\partial E^N}{\partial t}\Big|_{t=0, t_0=a, C_j=1, \bar{\mathbf{X}}_j, \bar{\mathbf{Z}}_j} \quad (4)$$

Based on the above equation, the estimator of total years for assimilation (*TYA*), as a continuous function on the real time axis, is constructed in the following way: Total years for assimilation is the upper-limit of the integral that accumulates the *MRA* to the initial earnings difference of the immigrant group:

$$\int_0^{\hat{TYA}_j} MRA_j(t)dt = \Delta y_j \quad (5)$$

We use a Newton-Rapson algorithm for the calculation of TYA in (5).

3. The data

The study was based on the 1990-2000 panel of the Swedish register-based Longitudinal Individual Data-set (LINDA), which contains two distinct random samples: a population sample, which includes 3.35 % of the entire population each year, and an immigrant sample, which includes almost 20 percent of immigrants to Sweden.[4] There is no overlap between samples. Apart from being a panel which is representative for the population, the sampling procedure ensures that the data are representative for each year. Starting with a representative sample a particular year, the inflow is sampled to replace the outflow to obtain next year's sample: thus the data are also cross-sectionally representative. The sampling frame consists of everyone who lived in Sweden during a particular year, including those who were born or died, and those who immigrated or emigrated. The data is updated with current household information each year with

[4] Immigrants to Sweden enter the national register (and thus the sampling-frame) when they receive a residence permit. In general, immigrants may become Swedish citizen after a sufficient number of years.

information from the population and housing censuses and the official Income Register, as well as a higher-education register. The Income Register information, based on filed tax returns, is contingent on the tax rules for that year (For more details see Edin and Frederiksson, 2001). All the Turkish and native individuals are included in original data except those who are self-employed.[5] We use the 3604 Turkish male immigrants and 9162 native Swedes (20 percent of the whole sample).

Based on working-indicators in the data, an employment dummy is defined as 1 if the individual is employed, 0 if not. In order to avoid shorter employment spells and part-time jobs with low pay, we adopt the threshold criteria followed by Antelius and Björklund (2000), giving the value 0 to those individuals with earnings lower than 36,300 SEK. According to Antelius and Björklund, using this threshold level yield similar results to those one would get from hourly wage data when evaluating the return to education.[6]

The earnings-variable used in the study has been obtained from the Tax Registers. The earnings are measured in thousands of SEK per year, adjusted with the consumer price-index in 2000 prices. The key explanatory variables used are age; marital status; number of children at home; highest educational levels; municipality level unemployment rates in observation year; years since migration and arrival-cohort. The local Unemployment rate used in this study is calculated by dividing the number of the unemployed individuals by the number of the individuals in the municipality. The municipality of residence for immigrants is assumed to be exogenous conditional on their observed and unobserved characteristics (Edin *et al*, 2002 and

[5] Measures of immigrant assimilation may be distorted if a significant fraction of immigrants return to their home country (Edin et al., 2000). In our case this does not seem to be an important issue since only about 0.04 percent disappear from the data during the observation period.

[6] We check the robustness of the results by using alternative threshold levels. Similar results are obtained.

2003; Åslund and Rooth, 2003).

The main features of the data are described in Table I, which shows Turkish immigrants and native Swedes according to the working indicator. Both the employment rate (83% vs. 54%) and earnings are considerably higher for native Swedes. Unemployment rates in the municipality of residence of natives are lower than that of Turks for both those working and not working. The average native Swede is better educated than the average Turk: About 74% of native Swedes have at least a high school education, compared to 31% for Turks.

Table 1 about here

The same pattern holds for both natives and Turks in terms of working and non-working individuals. Working individuals are more likely to be married, young, have more children, better educated, live in Stockholm county, and have less non-labour income. It is interesting to note that the Turks who arrived in 1990-1994 are relatively less likely to be employed in comparison to other arrival cohorts (11% vs. 20%). This is true not only for Turks but also for all other immigrant groups, due to the fact that Sweden had a sharp economical crisis during that period, in which unemployment rates reached approximately 9 percent.

