Interethnic Marriage and the Labor Market Integration of Immigrants in the Netherlands

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Abstract

This study investigates the role of interethnic marriage on the economic integration of immigrants in the Netherlands. I measure economic integration in terms of two labor market outcomes: earnings and employment. Using the data from the Dutch survey 'Social Position and Use of Public Utilities by Immigrants', I examine whether immigrants married to a native have better labor market outcomes than those married within their own ethnic group. Accounting for potential endogeneity of intermarriage, the empirical findings indicate that interethnic marriage has a positive effect on immigrants' labor market outcomes. Intermarried immigrants earn more than their endogamously married counterparts, while the intermarriage premium varies across generations. First generation immigrants receive a higher intermarriage premium than second generation immigrants. Moreover, there is a significant difference in the likelihood of employment between endogamously married immigrants and those who are married to a native. Marrying a native increases the probability of employment.

1 Introduction

Social scientists consider interethnic marriage as one of the most important indicators of social and economic integration of immigrants for several reasons (Gordon 1964; Kalmijn 1998; Muttarak 2004). First, interethnic marriage helps accelerate the fading of cultural and social barriers between immigrants and natives. Second, a high level of interethnic marriage is associated with decreasing dissimilarities in labor market outcomes of immigrants and natives. Muttarak (2004) also points out that intermarriage is not only an indicator of integration but also a primary cause of it. Although the economic integration of immigrants has been the subject of a large literature[1], the research on the effect of intermarriage on immigrants' economic integration is scarce (Meng and Gregory 2005; Kantarevic 2004).

This study aims to investigate the role of interethnic marriage on immigrants' economic integration in the Netherlands[2]. To this end, I measure economic integration in terms of two labor market outcomes: earnings and employment. Analyzing the relationship between intermarriage and economic assimilation, Meng and Gregory (2005) find that intermarried immigrants assimilate faster and earn more than their endogamously married counterparts in Australia. They report a substantial intermarriage premium, around 20 percent, for immigrants from non-English-speaking countries. On the other hand, Kantarevic (2004) does not find any causal relationship between earnings and intermarriage in the U.S. He tests two competing hypotheses: the productivity hypothesis and the selection hypothesis. According to the productivity hypothesis, immigrants married to native-born spouses assimilate faster than comparable immigrants who are married to foreign-born spouses. In this approach, native-born spouses play an important role in the human capital accumulation of their partners. Thanks to their native-born spouses, immigrants improve their language skills and knowledge of the local labor market and establish networks that may contribute positively to their labor market productivity. In contrast, the selection hypothesis claims that the relationship between intermarriage and economic assimilation is spurious. The effect of intermarriage on economic assimilation disappears once the selection into intermarriage is accounted for. Kantarevic's empirical findings support the selection hypothesis.

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[1]See Chiswick 1978, Borjas 1985,1995, and 1999; Chiswick and Miller 1992

[2]Interethnic marriage is defined as the union of an immigrant with a native. These unions may be in the form of legal marriages as well as de facto relationships

I focus on the following questions to investigate whether labor market outcomes differ between immigrants married to a native and immigrants married within their own ethnic group in the Netherlands: (1) Are immigrants who are married to a native more likely to be employed than those who are endogamously married? (2) Do exogamously married immigrants earn more than those who are endogamously married? If so, what is the intermarriage premium for intermarried immigrants? The data used in this study come from the SPVA, 'Social Position and Use of Public Utilities by Immigrants'. This survey provides information on the socio-economic and socio-cultural position of the four largest ethnic minorities in the Netherlands: Turks, Moroccans, Surinamese and Antilleans. The sample used in the empirical analysis consists of first- and second-generation male immigrants.

The contribution of this paper to the relevant literature is twofold. First, the existing literature on intermarriage premium (Meng and Gregory 2005; Kantarevic 2004) uses earnings as a measure of economic integration. In this study, economic integration is measured in terms of not only labor market earnings but also employment. I believe that it is important to analyze the association between employment and intermarriage as employment is a key part of the integration process. Moreover, most of the public debate in Europe focuses on unemployment and the use of welfare because of the inflexibility of the European labor market. (Euwals et. al 2007). Second, the literature on the intermarriage premium considers unions between first-and second generation immigrants as interethnic marriages due to data limitations.[3] Even though second generation immigrants are closer to the native population, they do not necessarily have the same human and social capital as the native population does (Van Ours and Veenman 2003). Therefore, treating second generation immigrants as natives may affect the estimates of intermarriage premia. In this study, I am able to distinguish second generation immigrants from natives as the data contain information on the parents' country of birth. Furthermore, this information allows me to test whether or not intermarriage premium varies across generations.

Intermarried immigrants may have unobserved characteristics that could affect their labor market outcomes. Also, marrying a native may contribute positively to immigrants' labor market productivity as intermarriage can increase linguistic adjustment of intermarried immigrants and

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[3]I use the term "first generation" to refer to people who were born abroad. Second generation is defined as those who were born in the Netherlands but have at least one foreign born parent. Native is defined as native-born individuals with two native-born parents.

their social network (Kantarevic 2004). However, one can argue that the causal relationship is the opposite: favorable labor market outcomes may increase the probability of marrying a native. In the empirical section, the econometric model accounts for potential endogeneity of intermarriage.

The main findings of this study indicate that intermarriage has a positive effect on immigrants' labor market outcomes. Intermarried immigrants earn more than their endogamously married counterparts after accounting for the possible endogeneity problem. The intermarriage premium varies across generations. First generation immigrants receive higher intermarriage premia than second generation immigrants. Moreover, there is a significant difference in the likelihood of employment between endogamously married immigrants and those who are married to a native. Marrying a native increases the probability of employment by 22 percent.

The structure of the paper is as follows. Section 2 provides background information on the migration history and labor market performance of the four ethnic minorities in the Netherlands. Section 3 describes the data and variables used in the empirical work. Section 4 discusses the empirical strategy and introduces the econometric model. Section 5 presents the empirical results while Section 6 offers a summary and conclusion.

2   Background

The Netherlands has been classified as a net-immigration country since the 1960s (Belevender and Veenman 2004). Foreigners, first and second generation immigrants, constituted 19.4% of the Dutch population in 2007.[4] Turks, Moroccans, Surinamese, and Antilleans that make up 66% of the immigrant population are the four largest immigrant groups in the Netherlands. First immigrants from Turkey and Morocco arrived in the Netherlands during the 1960s as a result of the Dutch government's attempt to alleviate the growing need of low-skilled workers in Dutch industry. Although the Dutch government ceased the labor recruitment program at the end of 1973, immigration from these countries has continued as a result of increasing family reunification in the 1980s and marriage formation in the 1990s (Kaljmin and Van Tubergen 2007). Table 1 shows that Turk and Moroccan immigrants represent 2.2 % and 2% percent respectively of the Dutch population in 2007.

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[4]In the publications of Statistics Netherlands, foreigners are defined as persons who are living in the Netherlands and of whom at least one parent is born abroad.

Suriname and the Dutch Antilles were former colonies of the Netherlands. The first migration from Suriname and the Antilles took place in the 1950s. More than 50,000 Surinamese came to the Netherlands due to political instability just before Suriname declared its independence from the Netherlands in 1975. The second immigration peak occurred in 1979 and 1980 shortly before the Dutch government introduced visa requirements to control the free movement of immigrants. At that time, approximately 30,000 Surinamese immigrated to the Netherlands. The prolonged recession through the second half of the 1990s in the Antilles led to a large-scale Antillean immigration to the Netherlands (Bevelander and Veenman 2004). Table 1 indicates that the Antillean population in the Netherlands is much smaller than the Surinamese population while 2 % of the total population of the Netherlands are first and second generation Surinamese, the Antillean population represented only 0.8% of the Dutch population in 2007.

