Will You Assimilate Me? (Inter)Marriage Premiums of Male Minority Migrants in Norway*

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Abstract

Do marriage premiums for male immigrants vary between endogamous and exogamous unions? Is it plausible that the intermarriage premium reflects returns from human capital and network "spillovers" from a native spouse? To address these questions, I model employment and labor earnings premiums from three types of marriage, using distributed fixed effects estimations on high-quality longitudinal population data from Norwegian administrative registers. Results suggest that treating the premium with dichotomous single-married dummy variables overestimate the *relative* intermarriage premium. I argue that the difference between endogamy and exogamy premiums is more difficult to interpret than has been acknowledged. Premiums associated with native intermarriage and premiums of intermarriage with an immigrant display remarkably similar patterns, pointing to a distinction between marriages within the national origin group and marriages outside of the national-origin group, rather than a distinction between intermarriage and marriage to another immigrant. Results from subgroup analyses are mixed, but most do not indicate a pattern we would expect if "spillovers" were the main mechanism generating the premium.

Keywords: marriage premium, intermarriage premium, immigrants, earnings, employment, assimilation

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1 Introduction

The association between immigrants' social integration and their economic assimilation is widely acknowledged among scholars in the social sciences (Furtado and Trejo 2012). In particular, there has been a recent upsurge in research on the intermarriage premium, defined as the gap in wages, earnings or employment between intermarried and endogamous immigrants. However, interpretations of the gap vary across studies with different analytical strategies and national contexts. Roughly, the literature presents two competing perspectives. The causal interpretation suggests that the gap exists because intermarriage with a native will provide a marital "spillover" of linguistic skills, knowledge, customs, contacts and connections, all of which improve the labor market prospects of the immigrant. The selection interpretation suggests that those intermarrying with a native is a very select group of immigrants, and that the gap is generated by other factors that increase both chances of intermarriage and chances of labor market success.

The two major questions posed in this article are: Do marriage premiums for male immigrants vary according to the background of the spouse? Is it plausible that the intermarriage premium reflects returns from human capital and network "spillovers" from a native spouse? This study proposes to look more closely at the marriage premiums of different marriage types, not only the average difference between the premium of exogamous and endogamous immigrants. First, this difference neglects the fact that endogamous immigrants might be earning a marriage premium for very different reasons than the exogamous. Second, an increasing difference could reflect post-marital decrease in the premium of the endogamous, and be consistent with no post-marital increase for the exogamous. Third, if the theories of "spillover" are true, we should not expect intermarriage with an immigrant to yield the same assimilation returns as intermarriage with a native. For these reasons, I display and compare the time-profile of marriage premiums for three types of marriage: endogamy, intermarriage with a woman of Norwegian background and intermarriage with a woman of a different national-origin immigrant background.

To address the research questions, I use high-quality longitudinal population data from Norwegian administrative registers. In order to broadly study the relationship between marriage and labor market assimilation, both employment and labor earnings (wages and returns to self-employment) are analyzed. As in several other European countries, challenges of assimilation are to a large degree related to access to labor for immigrants in Norway, which makes it important to investigate the transition to employment as well as earnings. The principal empirical strategy utilized is the application of distributed fixed effects models (Dougherty 2006; Dribe and Nystedt 2014) which enable assessment of year-by-year assimilation ten years before and after the marital union. Although the approach does not guarantee identification of a causal relationship, it provides a unique longitudinal window into when employment and earnings changes occur relative to the time of marriage (or cohabitation with children).

I present a variety of analyses for different subgroups. If the intermarriage

premium is a result of destination-country specific human capital and network spillover from the native-born spouse, returns from native intermarriages should stand out for adult migrants more than child migrants, for immigrants more than their children (second generation) and for those from culturally and linguistically different regions more than very similar regions. In all main specifications, immigrants from the Nordic countries, North-Western Europe, the US, Canada, New Zealand and Australia are excluded. These groups exhibit very high rates of economic assimilation, and their members frequently migrate to Norway because of a lucrative job offer or a Norwegian partner or spouse. Thus, as displayed in the last row of Table 1, they also intermarry with natives at substantially higher rates than all of the largest "non-western" groups.

The article is structured in the following way. After a brief review of theory and background, I present the empirical strategy, the data, and the results beforing discussing the implications of the findings for understanding the intermarriage premium.