4. Empirical analysis

4.1 Employment and earnings assimilation

The estimation results of both earnings and employment equations are given in Table II together with the estimated marginal effects of variables. We use conditional marginal effects for the earnings equation (for those who work). These marginal effects can be separated into three parts: direct, indirect and total. The first and third rows show the direct and total effects, respectively (see the note below Table II). The marginal effects for the employment equation are simply the derivative of the expected value of the probit model evaluated on the average values

of the right hand side variables.[7]

Table II about here

There are considerable differences in the magnitudes of the slopes for Turkish immigrants and native Swedes in both equations, but most standard results are confirmed. For example, for both Turks and native Swedes, the earnings and the employment probabilities increase with age at a decreasing rate. The depreciation of human capital is much higher for Turkish immigrants.

For married Swedes, being married and having children at home increase the earnings and employment probabilities, though their magnitudes remain considerably bigger for native Swedes compared to Turkish immigrants. Having one additional child at home does not have a significant effect on the earnings of Turkish immigrants. A university degree and upper-secondary level education improve the earnings and employment probabilities for both groups. The effect of university and upper-secondary levels of education on earnings for an average native is greater than that of the Turkish immigrant in comparison with lower-secondary educated individuals (0.48 vs. 0.36 and 0.19 vs. 0.10 log-points, respectively). However, the effect on the employment probabilities has an opposite pattern (13% vs. 16% and 1% vs. 6%, respectively).

The marginal effect of the local market unemployment rate gives the local unemployment-elasticities of earnings and employment probabilities. These elasticities are negative, but much smaller for native Swedes: the earnings and employment probabilities of natives are *not* sensitive to transitory macroeconomic shocks. This result is important since it indicates that the equal period-effect restriction produces biased predictions for assimilation, if the model is not controlled for local unemployment rates.

Tables IIA and B (below) show the development path of relative earnings and employment

[7] The median local unemployment rates are used for all calculations in this paper.

probabilities based on the estimators described in Section 2.2. The first column of these tables shows the initial earnings differences (Δy), which are calculated by setting the year since migration equal to zero and evaluating all other right hand side variables on their average values (see footnote (8)). The entry age to Sweden is chosen to be 20 and years since migration increase by five-year periods until the end of the individual's working life. *TYA* is the total number of years needed for the earnings and employment probabilities of an average Turk to catch up with those of an average native Swede (last column in Table IIIA and B). The positive numbers, which are in bold type, indicate that the earnings or employment probabilities of Turkish immigrants overtake those of natives.

Table IIIA about here

Table IIIB about here

The result indicate that an average Turk starts his working life by earning 0.64 log-points less than an average native (Table IIIA). After 30 years, the earnings of an average Turk are converged with that of an average native. Upper-secondary and university educated Turkish immigrants are successful in comparison with an *average* native. The assimilation process takes 26 years for the former and 9 years for the latter group of Turks. Lower-secondary educated Turks are not able to achieve earnings-parity with an average native.

The assimilation-effect on the employment probabilities for Turkish immigrants is weak and not enough to make the probabilities converge to those of natives. An average Turk is almost 40% less likely to be employed compared to the average native Swede upon arrival. In 10-15 years, the difference is reduced to 22%. However, having a university degree causes the difference to be reduced to approximately 5%.

Figure 1 conveys the results with graphics. Panel (a) gives the age-earnings profile of an

average Turkish male immigrant. There is a continuous accumulation of the earnings of an average immigrant relative to a similarly-aged average native. After almost 30 years, the marginal rate of assimilation becomes negative and the aging-affect of the average native dominates that of Turkish immigrant. The same is true for the age-employment probability profile (panel b), except that it is not convergent.

Figure 1 about here

Panels (a) and (b) have some common characteristics: the age penalty is much higher for a Turkish immigrant than that of an average native Swede (compare the slopes of curves after the peaks). The native is able to keep her/his probability of being employed by high level until late ages, unlike that of the Turkish immigrant, which goes down close to zero.

Panel (c) and (d) show the corresponding results by education. The absolute level of earnings and employment probabilities of an average Turk increases as the level of education increases. The impact of having a university degree is much more intense than any other accumulated human capital, not only for higher earnings but also for strong labour-market attachment. However, in order to obtain the true picture of the returns to human capital, the above analysis must compare similarly educated Turkish immigrants and native Swedes. The age-earnings and the age-unemployment probability profiles obtained by this comparison are given in Figure 2 (below). The first and second panels of each line show the development of earnings and employment probabilities, respectively. The natives are represented by a dashed curve in each figure. The profiles of the university-educated Turks are drawn by assuming that the average university graduation age is 25. Tables IIIC and D (below) contain the relative earnings differences and *TYA* measures for this classification.