There are some specific differences between immigrants from Suriname and the Antilles (Caribbeans) and those from Turkey and Morocco (Mediterraneans). Suriname and the Antilles were former Dutch colonies. Hence, Caribbean groups are more acquainted with the Dutch society and language compared to the Mediterranean groups who were not exposed to the Dutch culture and language before they immigrated to the Netherlands. Moreover, Turks and Moroccans are mostly Muslim as opposed to Caribbeans, especially Antilleans, who are mainly Christian. Kalmijin and Van Tubergen (2007) point out that Mediterraneans are a more closed group than Caribbeans in the Netherlands because of the differences in language and religion.

On average, the labor market position of immigrant workers lags behind that of the native Dutch. As far as employment levels are concerned, unemployment rates for the four main immigrant groups are several times as high as that for the native Dutch. Turks and Moroccans are the most disadvantaged while the Caribbeans still have higher unemployment rates than the native Dutch. Bevelander and Veenman (2004) investigate the employment integration of ethnic minority males in the Netherlands from 1988 to 2002. They point out that after controlling for the individual characteristics, both Caribbean and Mediterranean groups had lower employment chances in the years 1991,1994, and 1998 compared to Dutch natives. However, the Caribeeans had the same employment chances as the native Dutch in 1988 and 2002. The immigrant groups also are disadvantaged in terms of earnings. Van Ours and Veenman(1999) indicate that the native Dutch have higher earnings than the aforementioned immigrant groups. The Antilleans most closely ap-

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proximate the native Dutch and the Antilleans are followed by the Surinamese, the Turks and the Moroccans respectively.

In the literature, there are several explanations for the disadvantageous labor market position of immigrants in the Netherlands. Studies focusing on the demand side of the labor market underline the existence of discrimination and prejudice in the Dutch labor market and the concentration of immigrants in particular industries that are affected more than others during recession (Gras and Bovenkerk 1999; Kee 1995; Van Ours and Veenman, 1999). Moreover, some studies emphasize the importance of the institutional factors such as policies on the labor market integration of immigrants (Reitzet et. al 1999). Van Ours and Veenman (1999) argue that the relatively poor employment position of ethnic minorities in the early 1980s in the Netherlands might be explained by the policy of the Employment Office that basically focused on the preferences of employers.

On the other hand, studies focusing on the supply side of the labor market, in line with the human capital theory, point out that immigrants usually lag behind the native Dutch in terms of education, country-specific skills, and language proficiency, resulting in a weak position in the labor market (Kee,1993). Applying a symmetric approach to the labor market in their analysis, Nieseng et al.(1994) suggest that half of the difference in employment chances between the native Dutch and ethnic minority groups in the Netherlands are attributable to differences in personal characteristics.

Another supply-side explanation emphasizes the impact of social capital on immigrants' labor market positions (Aguilera 2002,2005). In this context, it is argued that immigrants are disadvantaged in the labor market because they have a social network predominantly consisting of members of their own ethnic group whose knowledge of the labor market is not as good as that of natives. Having access to native social networks is important for the economic performance of immigrants, as natives are better informed about job openings; they are better positioned to find jobs and to present themselves to employers than are immigrants. Examining the role of human and social capital in immigrant employment and occupational status in the Netherlands, Van Tubergen and Kanas(2006) find that human capital has a positive impact on immigrants' labor market positions and the returns to host-country specific human capital are much higher than the returns to origin-country specific human capital. Although they find that immigrants who have more contacts with Dutch natives are less often unemployed and have a higher occupational status, this positive effect

of social capital disappears considerably after human capital characteristics are controlled for. Conversely, Veenman(1998) suggests that in addition to education level, work experience and Dutch language proficiency, social contact with Dutch natives has a positive impact on the employment integration of immigrants in the Netherlands.

3 Data and Descriptive Statistics

The data used in this study come from the SPVA, 'Social Position and Use of Public Utilities by immigrants'. The SPVA is a large-scale, cross-sectional[5] immigrant-specific survey (Van Ours and Veenman 2003). The aim of this survey is to collect information on the socio-economic and socio-cultural position of the four largest ethnic minorities in the Netherlands: Turks, Moroccans, Surinamese and Antilleans. In the SPVA, the main respondents are heads of the households who are interviewed through an extensive questionnaire. In addition, partners and offspring aged 12 years and older are interviewed with the shortened version of the main questionnaire. The SPVA surveys contain extensive information on immigrants' labor market outcomes, their migration history, education, and cultural attitudes.

The SPVA comprises random samples of the population in thirteen cities, including the four largest in the Netherlands.[6] The first survey was conducted in 1988 and repeated thereafter in 1991, 1994, 1998, and 2002. As this study aims to investigate the effect of interethnic marriage on immigrants' labor market outcomes in the Netherlands, I restrict the sample to immigrants who entered the Netherlands as unmarried.[7] To apply this selection rule, I need information on the year of marriage and the year of immigration. This information is not collected for the 1988 and 1991 surveys. Therefore, I make use of the surveys conducted in 1994, 1998, and 2002.

The total number of marriages in the pooled data set is 4324. 62% of 4324 respondents (2696) were unmarried when they immigrated to the Netherlands. The final sample includes both the first- and second-generation male immigrants.[8] I use the term 'first generation' to refer to people

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[5]The SPVA contains a small panel, about 10% of the sample. I use the sub-samples of the SPVA surveys comprising those who were interviewed for the first time.

[6]For 1994, 1998 and 2002 surveys, in addition to the four major cities in the Netherlands–Amsterdam, Rotterdam, The Hague, and Utrecht-Almere, Alphen aan de Rjin, Bergen op Zoom, Delft, Dordrecht, Eindhoven, Enschede, Hoogezand-Sappemeer, and Tiel are included.

[7]In the empirical section, I also estimate the model for the sample of all married immigrants to check whether the results are sensitive to this selection rule.

[8]I focus on males, since inclusion of females in the sample leads to a serious selection problem related to their

who were born abroad and actually immigrated to the Netherlands. Second generation immigrants are defined as those who were born in the Netherlands but have at least one foreign born parent. Second generation immigrants constitute 12% of the final sample.

Interethnic marriage is defined as the union of a first or second generation immigrant with a native who is defined as a native-born person of two native-born parents. Also, the couples may be legally married or in a de-facto relationship. Cohabitation is very common in the Netherlands especially among the native and Caribbean couples. The sample includes 102 cohabiting couples, 78% of which are Caribbean couples.

I am basically interested in two types of marriages (i) *Exogamous marriages*: the respondent's partner is native Dutch.[9] (ii) *Endogamous marriages*: the respondent's partner or her parent(s) come from the same country as the respondent. In 51 cases, the information on the birthplace of parents-in-law is missing.[10] For these cases, I utilize information on the birthplace of the partner only. Table 2 presents the interethnic marriage rates among ethnic groups. The overall interethnic marriage rate in the sample is 16%. The Antilleans appear to have the highest percentage of intermarried immigrants while the Turks have the lowest intermarriage rate. The Caribbean groups, i.e., Surinamese and Antilleans, marry exogamously more often than the Mediterranean groups, i.e., Turks and Moroccans. There are several explanations for the high rates of intermarriage in Caribbean groups (Kaljmin and Van Tubergen 2007). First, as Suriname and the Dutch Antilles were former colonies of the Netherlands, Caribbean groups are quite familiar with Dutch culture and language. On the other hand, the language background of the Mediterranean groups is different from that of the Caribbean groups. Turks and Moroccans were not exposed to the Dutch language before immigration. Immigrants who do not speak the language of the host country very well have fewer opportunities to interact with the native population and this would naturally decrease the propensity to intermarry. Second, religious affiliation is another important factor affecting the partner selection process. Unlike the Caribbean groups who are mainly Christian,[11] the Mediterranean groups are mostly Muslim. Islam stresses similarity in religious outlook as one of the most

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labor market participation. This problem is less severe for males than for females.