2 Theory and Background

Research on the intermarriage premium is recent and results are heterogenous. While cross-sectional analyses using instrumental variable estimation have generally found support for the causal interpretation (Meng and Gregory 2005; Meng and Meurs 2006; Gevrek 2009), recent analyses of longitudinal data find pre-marital income growth for the to-be intermarried as well as little or no growth post-marriage, which supports the selection interpretation (Dribe and Nystedt 2011, Nekby 2010, Nottmeyer 2010).

This literature focuses on the intermarriage premium understood as a difference between the marriage premiums of the endogamous and those intermarried to a person of native background. The predominant theory in the field suggests that the latter could benefit from "spillovers" from their native spouse, e.g. language and other pertinent knowledge or skills (e.g. customs and informal rules), which would make them more productive and appear more attractive to employers (Gevrek 2009). In addition, accessing native networks could improve chances of gainful employment, through enforcing job search and norms of employment (Furtado and Theodoropoulos 2010). It could also increase the probability of finding a job with higher wages, due to less costly and better informed job searches and higher likelihood of being recommended (Meng and Meurs 2006).

An observed gap might also be generated by selection. Numerous characteristics associated with intermarriage (e.g. higher education, residing in a majority-dominated area, adhering to the majority religion, proficiency in the majority language, early age migration, being second generation) (Dribe and Lundh 2008; Kalmijn 1998; Kalmijn and Van Tubergen 2006; Kalmijn and Van Tubergen 2010; Kulczycki and Lobo 2002; Okamoto 2007; Van Tubergen and Maas 2007) are likely to positively influence economic assimilation or be indicative of unobserved traits likely to increase economic assimilation.

The juxtaposition of selection processes and spillovers from native intermarriage have led researchers to compare the differences in marriage premiums between these unions before and after marriage. However, interpreting the difference between exogamy and endogamy premiums is more complicated than has been acknowledged. In experimental jargon, previous research seems to presuppose that if the selection into intermarriage is under control (through instrumental variable or panel data strategies), endogamy and intermarriage can be thought of as control and treatment, implying that a significant difference in favor of the latter would support theories of "spillover". This interpretation neglects the fact that the endogamy and the exogamy premiums *might* reflect different treatments entirely, for several reasons.

One reason for this is the disparate relevance of the specialization hypothesis (Becker 1981).[1] While Nordic patterns of family/work balance norms are widespread in some immigrant groups, even in some of the large non-OECD groups (Kavli 2012), traditional arrangements of gendered household specialization is still the rule among the most endogamous groups (Kavli and Nadim 2009; Galloway 2008; OECD 2009). In a German study on immigrants' relative labor supply, Nottmeyer (2011) finds that gender specialization is more common within endogamous households. Thus, if gender specialization was the only mechanism behind the marriage premium, we would expect smaller male marital premiums for those intermarrying with Norwegian women, possibly closer to levels found for men from the majority population in Scandinavian countries (e.g. Gupta et al. 2007; Isacsson 2007; Petersen et al. 2011).

Another difference between these "marriage treatments" relates to the possibility of an intermarriage penalty. Bratter and Eschbach (2006) find that intolerance from both families and ethnic communities may cause psychological distress and conflict within exogamous unions, which in turn could explain their relatively high rates of divorce (Kalmijn et al. 2005; Lehrer and Chiswick 1993; Finnas 1997). This could result in lower productivity and earnings (Nottmeyer 2010). In addition, the asymmetry between majority and minority spouse (relied on in the theory of "resource spillover") could serve as a deterrent with respect to the immigrant's investments in the labor market (Basu 2010). The majority spouse might enable the immigrant to postpone job search or prioritize differently than if he were the main breadwinner of the household.

Interpreting the difference between endogamy and native exogamy premiums as support of the spillover theory also neglects that there is a third type of "marriage treatment", intermarriage with an immigrant. All major mechanisms proposed in the literature to explain the hypothesized causal relationship between intermarriage and economic assimilation involve benefits contracted from the *native-born spouse* (e.g. human capital, network, name). If this account is true, intermarriage with another immigrant should not bring about the same

[1] Despite many studies (e.g. Korenman and Neumark 1991; Nakosteen and Zimmer 1997; Hersch and Stratton 2000), the general validity of this hypothesis is still debated (Dougherty 2006; Krashinsky 2004; Nakosteen and Zimmer 2001; Nakosteen et al. 2004; Ludwig and Brüderl 2011). However, most analyses of the male marital earnings premium have excluded immigrants and minority groups.