The absolute level of the returns to human capital of both the earnings and the employment probabilities is an increasing function of the level of human capital. However, the relative returns

are different: while a unit of human capital improves the employment probabilities at an increasing rate, it is paid at a decreasing rate, implying that the Swedish economy absorbs the highly-educated Turks well but pays relatively less. There can be many factors underpinning this situation, such as labour-market discrimation or the quality of human capital acquired in the home country. Unfortunately, the data that we use (LINDA) does not tell us where the immigrants have obtained their education

Figure 2 about here

Table IIIC about here

Table IIID about here

We observe that the lower the education level the smaller the initial earnings difference, and *TYA* i.e. the low-skilled immigrants earn relatively more upon arrival and assimilate faster than high-skilled ones. For example, an average lower secondary educated Turkish immigrant earns 0.38 log-points less and catch up with the earnings of an average low-skilled native 14 years after arrival; while a university-educated Turkish immigrant earns 0.62 log-points and assimilation process takes 23 years.

4.2. Cohort effects

In this subsection, we test whether the permanent earnings and employment abilities of Turkish immigrants decline across arrival cohorts. Testing this hypothesis is possible since our model and data allow identification of cohort-effects. The estimated cohort-effects on earnings and employment probabilities are given in Table IVA (below). These are the marginal effects of arrival-cohorts on earnings (total effect) and employment probabilities.

The effect of the arrival-cohort on employment probabilities declines by between 9 and 16 % in comparison with pre-1970 cohort. Whether there is a decline in the within-cohort-effects is not

apparent until the 1990-1994 arrival-cohorts. There are only some small fluctuations within-cohort growths. In comparison to the pre-1970 cohort, the permanent earnings ability of the Turkish immigrant is better until 1990-94 with a gradual within-cohort declining pattern. However, the fact is that the cohort-effects on both earnings and employment probabilities *do* decline with the 1990-94 arrival-cohorts.

Table IVA about here

The decline coincides with the sharp economic downturn between 1990 and 1994. One may suspect that the decline in the cohort-effects is not caused by the immigrants who have low skill endowments but by the bad economical conditions. This suspicion is possibly credible due to the fact that the earnings and employment probabilities of natives and Turks have different responses to changes in unemployment rates (see marginal effects of local unemployment rates in Table II). We have also estimated our model without local unemployment rates and find that the most recent two cohort-effects are more negative than the ones reported here, implying that the wage-curve methodology that we follow helps to identify the pure effect of arrival-cohorts, which are combined with the effect of macroeconomic conditions.[8]

Tables IVB and C give the development of relative earnings and *TYA* measures by arrival-cohorts. Pre-170, 1975-79 and 1980-84 arrival Turks have weak aging effects and they are not able to achieve earnings-parity with natives. However, there is no arrival-cohort is able to reach the native's probability levels of being employed.

Table VIB about here

[8] Barth at al (2004) found that if unemployment was rising- as in Sweden-, the classical assimilation model, which is not controlling for local unemployment rates, overestimated the labour-market success of early cohorts and underestimated the success of recent arrivals because of the mechanical correlation between cohorts and calendar time in the data.

Table VIC about here

5. Discussion and conclusions

Using the register-based Longitudinal Individual Data set (LINDA), covering the period 1990-2000, we analyse the performance of Turkish male immigrants in Sweden. The study differs from previous studies in many respects: First, the sample-selection bias is dealt with by estimating the employment and earnings equations simultaneously. Second, the unobserved heterogeneity, which is possibly correlated with observed characteristics of individuals, has been controlled for by using a fixed-effect model. Third, the local unemployment rate is used as a proxy for period-effects in order to correct the bias caused by imposing the equal period-effect assumption according to the wage-curve methodology.

The results predicted in Barth *et al* (2004) are confirmed: the equal period-effect assumption produces biased assimilation- and cohort-effects if the sensitivities of the earnings of immigrants and natives are different to changes in economy-wide conditions. Local unemployment elasticities, which can be used as a measure of this sensitivity, are considerably different for Turkish immigrants and native Swedes. We conclude that an economical downturn reduces the earnings and employment probabilities of Turkish immigrants much more sharply than those of natives.