[9]The final sample does not include exogamous marriages with the other ethnic groups. For example, Surinamese men are married to Turkish women.

[10]For those cases, some of the partners might be treated as native while they were actually second generation immigrants.

[11]There are three main ethnic subgroups of Surinamese population: (i)*East Indians*: the majority of this group is Hindu, (ii) *Indonesians* are mostly Muslim (iii) *Creoles* are predominantly Christian.

important traits in the partner selection process. Although in some circumstances, Muslim men are permitted to marry non-Muslim women, interfaith marriages are not recommended for the sake of religious compatibility between partners and the upbringing of children. A further explanation for the comparatively low rates of interethnic marriage in the Mediterranean groups is that among Turks and Moroccans, arranged marriages with the members of the same ethnic group are quite common. In this kind of marriage, partner selection is influenced by traditional family values.

In the next section, I describe the basic variables I have used in the empirical analysis.

Dependent Variables

This paper investigates how interethnic marriage affects immigrants' labor market outcomes in the Netherlands. I consider two important aspects of economic integration: *earnings* and *employment*.

Hourly wage: In this study, the logarithm of hourly wage is used as the measure of earnings. For the survey years 1998 and 2002, the respondents were asked to report their hourly wage rates directly. However, the 1994 survey does not contain such information. For the 1994 survey, the hourly wage variable is constructed by the division of net monthly earnings from paid work by the monthly hours of work.[12] **Employment**: is a binary variable that takes the value of 1 if the respondent has any kind of employment including self-employment and takes zero if the respondent is unemployed or searching for a job. The sample is restricted to the economically active population of male immigrants aged between 25 and 60 years. Individuals are considered to be economically active when they are employed, self employed, unemployed or searching for a job. Inactive people are all others, such as students and retired persons. The lower and upper age categories are chosen based on the assumption that individuals older than 24 participate in the labor market since they have typically finished their studies at that age and that individuals older than 60 leave the labor market (Bevelander and Veenman 2004).

Independent Variables

The following variables are controlled for in the earnings and employment equations.

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[12]It is also important to note that the currency used in the Netherlands before the euro is the Dutch gulden (florin). The Dutch gulden expired in January 28, 2002. Thus, the data on hourly wage rates and monthly earnings collected in 1994 and 1998 waves were in the Dutch gulden. For these survey years, the Dutch Gulden is converted to the euro at the rate 1 Euro=2.20371 Dutch Gulden.

Education: I distinguish four levels of education (1) Primary education (2) Lower Secondary education (3) Higher secondary education (4) University Education. **Age**: is measured in years. **Caribbean** : is an indicator variable that takes on the value of 1 if the immigrant is from Suriname or the Antilles (the Caribbeans) and zero if the immigrant is from Turkey or Morocco (the Mediterraneans). I divide immigrant groups into two main categories, as they are homogenous in terms of religious, cultural and language backgrounds. **Second Generation**: is a dummy variable indicating that the respondent is a second generation immigrant. First generation immigrants are defined as people who were born abroad and actually immigrated to the Netherlands while immigrants who were born in the Netherlands but have at least one foreign born parent are categorized as second generation. The second generation immigrants may have different labor market outcomes from first generation immigrants due to the fact that the former group does not necessarily have the same human and social capital as the latter group. **Years since migration** (*Duration of Residence*): It is well-documented in the literature that the time spent in the host country, often referred to as years since migration, is an important factor influencing the assimilation process[13](Borgas 1994, 1999; Chiswick, 1991). Immigrants who have been in the host country for a longer time acquire more country-specific skills that affect their economic integration positively. I construct five categories for the *years since migration* variable: 0-5 years, 6-10 years, 11-15 years, 16-20 years and 21 years or more. **Survey 1998 and Survey 2002**: I include the survey-year indicator variables to control for yearly effects. Survey 1994 is the omitted category for the set of survey-year indicator variables. **Bigcity**: is an indicator variable that takes on the value of 1 if the municipality in which the respondent lives is large[14] and zero otherwise. The respondent's region of residence is added to the model to control for possible variations in regional labor market conditions. **Part-time**: is an indicator variable that takes on the value of 1 if the immigrant is a part-time worker and zero if the immigrant is a full-time worker. A part-time worker is defined as someone who reports that she is working less than 30 hours but more than 5 hours a week. **Private**: to capture the

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[13]Proficiency in the host country's language has also been found to play an important role in the process of economic assimilation of immigrants. (Chiswick and Miller 1992, 2002) In my analysis, I do not control for immigrants' Dutch language proficiency due to possible endogeneity between language fluency and earnings. In addition, the direction of causality between intermarriage and language fluency is ambiguous. While intermarriage increases language fluency, language fluency may also increase the likelihood of intermarriage. (Meng and Gregory 2005) The complicated relationships among earnings, intermarriage and language fluency makes the model more complex which calls for a better dataset.

[14]If the respondent lives in the four major cities in the Netherlands-Amsterdam, Rotterdam, The Hague, and Utrecht- the binary variable *Bigcity* takes a value of 1 and zero otherwise.

wage differential between public and private sectors, I set up an indicator variable that takes on the value of 1 if the respondent works in the private sector and takes zero if the respondent works in the public sector.[15]

To endogeneize the intermarriage decision, I incorporate intermarriage equation into the model. Therefore, I examine the determinants of intermarriage. In addition to the human capital variables, structural and demographic forces such as group size, sex ratio, generational composition, and ethnic residential segregation also affect interethnic marriage decision. In this study, I consider group size and sex ratio as main demographic forces affecting interethnic marriage. **Group-Specific Sex Ratio**: This variable measures the number of group members of the opposite sex divided by the number of group members of the same sex aged 15-60. The data are available for the period 1972-2002 on a yearly basis.[16] The sex ratio for an individual i from ethnic group e can be specified as:

$$SR_{it}^e = \frac{n_t^f}{n_t^m} \tag{1}$$

where n_t^f and n_t^m are the number of females and males respectively in the ethnic group e in year t.[17] To construct the sex ratio variable, I match the year in which the respondent married with the relevant group specific sex ratio for that year. For those who married before 1972, I use the group-specific sex ratios for 1972. The more skewed the group-specific sex ratio, the more likely immigrant will look for potential partners outside his own ethnic group (Angrist 2002; Blau and Schwartz 1984). In other words, unbalanced sex ratios encourage interethnic marriage. Examining the patterns and determinants of ethnic intermarriage in the Netherlands, Kalmjin and Tubergen (2007) find that immigrants marry out more often when the group-specific sex ratio is more unbalanced and when the share of the second generation immigrants within the ethnic group is comparatively larger. **Group Size**: This variable indicates the size of each immigrant group aged 15-60 relative to that of Dutch population. The group size for individual i from ethnic group e can be specified as:

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[15]In 2002 and 1998 surveys, there are three possible answers for the question of the respondent's employment sector: Public sector, Private sector and Non-governmental Organizations (NGOs). For these years, I added NGOs employment to the category of the public sector.

[16]The data are obtained from the database of Statistics of Netherlands

[17]The marriage market might be geographically bounded. Since the data is not available at the province level, I measure the group-specific sex ratios at the nation level.

$$GS_{it}^e = \frac{N_t^d}{N_t^e} \qquad (2)$$

where N_t^d and N_t^e represent the number of Dutch natives and number of members from ethnic group e in year t. I construct this variable by matching respondents' year of marriage with the corresponding relative size of the immigrant group in that year. For immigrants who married before 1972, I use the group size ratios for 1972. A number of studies indicate that the size of the immigrant group is an important factor affecting intermarriage decisions (Qian and Lichter 2001; Blau and Schwartz 1984; Hwang et al. 1997). The larger the size of the immigrant group, the more likely for an immigrant to meet a partner from his own ethnic group and the lower the probability of marrying exogamously.

Table 3 presents the summary statistics by type of marriage. The main conclusions drawn from Table 3 are as follows: Intermarried immigrants earn more than their endogamously married counterparts. Intermarried and nonintermarried immigrants also differ in employment rate. In the intermarried sample, 79% of immigrants are employed while in the nonintermarried sample the employment rate is 65%. The Caribbean groups, i.e., Surinamese and Antilleans are more likely to intermarry than the Mediterranean groups, i.e., Turks and Moroccans. In general, intermarried immigrants are more educated, have spent more years in the Netherlands, and live in smaller cities compared to their nonintermarried counterparts. The generational composition of the intermarried sample is different from that of the nonintermarried sample. Second generation immigrants constitute 36% of the former sample and 8% of the latter sample. Second generation immigrants seem more likely to marry exogamously than first generation immigrants This pattern might be explained by the different degrees of integration the two groups experience. Second generation immigrants who attended school in the Netherlands and have more skills in the Dutch language are more likely to become integrated within Dutch society than first generation immigrants. To sum up, since the intermarried and nonintermarried immigrants differ in certain characteristics which might also affect their labor market outcomes, I have to control for these differences in the earnings and employment equations.

4 Empirical Strategy

The key interest of this paper is to investigate whether immigrants married to a native have better labor market outcomes than those married within their own ethnic group. I examine two important aspects of economic integration: earnings and employment. The standard economic approach to the study of immigrant integration is based on human capital theory. In this approach, human capital theory has been augmented to include variables that capture economic integration. In this study, I follow a similar approach by proposing that intermarriage has an effect on the economic integration of immigrants. There are at least two reasons to include intermarriage in the model. First, having a native spouse gives access to native networks. The networks are influential in creating productive social capital which promotes immigrants' economic integration. Second, intermarried immigrants can increase their human capital accumulation, e.g., language skills, host country's culture, rules regulating the labor market through their native spouses.

Estimating the causal effect of interethnic marriage on immigrants' economic integration is not simple for the following reasons. First, intermarriage can be endogenous to labor market outcomes due to reverse causality. Marrying a native increases the human capital accumulation of the immigrant, thus improving the immigrant's position in the labor market or it can be argued that the causal relationship is the opposite: An immigrant with higher earnings might be more likely to marry a native. Second, intermarried immigrants might be a selected sub-sample from the population of all married immigrants (Kantarevic, 2004). It is possible that intermarried immigrants have unobserved characteristics, such as physical appearance or social skills that may also affect their labor market outcomes. Ignoring these problems leads to biased and inconsistent coefficient estimates.

The sample consists of married immigrants. Therefore, the inference is limited to this restricted sub-sample of the immigrant population only. I also limit the sample to immigrants who entered the Netherlands as unmarried. It is probable that immigrants who arrived as unmarried to the Netherlands might be different from those who arrived as married. In the empirical section, I estimate the model for the sample of all married immigrants, without excluding immigrants who already were married when they moved to the Netherlands, to check whether the results are sensitive to this selection rule. In this study, I deal with selection issues in the sample of married immigrants

only, i.e., selection into interethnic marriage.[18]

To endogeneize the interethnic marriage decision, I need at least one instrument that affects the likelihood of intermarriage but does not have a direct effect on the labor market outcomes except through its effect on interethnic marriage. I use group size and sex ratio as instruments. Group size represents the size of the immigrant group relative to that of the native Dutch population. The larger the size of the immigrant group, the more likely for an immigrant to meet a partner from his own ethnic group and the lower the probability of interethnic marriage. Sex ratio measures the number of group members of the opposite sex divided by the number of group members of the same sex. As unbalanced sex ratios encourage interethnic marriage, I expect a negative relationship between the sex ratio variable and the probability of interethnic marriage.

The credibility of my identification strategy hinges on the assumption that the instruments are valid. If the instruments are valid, then (i) they must be significant determinants of interethnic marriage decision (ii) they must not be determinants of the labor market outcomes. As discussed above, group size and sex ratio are both important factors affecting interethnic marriage decisions. Moreover, it is unlikely to consider that the instruments should be included into the earnings and employment equations. Therefore, they do not make a direct contribution to the labor market outcomes except through their effects on interethnic marriage.

4.1 Econometric Model

4.1.1 Earnings Equation:

The baseline earnings equation for immigrants is specified as follows to test the two hypotheses: **Hypothesis 1**: Exogamously married immigrants earn more than those who are endogenously married. **Hypothesis 2**: The interethnic marriage premium varies across generations. The premium is larger for first generation immigrants than second generation immigrants.

$$lnW_i = \alpha_0 + \alpha_1 I_i + X_i' \beta_{11} + \varepsilon_{i1} \tag{3}$$

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[18]I am aware that the selection may be an issue because of the fact that the employment status can be observed for those who are economically active and the wage equation is estimated for only those who are working as wage earners. In the final sample which excludes male immigrants who were already married when they immigrated to the Netherlands, only 20% of males are economically inactive, 85% of the economically active males are working and 67% are wage earners.

where lnW_i is the natural log of hourly wage for individual i, *intermarriage*, denoted by I, is a binary variable that takes on value one if the immigrant married a native and zero if the immigrant married within his own ethnic group. X_i represents a vector of other control variables: *age* (and its squared term), *Caribbean* is a dummy variable indicating whether the immigrant is from Suriname or Antilles, *education level*, *years since migration*, *bigcity* is a dummy variable for the place of residence, *private* is a dummy variable indicating whether the individual works in the private sector, *Part-time* is a dummy variable indicating whether the individual is a part-time worker. *Second generation* takes the value one for second generation immigrants and zero for first generation immigrants, *Survey-year dummies*. I also add an interaction variable ,*interaction*, which is created by the product of *intermarriage* and *second generation* to test Hypothesis 2.

Treating intermarriage as an exogenous variable in equation 3, I can estimate the causal effect of interethnic marriage on earnings by OLS. However, as mentioned earlier, it is quite possible that intermarried immigrants have unobservable characteristics which make them earn higher or lower earnings. In order to take this endogeneity problem into account, I incorporate the intermarriage equation into the model.

$$I_i = \delta_0 + X_i'\delta_{11} + Z_i'\delta_{12} + \varepsilon_{i2} \tag{4}$$

where Z_i is a vector of additional exogenous variables that affect the intermarriage decision but must be redundant in the earnings equation. Z_i includes group specific sex ratio and group size. It is important to note that the interaction variable, which is created by the product of *intermarriage* and *second generation* dummies, is also potentially endogenous. Therefore, there are two endogenous regressors in equation 3. I also consider interaction variables -*sex ratio*second generation* and *group size*second generation*-, which are created by interacting the second generation dummy variable with group size and sex ratio, as instruments to identify the parameters of interest. Using the standard 2SLS estimation method, I obtain predicted values from first-stage regressions of endogenous regressors on instruments and then run second stage OLS regression using those predicted values.

4.1.2 Employment Equation

I also aim to investigate whether marrying a native positively affects the employment integration of immigrants in the Netherlands. To this end, I would like to test the following hypotheses. **Hypothesis 3**: Immigrants who are married to a native are more likely to be employed than those who are endogamously married. **Hypothesis 4**: The interethnic marriage premium varies across generations. The premium is larger for first generation immigrants than second generation immigrants.