The results show that there is evidence of the existence of an assimilation process. The earnings of Turkish immigrants converge towards that of natives with years spent in Sweden. The assimilation in employment probabilities is weak. The probabilities do not converge to those of natives who have similar observed characteristics. We find that the development of earnings has different patterns for immigrants with different human capital endowments. Earnings increase with the amount of human capital investment but decrease in relative terms. For example, low-skilled Turks earn relatively more than high-skilled ones relatively to native Swedes with similar

characteristics. However, the behaviour of the probability of being employed is different. There is a positive correlation between the amount of human capital investment of Turkish immigrants and their probability of being employed in Sweden. We also find that the productivity level of Turkish immigrants declines with successive arrival-cohorts. This has much more effect on their probabilities of being employed than on their earnings.

The main results of this paper can be summarized as follows:

- The earnings of Turkish male immigrants converge to that of natives almost 30 years after arrival, but their employment probabilities diverge.
- The permanent earnings and employment ability of Turkish male immigrants decline with successive arrival-cohorts. Recent cohorts earn 0.03 log-points less and are 14% less likely to be employed than those who arrived before 1970. No arrival cohort is able to reach the employment probability level of native Swedes. The earnings of Turkish male immigrants who arrived before 1970, 1975-79 and 1980-84 have not converged to those of natives.
- The effect of local unemployment elasticities on both the employment probability and the earnings is negative for both Turkish immigrants and natives. This measure is much bigger for Turkish immigrants, implying that they are affected more by the economy-wide conditions and this strong wage-curve effect can explain the decline in earnings of the 1990-94 and 1995-2000 cohorts. The model which does not control for the effect of macroeconomic conditions is biased which can distort the predictions about assimilation and cohort effects.

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Table I
Mean values of variables

	Native Swedes		Turks	
	Working	Not Working	Working	Not Working
Log earnings	12.27 (0.53)	–	11.68 (0.59)	–
Local unemployment rates	2.713 (1.07)	3.128 (1.52)	3.014 (1.18)	3.195 (1.35)
Age	38.44 (10.3)	36.48 (13.4)	35.22 (9.16)	35.29 (11.2)
Years since migration			14.72 (7.40)	13.05 (8.01)
Married/cohabiting	0.445 (0.50)	0.211 (0.41)	0.728 (0.44)	0.635 (0.48)
Number of children	1.875 (1.19)	1.357 (0.91)	2.552 (1.56)	2.176 (1.65)
Stockholm county	0.225 (0.38)	0.217 (0.36)	0.357 (0.43)	0.335 (0.44)
Other income	0.121 (0.28)	3.729 (4.30)	0.035 (0.15)	1.189 (2.78)
Highest education level				
Lower–secondary	0.208 (0.36)	0.327 (0.46)	0.527 (0.49)	0.607 (0.49)
Upper–secondary	0.516 (0.49)	0.494 (0.50)	0.340 (0.47)	0.308 (0.46)
University degree	0.276 (0.44)	0.179 (0.38)	0.132 (0.34)	0.083 (0.27)
Arrival Cohort :				
<1970			0.054 (0.18)	0.041 (0.17)
1970–74 (5 years)			0.113 (0.32)	0.098 (0.27)
1975–79 (5 years)			0.252 (0.45)	0.224 (0.43)
1980–84 (5 years)			0.186 (0.39)	0.167 (0.37)
1985–89 (5 years)			0.211 (0.42)	0.206 (0.41)
1990–94 (5 years)			0.111 (0.31)	0.202 (0.40)
1995–2000 (6 years)			0.073 (0.17)	0.062 (0.23)
Sample size	78026	15987	10142	18729
Sample size – all sample	94008 (9162 Individuals)		28871 (3604 individuals)	

Note: (Standard deviations in parentheses)

Table II
Estimation Results

	Native Swedes		Turks	
	Earnings	Employment	Earnings	Employment
Intercept	11.856***	– 0.245***	11.730***	– 1.395
	(0.028)	(0.044)	(0.269)	(0.259)
Age	0.010***	0.093***	0.011***	0.082***
	(0.001)	(0.0001)	(0.008)	(0.008)
	0.023	0.007	0.007	0.002
Age-squared	– 0.0002***	– 0.0011***	– 0.0001	– 0.0013***
	(0.00001)	(0.0002)	(0.0002)	(0.0001)
Years since migration			0.018***	0.075***
			(0.009)	(0.009)
			0.031	0.011
Years since migration–squared			– 0.0007***	– 0.0017***
			(0.0002)	(0.0002)
Local unemployment rate	– 0.003***	– 0.002***	– 0.075**	– 0.032**
	(0.0004)	(0.0008)	(0.032)	(0.015)
	– 0.001	– 0.004	– 0.123	– 0.087
Married/cohabiting	– 0.023***	0.513***	– 0.062**	0.305***
	(0.004)	(0.007)	(0.027)	(0.024)
	0.264	0.131	0.073	0.110
Number of children	– 0.021***	0.100***	– 0.007	0.018***
	(0.001)	(0.003)	(0.005)	(0.007)
	0.034	0.026	0.001	0.007
Stockholm county	– 0.085***	0.120***	– 0.029**	0.043**
	(0.003)	(0.006)	(0.014)	(0.019)
	– 0.017	0.033	– 0.011	0.016
Upper-secondary	– 0.018***	0.371***	0.033**	0.145***
	(0.004)	(0.006)	(0.019)	(0.022)
	0.189	0.010	0.098	0.055
University degree	0.166***	0.550***	0.174***	0.422***
	(0.004)	(0.008)	(0.035)	(0.033)
	0.475	0.130	0.362	0.162
Non-labour income		– 0.886***		– 0.481***
		(0.005)		(0.027)
		– 0.237		– 0.178
λ	– 0.697***		– 0.505***	
	(0.011)		(0.109)	
Selection corrected standard error	0.816		0.737	
Correlation– ρ	– 0.855		– 0.683	

Notes: * = significant at 10 percent; ** = significant at 5 percent; *** = significant at 1 percent; First row for each variable is the direct (marginal) effect and point estimates of earnings and employment equations, respectively. Needless to say, there is no marginal effect of variables age-squared, and years since migration-squared and the direct effect of age and years since migration are not equal to the parameter estimates because of the included variables age-squared and years since migration-squared. The reference variables are: single, lower-secondary education, outside Stockholm county, arrival cohort before 1970. The model also includes a full set of time dummies and can be provided by authors, on request. (Standard errors in parentheses).

Table IIIA

Developments of Relative Earnings

Year since migration	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
All Turks	– 0.641	– 0.441	– 0.284	– 0.162	– 0.073	– 0.016	**0.004**	– 0.027	– 0.111	**29.7**
by Educational level (vs. an *average* native)										
Lower–Secondary	– 0.709	– 0.507	– 0.347	– 0.224	– 0.134	– 0.078	– 0.062	– 0.094	– 0.180	–
Upper–Secondary	– 0.631	– 0.432	– 0.275	– 0.154	– 0.064	– 0.007	**0.011**	–0.017	–0.101	**26.0**
University degree	– 0.305	– 0.121	**0.023**	**0.137**	**0.226**	**0.289**	**0.320**	**0.305**	**0.236**	**9.11**

Note: Δy is the initial earnings difference; YSM and TYA are year since migration and total years for assimilation, respectively

Table IIIB

Developments of Relative Employment Probabilities

Year since migration	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
All Turks	– 0.407	– 0.314	–0.256	– 0.223	– 0.241	– 0.288	– 0.395	– 0.443	– 0.558	–
by Educational level (vs. an *average* native)										
Lower–Secondary	– 0.575	– 0.527	– 0.467	– 0.430	– 0.481	– 0.562	– 0.647	– 0.685	– 0.642	–
Upper–Secondary	– 0.386	– 0.279	– 0.201	– 0.165	– 0.169	– 0.214	– 0.305	– 0.438	– 0.565	–
University degree	– 0.259	– 0.147	– 0.081	– 0.055	– 0.060	– 0.097	– 0.176	– 0.308	– 0.466	–