The equation for the probability of being employed is specified as follows:

$$E_i^* = X_i'\beta_1 + \delta_2 I_i + \epsilon_{i1} \tag{5}$$

$$E_i = \begin{cases} 1 & \text{if } E_i^* \geq 0 \\ 0 & \text{if } E_i^* < 0 \end{cases}$$

where E_i^* is an unobserved latent variable. The employment variable E_i equals one if the immigrant has any kind of employment including self-employment and zero otherwise. The *intermarriage* variable I_i takes a value of one if the immigrant married a native and zero if the immigrant married within his own ethnic group. X_i, a vector of other control variables, includes *age, age squared, Caribbean, Education level, years since migration, bigcity, Second generation, interaction, Survey-year dummies.*

The equation for the probability of being married to a native is specified as follows:

$$I_i^* = M_i'\gamma_1 + Z_i\gamma_2 + \epsilon_{i2} \tag{6}$$

$$I_i = \begin{cases} 1 & \text{if } I_i^* \geq 0 \\ 0 & \text{if } I_i^* < 0 \end{cases}$$

where I_i^* is an unobserved latent variable. The *intermarriage* variable ,I_i, equals one if the immigrant is intermarried and zero otherwise. M_i is a vector of variables including *education level, years since migration, Caribbean, Second generation* and Z_i is a set of instrumental variables.

Since in the employment equation, the outcome measure and potentially endogenous variable

are both binary, the bivariate probit procedure is used to estimate the causal effect of intermarriage on the probability of being employed. The bivariate probit model with the endogenous dummy variable belongs to the class of recursive models for dichotomous choice (Maddala 1983). The recursive structure builds on a first reduced-form equation for the potentially endogenous dummy (Equation 6) and a second structural-form equation determining the outcome of interest (Equation 5) (Monfardini and Radice 2007). In this framework, it is assumed that ϵ_{i1} and ϵ_{i2} are identically and independently distributed as bivariate normal with zero mean, unit variance and correlation coefficient ρ:

$$\begin{pmatrix} \epsilon_{i1} \\ \epsilon_{i2} \end{pmatrix} \sim N \left\{ \begin{pmatrix} 0 \\ 0 \end{pmatrix}, \begin{pmatrix} 1 & \rho \\ \rho & 1 \end{pmatrix} \right\} \tag{7}$$

The system is identified if at least one variable in Z_i is not contained in X_i. The endogeneity of *intermarriage* ,I_i, in equation 5 is tested by the following null and alternative hypotheses:

$$H_o : \rho = 0$$

$$H_a : \rho \neq 0$$

Accepting the null hypothesis implies that there is no endogeneity bias, and consistent estimates for the variables of interest can be obtained by estimating the two equations (5&6) separately as binomial probits. However, if $\rho \neq 0$, Equations 5 and 6 have to be estimated simultaneously by maximum likelihood (ML) to get consistent estimates of the parameters of equation 5. The test for endogeneity ($\rho = 0$) can be performed using the likelihood ratio (LR) test (Monfardini and Radice 2007).

5 Results

5.1 Earnings Equation

I begin estimating the earnings equation with OLS, treating interethnic marriage as exogenous. Table 4 presents the OLS results of the earnings equation. These results may be viewed as a benchmark which sheds light on whether the effect of interethnic marriage on earnings persists after

other observed factors are controlled for. The estimations are carried out for four specifications, and each specification adds more controls to the set of explanatory variables. First, I regress log hourly wages on an indicator of interethnic marital status ,*intermarriage*, to estimate the raw interethnic marriage premium. In the second specification, I control for age, education level, years since migration, ethnic groups, *caribbean*, and survey year effect. In the third specification, I also control for the place of residence ,*bigcity*, a dummy variable indicating if the immigrant is a part-time worker,*part-time*. In the fourth specification, I add a dummy indicating immigrant generation,*second generation*, to control for possible differences in labor market outcomes between first and second generation immigrants. I also add the interaction term, created by the product of *intermarriage* and *second generation* dummies, to test whether the interethnic marriage premium varies across generations.

The following conclusions can be drawn from Table 4. First, the raw interethnic marriage premium is eighteen percent. However, summary statistics in table 3 suggest that intermarried and nonintermarried immigrants differ in certain characteristics that might also affect their earnings. After controlling for these differences, I find that intermarried immigrants on average earn five percent more than their endogamously married counterparts.[19] Second, most of the other variables have the expected signs and are statistically significant. The hourly earnings are an increasing and concave function of age. Educational level also has a positive impact on earnings. The Caribbean groups, i.e., Surinamese and Antilleans on average earn four percent more than the Mediterranean groups, i.e., Turks and Moroccans. In line with the earlier studies, immigrants who have been in the Netherlands for a longer period have higher earnings. Moreover, the estimated coefficients for survey year dummies indicate that hourly earnings are approximately twenty percent higher in 2002 compared to those in 1994. However, there is no statistically significant difference between hourly earnings in 1998 and those in 1994. Surprisingly, the OLS results indicate that on average, the hourly earnings of part-time workers are higher than those of full-time workers. Finally, in the fourth specification, the coefficients of second generation dummy and interaction term are not statistically significant.

I estimate equations 3 & 4 using two-stage least squares (2SLS), which takes the endogeneity

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[19]The estimated coefficient for intermarriage is always positive .The p-values for the coefficient is 0.000, 0.008, 0.045, 0.122 for the first, second, third and fourth specifications respectively.

problem into consideration. 2SLS estimations are carried out for two specifications. In the first specification, I control for age, education level, duration of residence, ethnic groups, part-time employment, place of residence, employment sector (public versus private), and survey year effects. The second specification adds immigrant generation and the interaction term, created by the product of *intermarriage* and *second generation*, to the explanatory variables set. Table 5 shows the first stage results for 2SLS estimation of the earnings equation. The first column of table 5 presents the estimation results under the first specification. The results in the first column indicate that the probability of interethnic marriage is a decreasing and concave function of age. Caribbean groups are more likely to be intermarried than Mediterranean groups. Compared to the reference group (primary school graduates), college graduates have a higher probability of being intermarried. Immigrants who live in the four major cities are less likely to have a native spouse. Most importantly, the estimated coefficients on the instruments, group size and sex ratio, have the expected sign and are statistically significant at the 1% level. It is important to note that in the second specification, there are two endogenous regressors (*intermarriage* and *interaction*). In addition to group size and sex ratio, I use the variable *Groupsize*Sec.gen* ,which is created by the product of second generation dummy and group size, as one of the instruments to identify the parameters of interest. The second and third columns of table 5 present the results for the first stage regressions of the endogenous regressors,*intermarriage* and *interaction*, respectively. The second column indicates that when I add a dummy indicating immigrant generation (*second generation*) and an interaction term (*interaction*) to the model, the estimated coefficients for age and ethnic group dummy (Caribbean) turn out to be statistically insignificant. In contrast to what I expected, second generation immigrants are less likely to marry out than first generation immigrants. In both specifications: (1) the F-statistic of excluded instruments implies that instruments are jointly significant. The joint and individual significance of the instruments in the first stage regressions ensure that the instruments are relevant (2) The Sargan Statistic, an overidendification test of all instruments, indicates that the instruments meet orthogonality conditions.

Table 6 presents the second stage results for 2SLS estimation of the earnings equation. As expected, the main coefficient of interest, the indicator for intermarriage, is positive and statistically significant at 5% level. The estimated coefficient implies that intermarried immigrants on average earn 30% more than their endogamously married counterparts. After accounting for the

endogeneity of intermarriage, I observe an increase in the intermarriage premium suggesting that unobservable characteristics that are positively related to probability of intermarriage have a negative effect on earnings.[20] Like OLS results, age, education level, and years of residence have positive impact on earnings. I observe no significant difference in hourly earnings between 1994 and 1998, whereas there is a statistically significant difference between 2002 and 1994. The dummy variable indicating if the immigrant is a part-time worker has a positive effect on earnings. Unlike OLS results, 2SLS results indicate that the Caribbean groups do not have significantly higher earnings than the Mediterranean groups and second generation immigrants earn approximately 9% more than first generation immigrants. Furthermore, the estimated coefficient of the interaction variable, *interaction*, is negative and statistically significant implying that the intermarried first generation immigrants earn higher incomes than the intermarried second generation immigrants. I find a higher intermarriage premium for first generation immigrants. This finding is in line with my expectations. As second generation immigrants are closer to the native population in terms of human and social capital, they may not gain from their Dutch spouses as much as first generation immigrants.