Note: See the note of Table IIIA

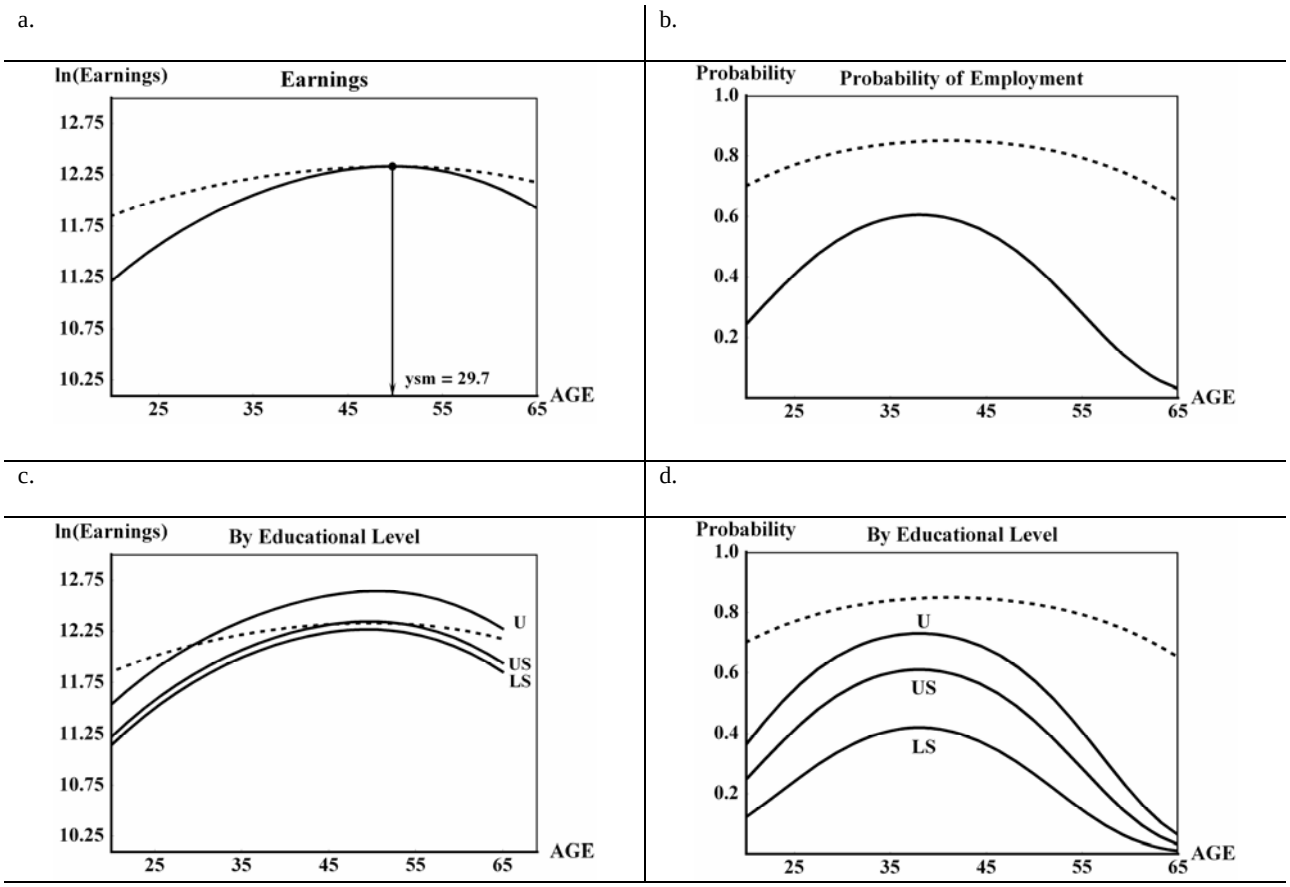

Figure 1: Dashed curves represent an average native in each graph. U, US and LS denote university, upper-secondary and lower secondary level of education, respectively. Profiles are drawn by using the average values of all variables except local unemployment rates. Median local unemployment rates are used. These rates are: native Swedes = 2.39; all Turks =2.799; university educated Turks = 2.499; upper-secondary educated Turks = 3.020; lower-secondary educated Turks = 2.814.