5.2 Employment Equation

The second part of the empirical analysis focuses on the association between interethnic marriage and employment integration of immigrants. First, I estimate the employment equation with probit treating interethnic marriage as exogenous. Probit estimations are carried out for two specifications. In the first specification, we control for age, education level, duration of residence, ethnic groups, place of residence, and survey year effect. The second specification adds immigrant generation and the interaction term to the explanatory variable set. The probit results in table 7 show that the main coefficient of interest, coefficient on the indicator for intermarriage, is not statistically significant, implying that there is no significant difference in the likelihood of employment between endogamously married immigrants and those who are married to a native. Most of the other variables have expected signs and are statistically significant. The likelihood of being employed increases with age, education level, and the number of years since migration. The Caribbean groups

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[20]After controlling for endogeneity of intermarriage, Meng and Gregory (2005) also find an increase in the intermarriage premium.

have higher employment chances than the Mediterranean groups. The second column in table 7 indicates that there is no significant difference in the likelihood of being employed between first and second generation immigrants. The estimated coefficient of the interaction variable ,*interaction*, has the expected negative sign, but it is not statistically significant.

I estimate the bivariate probit model of employment and intermarriage equations to account for possible endogeneity of intermarriage. Table 8 presents the results of the bivariate probit model. The estimation results for the employment equation show that the main coefficient of interest - coefficient on the indicator for intermarriage- has the expected positive sign and is statistically significant at 5% level indicating that immigrants who are married to a native more likely to be employed than those who are endogamously married. The employment chances of immigrants are positively correlated to the number of years since migration. The likelihood of being employed increases with age at a decreasing rate. Education level has a significant positive effect on employment chances. The estimated coefficients of survey year dummies indicate that immigrants have higher job chances in the years 1998 and 2002 compared to 1994. The Caribbean groups have higher employment chances than the Mediterranean groups. Unexpectedly, the likelihood of being employed does not differ between first and second generation immigrants and the estimated coefficient of the interaction term is not statistically significant implying that the effect of intermarriage on employment is not different between first and second generation immigrants. I calculate the marginal probabilities of being employed from the bivariate probit estimates. Marginal probabilities in table 8 suggest that being married to a native increases the probability of employment by 22%.

The following conclusions can be drawn from the estimation results of the intermarriage equation in table 8. Compared to the reference group, primary school graduates, higher secondary school and college graduates have a higher probability of being intermarried. As expected, Caribbean groups are more likely to be intermarried than Mediterranean groups. Immigrants who have been in the Netherlands for a longer time have higher propensity to intermarry. Second generation immigrants are more likely to marry out than first generation immigrants. The bivariate probit model is identified if there is at least one variable that affects intermarriage decision, but does not directly affect employment except through its effect on marriage choice. In the bivariate probit estimations, I use *group size* and *sex ratio* as instruments. The estimated coefficients on the instruments have

the expected sign and are statistically significant at the 1% level.

Moreover, the estimate of ρ, the correlation coefficient for the error terms of employment and intermarriage equations, is -0.36. The LR test statistic indicates that this estimate is significantly different from zero at 10% level. The significant and negative estimate of ρ suggests that unobservable factors that are positively related to probability of intermarriage are negatively related to employment chances.

The sample used in the empirical analysis excludes immigrants who entered the Netherlands as unmarried. I also estimate the model for the sample of all married immigrants, without excluding immigrants who already were married when they moved to the Netherlands, to check whether the results are sensitive to this selection rule. Table 9 reports the selected estimation results for earnings and employment equations. As can be seen from table 9, the overall findings do not change. The estimated coefficients of the intermarriage dummy and interaction variable are statistically significant and have the same signs as those for the sample which excludes immigrants who entered the Netherlands as married.

6 Conclusion

This study analyzes the relationship between interethnic marriage and the labor market integration of immigrants in the Netherlands. It is important to examine this relationship because interethnic marriage promotes economic and social integration of immigrants through increasing their knowledge about host country's culture, language and rules regulating the labor market . Also having a native spouse gives access to native networks. The networks are important in creating productive social capital, which may have a positive effect on immigrants' labor market outcomes.

I basically investigate whether labor market outcomes differ between immigrants married to a native and those married within their own ethnic group by using large-scale, cross-sectional immigrant-specific survey data, 'Social Position and Use of Public Utilities by Immigrants'. I focus on the following questions. (1) Are immigrants who are married to a native more likely to be employed than those who are endogamously married? (2) Do exogamously married immigrants earn more than those who are endogamously married? If so, what is the intermarriage premium for intermarried immigrants? Furthermore, I test whether or not the intermarriage premium varies

across generations. Unlike the previous studies, which treat second generation immigrants as natives, the data set used in this study allows one to distinguish between first and second generation immigrants.

The main findings of this study can be summarized as follows: Marrying a native is associated with higher earnings. Treating intermarriage as exogenous, I find that intermarried immigrants on average earn 5 percent more than their endogamously married counterparts. However, after accounting for the possible endogeneity of intermarriage, the intermarriage premium goes up to 30 percent. The results show that the intermarriage premium varies across generations, while second generation immigrants do not gain from their Dutch spouses as much as first generation immigrants. Moreover, there is a significant difference in the likelihood of employment between endogamously married immigrants and those who are married to a native. Having a native spouse increases the probability of employment by 22 percent.

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Table 1

Number of Ethnic minorities in the Netherlands
in 1990, 2002 and 2007

	1990	2002	2007
Natives	12,668,000	13,140,336	13,187,586
Turks	206,000	331,000	368,600
Moroccans	168,000	284,000	329,493
Surinamese	237,000	315,000	333,504
Antilleans	81,000	125,000	129.965
Total Population	14,892,574	16,105,285	16,357,992

Source:Statline, Statistics Netherlands.

Table 2

Descriptive Statistics on the marital behavior
of the four ethnic groups

	Endogamy	Exogamy
Turks	1066	48
Moroccans	863	52
Surinamese	316	138
Antilleans	88	125
total	2333	363

Source:SPVA data 1994-2002 .

Table 3
Summary Statistics

	Total Sample (N=2696)		Endogamous Marriage (N=2333)		Exogamous Marriage (N=363)	
	Mean	Std. Dev.	Mean	Std.Dev.	Mean	Std. Dev.
Log(hourly wage)	2.01	0.33	1.98	0.30	2.16	0.44
Employment	0.67	0.47	0.65	0.47	0.79	0.40
Age	37.7	10.4	37.6	10.2	38.5	11.3
Education Level						
Primary	0.48	0.49	0.52	0.49	0.19	0.39
Lower secondary	0.22	0.42	0.22	0.41	0.26	0.44
Higher secondary	0.19	0.39	0.17	0.38	0.27	0.44
University	0.09	0.29	0.07	0.26	0.26	0.44
Years since migration	20.2	10.6	19.3	9.2	25.9	12.5
YSM1(0-5 years)	0.73	0.26	0.07	0.26	0.06	0.25
YSM2 (6-10 years)	0.12	0.32	0.13	0.33	0.06	0.24
YSM3 (11-15 years)	0.12	0.32	0.12	0.33	0.05	0.23
YSM4(16-20years)	0.17	0.3	0.19	0.39	0.08	0.28
YSM5 (> 20 years)	0.50	0.50	0.46	0.49	0.71	0.45
Second generation	0.11	0.32	0.08	0.27	0.36	0.48
Caribbean	0.24	0.43	0.17	0.37	0.72	0.44
Part-time	0.04	0.20	0.04	0.19	0.05	0.22
Private	0.77	0.41	0.78	0.40	0.69	0.46
Bigcity	0.66	0.47	0.69	0.46	0.47	0.49
Survey-year Dummies						
Survey1994	0.24	0.43	0.24	0.42	0.30	0.46
Survey1998	0.46	0.49	0.47	0.49	0.43	0.49
Survey2002	0.28	0.45	0.28	0.45	0.26	0.44
Sex Ratio	0.01	0.06	0.01	0.005	0.01	0.007
Group Size	0.73	0.26	0.69	0.26	0.93	0.17