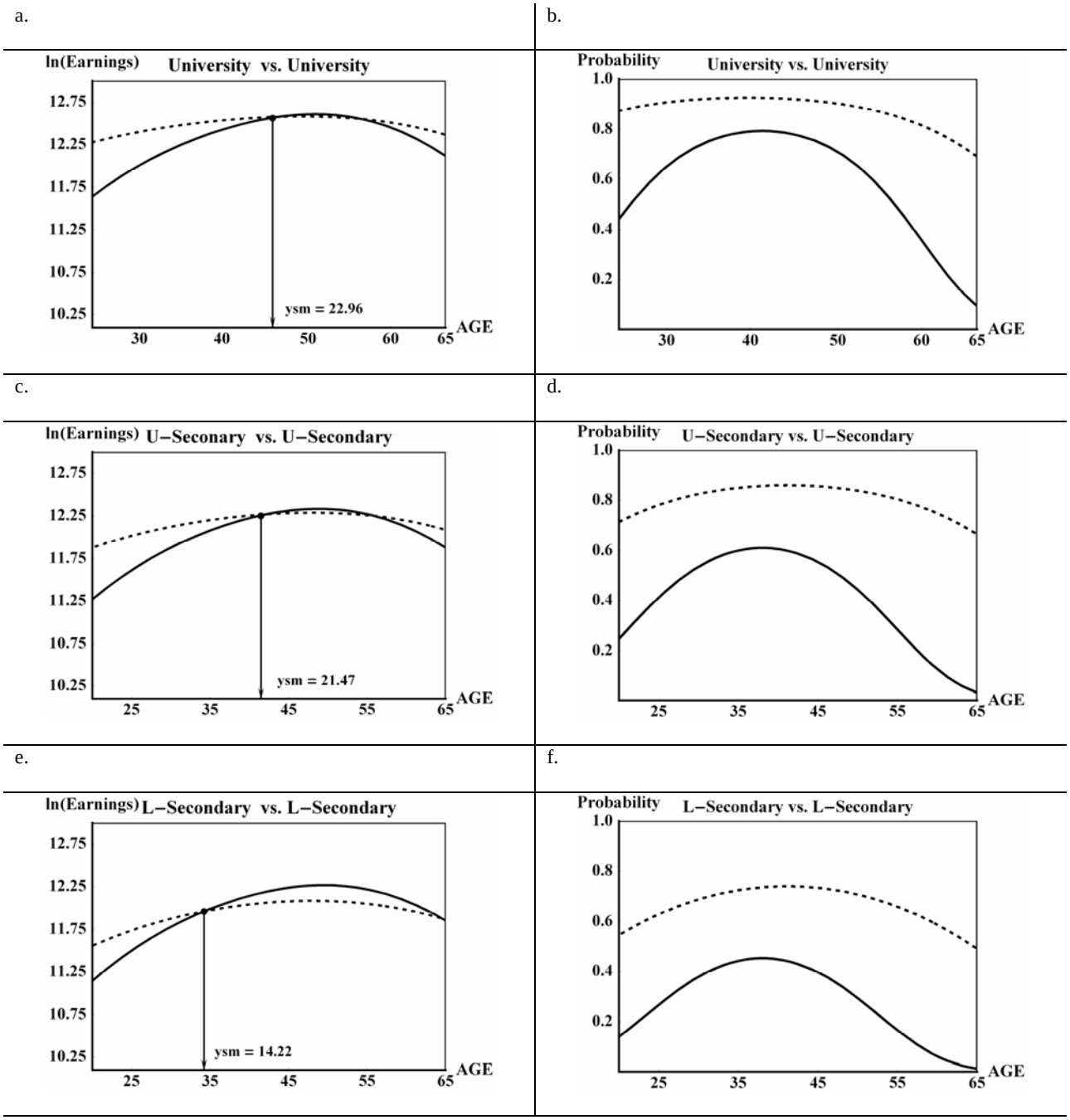

Figure 2: Dashed curves represent an average native in each graph. Profiles are drawn by using the average values of all variables except local unemployment rates. Median local unemployment rates are used. These rates are: university educated Swedes= 2.436; upper-secondary educated Swedes= 2.872; lower-secondary educated Swedes= 2.751; university educated Turks = 2.499; upper-secondary educated Turks = 3.020; lower-secondary educated Turks = 2.814.

Table IIIC

Developments of Relative Earnings By Education

YSM	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
Lower–Secondary	– 0.375	– 0.205	– 0.071	**0.034**	**0.114**	**0.166**	**0.183**	**0.157**	**0.084**	**14.22**
Upper–Secondary	–0.592	– 0.391	– 0.232	– 0.110	– 0.020	**0.037**	**0.054**	–0.024	– 0.060	**21.47**
University degree	– 0.629	– 0.421	– 0.259	– 0.133	– 0.039	**0.019**	**0.036**	**0.001**	– 0.093	**22.96**

Note: See the note of Table IIIA

Table IIID

Developments of Relative Employment Probabilities By Education

YSM	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
Lower–Secondary	– 0.372	– 0.338	– 0.291	– 0.265	– 0.273	– 0.318	– 0.391	– 0.497	– 0.572	**–**
Upper–Secondary	– 0.466	– 0.369	– 0.288	– 0.248	– 0.252	– 0.300	– 0.394	– 0.519	– 0.622	–
University degree	– 0.522	– 0.358	– 0.254	– 0.203	– 0.195	– 0.230	– 0.313	– 0.443	– 0.528	–

Note: See the note of Table IIIA

Table IVA

Cohort Effects

Arrival cohorts	Earnings	Employment
1970-74 (5 years)	0.0605	– 0.1027
	(0.0115)	(0.0265)
1975-79 (5 years)	0.0308	– 0.0951
	(0.0111)	(0.0354)
1980-84 (5 years)	0.0182	– 0.1050
	(0.0025)	(0.0439)
1985-89 (5 years)	0.0864	– 0.0942
	(0.0266)	(0.0544)
1990-94 (5 years)	– 0.0319	– 0.1643
	(0.0157)	(0.0566)
1995-2000 (6 years)	– 0.0276	– 0.1439
	(0.0144)	(0.0635)

Note: These are marginal (total) effects and marginal effects of earnings and employment equations, respectively.

(Standard errors of marginal effects in parentheses).

Table IVB

Relative Earnings By Cohorts

Year since migration	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
<1970	– 0.703	– 0.511	– 0.360	– 0.243	– 0.154	– 0.094	– 0.069	– 0.091	– 0.167	–
1970-74	– 0.606	– 0.408	– 0.251	– 0.130	– 0.041	**0.017**	**0.036**	**0.007**	–0.075	**23.2**
1975-79	– 0.755	– 0.549	– 0.387	– 0.262	– 0.172	– 0.118	– 0.104	– 0.140	– 0.229	–
1980-84	– 0.651	– 0.451	– 0.249	– 0.172	– 0.083	– 0.026	– 0.008	– 0.037	– 0.121	–
1985-89	– 0.533	– 0.340	– 0.188	– 0.070	**0.019**	**0.049**	**0.073**	**0.051**	**0.002**	**18.8**
1990-94	– 0.629	– 0.428	– 0.270	– 0.148	– 0.058	– 0.001	**0.016**	– 0.015	– 0.100	**25.2**
1995-2000	– 0.542	– 0.348	– 0.196	– 0.077	**0.012**	**0.071**	**0.094**	**0.071**	– 0.007	**19.2**

Note: See the note of Table IIIA

Table IVC

Relative Employment Probabilities By Cohorts

Year since migration	Δy	1-5	6-10	11-15	16-20	21-25	26-30	31-35	36-40	TYA
<1970	– 0.384	– 0.277	– 0.198	– 0.163	– 0.167	– 0.212	– 0.303	– 0.436	– 0.563	–
1970-74	– 0.324	– 0.212	– 0.138	– 0.107	– 0.111	– 0.152	– 0.239	– 0.374	– 0.518	–
1975-79	– 0.450	– 0.353	– 0.274	– 0.235	– 0.239	– 0.287	– 0.381	– 0.505	– 0.608	–
1980-84	– 0.391	– 0.284	– 0.206	– 0.170	– 0.174	– 0.219	– 0.311	– 0.443	– 0.568	–
1985-89	– 0.327	– 0.215	– 0.141	– 0.109	– 0.114	– 0.155	– 0.242	– 0.377	– 0.521	–
1990-94	– 0.401	– 0.296	– 0.217	– 0.180	– 0.185	– 0.230	– 0.323	– 0.454	– 0.575	–
1995-2000	– 0.335	– 0.223	– 0.148	– 0.116	– 0.120	– 0.162	– 0.250	– 0.385	– 0.501	–

Note: See the note of Table III