Table 4

Results from OLS Estimation of the Earnings Equation

Log(hourly wage)	1	2	3	4
R^2	0.039	0.303	0.323	0.323
Intermarriage	0.183^{**}	0.046^{+}	0.054^{*}	0.049
	(0.026)	(0.027)	(0.027)	(0.032)
Age		0.29^{**}	0.031^{**}	0.029^{**}
		(0.007)	(0.007)	(0.08)
Age^2		-0.000^{**}	-0.000^{**}	-0.000^{**}
		(0.000)	(0.000)	(0.000)
Education Level				
Lower secondary		0.020	0.025	0.026
		(0.022)	(0.022)	(0.022)
Higher secondary		0.061^{**}	0.067^{**}	0.068^{**}
		(0.023)	(0.023)	(0.023)
University		0.315^{**}	0.308^{**}	0.310^{**}
		(0.030)	(0.029)	(0.029)
Years since migration				
YSM2 (6-10 years)		0.109^{**}	0.106^{**}	0.108^{**}
		(0.041)	(0.040)	(0.040)
YSM3 (11-15 years)		0.068^{+}	0.068^{+}	0.071^{+}
		(0.042)	(0.041)	(0.042)
YSM4(16-20years)		0.148^{**}	0.151^{**}	0.157^{**}
		(0.040)	(0.039)	(0.040)
YSM5 (>20 years)		0.179^{**}	0.179^{**}	0.191^{**}
		(0.038)	(0.038)	(0.041)
Caribbean		0.044^{*}	0.042^{*}	0.043^{*}
		(0.021)	(0.021)	(0.021)
Survey2002		0.196^{**}	0.204^{**}	0.204^{**}
		(0.025)	(0.025)	(0.025)
Survey1998		-0.016	-0.010	-0.011
		(0.022)	(0.022)	(0.022)
Part-time			0.251^{**}	0.250^{**}
			(0.044)	(0.044)
Bigcity			0.013	0.013
			(0.017)	(0.018)
Second generation				-0.033
				(0.039)
Interaction				0.031
				(0.054)
Observations	1187	1142	1142	1142

The dependent variable is the logarithm of hourly wage. Standard errors are given in parenthesis. **, * and $^{+}$ indicate respectively 1%, 5% and 10% significance levels. The reference category for education dummy variables, years since migration dummy variables, and survey year dummy variables are primary education, duration of residence between 0 and 5 years, and Survey1994 respectively.

Table 5

First Stage Results of 2SLS Estimation

| | P(intermarriage=1) | | P(interaction=1) |
	1	2	2
Age	-0.016^*	-0.005	0.012^{**}
	(0.008)	(0.009)	(0.005)
Age^2	0.000^+	0.000	-0.000^{**}
	(0.000)	(0.000)	(0.000)
Lower secondary	-0.031	-0.009	-0.008
	(0.025)	(0.024)	(0.009)
Higher secondary	0.030	0.165	0.005
	(0.026)	(0.023)	(0.010)
University	0.157^{**}	0.113^{**}	0.033^*
	(0.033	(0.039)	(0.016)
YSM2 (6-10 years)	-0.047	-0.057	-0.016^{**}
	(0.045)	(0.047)	(0.006)
YSM3 (11-15 years)	-0.071	-0.098^*	-0.021^{**}
	(0.046)	(0.047)	(0.008)
YSM4(16-20years)	-0.022	-0.069	-0.037^{**}
	(0.044)	(0.048)	(0.012)
YSM5 (>20 years)	0.093^*	-0.018^{**}	-0.044^{**}
	(0.042)	(0.051)	(0.012)
Caribbean	0.145^{**}	0.033	-0.010
	(0.039)	(0.038)	(0.012)
Survey2002	-0.084^{**}	-0.084^{**}	-0.005
	(0.030)	(0.034)	(0.015)
Survey1998	-0.079^{**}	$-0.066^{(*)}$	0.009
	(0.025)	(0.028)	(0.013)
Part-time	-0.060	-0.037	-0.019^{**}
	(0.052)	(0.052)	(0.022)
Private	0.018	0.010	0.006
	(0.023)	(0.022)	(0.011)
Bigcity	-0.127^{**}	-0.138^{**}	-0.026^{**}
	(0.019)	(0.020)	(0.009)
Second generation		-1.304^{**}	-1.770^{**}
		(0.228)	(0.229)
Instruments			
Sex ratio	-13.10^{**}	-14.25^{**}	-5.475^{**}
	(2.32)	(2.785)	(1.366)
Group size	0.451^{**}	0.508^{**}	0.0701^*
	(0.90)	(0.082)	(0.032)
Groupsize*Sec.gen		1.661^{**}	2.386^{**}
		(0.251)	(0.250)
Observations	1075	1075	1075
R^2	0.315	0.384	0.657
F-statistic of excluded instruments	15.24	32.58	46.52
(Prob> F)	(0.000)	(0.000)	(0.000)

Dependent variables are probability of being intermarried and probability of being intermarried second generation immigrant. Heteroscedasticity robust standard errors are given in parenthesis. **, * and $^+$ indicate respectively 1%, 5% and 10% significance levels. 2SLS estimations are carried out for two specifications.(1) and (2) refer to specification 1& 2 .The reference category for education dummy variables, years since migration dummy variables, and survey year dummy variables are primary education, duration of residence between 0 and 5 years, and Survey1994 respectively.

Table 6

Results from 2SLS estimation of the Earnings Equation

	Log(hourly wage)	
	1	**2**
Intermarriage	0.257*	0.304*
	(0.129)	(0.153)
Age	0.035**	0.039**
	(0.007)	(0.008)
Age^2	−0.000**	−0.000**
	(0.000)	(0.000)
Education Level		
Lower secondary	0.032	0.019
	(0.022)	(0.023)
Higher secondary	0.069**	0.072**
	(0.023)	(0.023)
University	0.290**	0.305**
	(0.037)	(0.035)
Years since migration		
YSM2 (6-10 years)	0.124**	0.123**
	(0.039)	(0.041)
YSM3 (11-15 years)	0.094*	0.098*
	(0.040)	(0.044)
YSM4(16-20years)	0.159**	0.160**
	(0.038)	(0.041)
YSM5 (>20 years)	0.178**	0.188**
	(0.038)	(0.042)
Caribbean	−0.017	0.008
	(0.045)	(0.038)
Survey2002	0.221**	0.216**
	(0.028)	(0.027)
Survey1998	0.013	0.011
	(0.025)	(0.025)
Part-time	0.218**	0.207*
	(0.045)	(0.096)
Private	0.011	0.017
	(0.020)	(0.021)
Bigcity	0.043$^+$	0.044$^+$
	(0.025)	(0.026)
Second generation		0.085*
		(0.043)
Interaction		−0.323**
		(0.125)
Observations	1075	1075
Sargan Test for Overidentification	0.149	0.131
(Prob$> \chi^2(1)$)	(0.699)	(0.717)

The dependent variable is the logarithm of hourly wage. Standard errors are given in parenthesis. **, * and $^+$ indicate respectively 1%, 5% and 10% significance levels. The reference category for education dummy variables, years since migration dummy variables, and survey year dummy variables are primary education, duration of residence between 0 and 5 years, and Survey1994 respectively.

Table 7

Probit Estimates of probability of employment

	1		2	
	Probit coefficient	Marginal effect	Probit coefficient	Marginal effect
Intermarriage	0.064	0.022	0.077	0.026
	(0.100)	(0.034)	(0.112)	(0.038)
Age	0.116**	0.041**	0.110**	0.039**
	(0.020)	(0.007)	(0.022)	(0.007)
Age^2	-0.001**	-0.000**	-0.001**	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
Education Level				
Lower secondary	0.243**	0.083**	0.242**	0.082**
	(0.073)	(0.024)	(0.074)	(0.024)
Higher secondary	0.456**	0.148**	0.461**	0.150**
	(0.081)	(0.023)	(0.081)	(0.023)
University	0.551**	0.170**	0.558**	0.172**
	(0.111)	(0.028)	(0.112)	(0.028)
Years since migration				
YSM2 (6-10 years)	0.378**	0.123**	0.386**	0.125**
	(0.124)	(0.036)	(0.125)	(0.036)
YSM3 (11-15 years)	0.349**	0.114**	0.362**	0.118**
	(0.126)	(0.037)	(0.127)	(0.037)
YSM4(16-20years)	0.430**	0.140**	0.451**	0.146**
	(0.119)	(0.035)	(0.123)	(0.036)
YSM5 (>20 years)	0.471**	0.166**	0.513**	0.180**
	(0.119)	(0.041)	(0.132)	(0.045)
Caribbean	0.603**	0.194*	0.610*	0.196*
	(0.081)	(0.023)	(0.082)	(0.023)
Survey2002	0.446**	0.149**	0.447**	0.149**
	(0.080)	(0.025)	(0.080)	(0.025)
Survey1998	0.283**	0.099**	0.282**	0.099**
	(0.068)	(0.023)	(0.068)	(0.023)
Bigcity	-0.057	-0.020	-0.054	-0.019
	(0.060)	(0.021)	(0.060)	(0.021)
Second generation			-0.086	-0.031
			(0.137)	(0.050)
Interaction			-0.012	-0.004
			(0.221)	(0.078)
Observations	2596	2596	2596	2596
Log likelihood	-1372.59	-1372.59	-1372.32	-1372.32

The dependent variable equals one if the immigrant has any kind of employment, including self employment and zero otherwise. Standard errors are given in paranthesis. **, * and $^+$ indicate respectively 1%, 5% and 10% significance levels. The reference category for education dummy variables, years since migration dummy variables, and survey year dummy variables are primary education, duration of residence between 0 and 5 years, and Survey1994 respectively. Marginal effects are calculated at the multivariate point of means.

Table 8
Bivariate Probit Estimates of Employment and Intermarriage
Equations

	Biprobit coefficient	Marginal effect
Employment Equation		
Intermarriage	0.773^*	0.229^*
	(0.383)	(0.090)
Age	0.110^{**}	0.039^{**}
	(0.021)	(0.007)
Age^2	-0.001^{**}	-0.000^{**}
	(0.002)	(0.000)
Lower secondary	0.233^{**}	0.080^{**}
	(0.073)	(0.024)
Higher secondary	0.413^{**}	0.137^{**}
	(0.086)	(0.025)
University	0.454^{**}	0.146^{**}
	(0.128)	(0.035)
Years since migration		
YSM2 (6-10 years)	0.361^{**}	0.119^{**}
	(0.124)	(0.037)
YSM3 (11-15 years)	0.324^{**}	0.108^{**}
	(0.127)	(0.039)
YSM4(16-20years)	0.413^{**}	0.136^{**}
	(0.123)	(0.037)
YSM5 (>20 years)	0.469^{**}	0.166^{**}
	(0.133)	(0.046)
Caribbean	0.397^{**}	0.134^{**}
	(0.151)	(0.046)
Survey2002	0.440^{**}	0.149^{**}
	(0.079)	(0.025)
Survey1998	0.280^{**}	0.099^{**}
	(0.067)	(0.023)
Bigcity	-0.045	-0.016
	(0.059)	(0.021)
Second generation	-0.174	-0.064
	(0.142)	(0.053)
Interaction	-0.154	-0.056
	(0.225)	(0.085)

Table 8 (Continued)
Bivariate Probit Estimates of Employment and Intermarriage
Equations

	Biprobit coefficient	Marginal effect
Intermarriage Equation		
Second generation	0.646**	0.135**
	(0.111)	(0.030)
Lower secondary	0.112	0.017
	(0.099)	(0.016)
Higher secondary	0.323**	0.056**
	(0.102)	(0.020)
University	0.581**	0.119**
	(0.115)	(0.029)
Years since migration	0.009*	0.001*
	(0.004)	(0.000)
Caribbean	0.666**	0.127**
	(0.145)	(0.034)
Sex ratio	-35.39**	-5.39**
	(7.73)	(1.201)
Group size	1.309**	0.199**
	(0.343)	0.051
Observations	2590	2590
ρ	-0.36	
Likelihood-ratio test of $\rho = 0$	2.878	
(Prob$> \chi^2(1)$)	(0.08)	

Standard errors are given in parenthesis. **, * and + indicate respectively 1%, 5% and 10% significance levels. The reference category for education dummy variables, years since migration dummy variables, and survey year dummy variables are primary education, duration of residence between 0 and 5 years, and Survey1994 respectively.

Table 9
2SLS Estimates of the Earnings Equation & Bivariate Probit
Estimates of Employment Equation

	(Earnings)	Employment
	2SLS Coefficient	Biprobit Coefficient
Intermarriage	0.29[+]	0.835**
	(0.175)	(0.277)
Age	0.034**	0.126**
	(0.006)	(0.017)
Age^2	-0.000**	-0.002**
	(0.000)	(0.000)
Lower secondary	0.013	0.205**
	(0.019)	(0.063)
Higher secondary	0.067**	0.322**
	(0.020)	(0.074)
University	0.298**	0.430**
	(0.034)	(0.106)
YSM2 (6-10 years)	0.085**	0.329**
	(0.029)	(0.096)
YSM3 (11-15 years)	0.074**	0.399**
	(0.031)	(0.102)
YSM4(16-20years)	0.138**	0.366**
	(0.029)	(0.097)
YSM5 (>20 years)	0.169**	0.326**
	(0.034)	(0.103)
Caribbean	0.008	0.427**
	0.040	(0.102)
Survey2002	0.202**	0.494**
	(0.022)	(0.066)
Survey1998	0.003	0.301**
	(0.021)	(0.055)
Bigcity	0.038[+]	-0.036
	(0.022)	(0.048)
Second generation	0.091*	-0.099
	(0.044)	(0.130)
Interaction	-0.324**	-0.139
	(0.139)	(0.212)
Part-time	0.139*	
	(0.070)	
Private	0.004	
	(0.018)	
Observations	1440	3866
F-stat.of excluded instruments	27.35	46.50
(Prob> F)	(0.000)	(0.000)
Sargan Test for Overidentification	1.047	
(Prob> $\chi^2(1)$)	(0.306)	
Likelihood-ratio test of $\rho = 0$		6.076
(Prob> $\chi^2(1)$)		(0.013)

The dependent variable is the logarithm of hourly wage in the earnings equation.In the employ-
ment equation, the dependent variable equals one if the immigrant has any kind of employment,
including self employment and zero otherwise. The sample comprises all married immigrants, with-
out excluding immigrants who entered the Netherlands as married. Standard errors are given in
paranthesis. **, * and [+] indicate respectively 1%, 5% and 10% significance levels. The refer-
ence category for education dummy variables, years since migration dummy variables, and survey
year dummy variables are primary education, duration of residence between 0 and 5 years, and
Survey1994 respectively.