Table 1: Partner Selection, 18 Largest National-Origin Groups

	Endogamy	Intermarriage With Native	Intermarriage With Immigrant	*N*
Poland	81.39	13.49	5.13	*1,053*
Russia	67.38	11.83	20.79	*279*
Bosnia-Hercegovina	72.85	12.48	14.67	*1,002*
Kosovo	62.68	21.83	15.49	*852*
Eritrea	58.30	5.38	36.32	*223*
Ethiopia	67.11	10.09	22.81	*228*
Ghana	54.22	34.34	11.45	*266*
Morocco	60.34	28.27	11.39	*237*
Somalia	83.30	5.63	11.07	*533*
Afghanistan	76.69	4.76	18.55	*399*
Sri Lanka	90.57	5.48	3.95	*1,569*
Turkey	80.58	13.50	5.92	*726*
India	68.28	19.09	12.63	*372*
Iraq	68.41	14.33	17.26	*1,634*
Iran	56.82	23.12	20.06	*1,341*
China	79.43	5.32	15.25	*282*
Pakistan	89.14	4.42	6.44	*1,087*
Vietnam	92.87	3.23	3.90	*1,640*
All Non-Western	75.08	12.98	11.93	*16,887*
All Western	20.51	66.11	13.37	*11,008*

All countries with *>200* first marriages in the period 1994-2009. Percentages, computed using the person-year after first marriage. "Western" refers to the Nordic countries, North-Western Europe, the US, Canada, New Zealand and Australia.

benefits. Thus, analyzing the marriage premiums involved in the latter unions could help understand whether the most important processes at work here concern selection of those finding spouses outside one's national-origin group or the helpfulness of a native partner.

Displaying the marriage type distribution of male immigrants who enter their first marital unions in Norway between 1994 and 2009, Table 1 shows that for many of the groups, intermarriage with an immigrant is as common as intermarriage with a native. However, the table also demonstrates that most groups are highly endogamous, with rates as high as 80-90 % for several Asian countries. The highest rates of marriage with Norwegian women are by men from Ghana and Morocco at 34 % and 28 % respectively. As these numbers exclude all immigrants married abroad and imported spouses, the actual levels of endogamy for most of these national-origin groups is even higher.

3 Model and Data

3.1 Empirical Strategy

Using panel data, a conventional way to estimate the marriage premium is to apply an individual fixed effects model (Petersen 2004). However, the assumption that the marriage premium can be modeled as a fixed effect is challenged by the observation that specific character traits likely to influence both chances of marriage and higher earnings are susceptible to a transformation (Dougherty 2006). In extension, there is a variety of post-migration events likely to increase the probability of both intermarriage and labor market success, e.g. befriending members of the native majority or increasing host language proficiency.

In response to the disadvantage of fixed effect models in the context of marriage premiums, time-profile approaches have been introduced. In this study, I follow Dougherty (2006) and Dribe and Nystedt (2014) in characterizing the marriage premium as a distributed fixed effect. Instead of using dummy variables measuring the marriage event, a set of indicators representing leads and lags of the marriage year is inserted for each marriage type. Let Y_{it} be a measure of earnings or employment, X_{jit} be the intercept and observed variables controlled for in the model, α_i account for time-invariant individual characteristics, ε represent the idiosyncratic error term and jit be indexes of observed correlates, individuals and time. Let s be the maximum years to/since marriage, EM, ME and IM represent endogamy, intermarriage with immigrant and intermarriage with native respectively, and the model can be written as

$$Y_{it} = \sum \beta_j X_{jit} + \sum_{p=-s}^{s} \gamma_p EM_{it}^p + \sum_{p=-s}^{s} \delta_p ME_{it}^p + \sum_{p=-s}^{s} \zeta_p IM_{it}^p + \alpha_i + \varepsilon_{it} \quad (1)$$

Each coefficient p gives the average difference in outcome for individuals who have been/are going to be marrying in a specific lag/lead (say, year of marriage -4) vs. the reference group of individuals remaining single throughout the observation period.

Because the M_{it}^p dummies are a disaggregation of whether an individual ever marries or not (a time-constant indicator that would drop out in fixed-effects estimation), it is assumed that for large enough negative s those who eventually will marry do not differ in time-varying aspects from those who never will (to enable a comparison to the reference of being single) (Dougherty 2006). The reference category thus includes the person-years of men who stay single and the earliest person-year of those who will eventually marry.[2]

[2] A very similar strategy is found in the staggered treatment model used by Nekby (2010), the main difference being that only ever-married are included, and the model is estimated within each marriage category. Let YM_{t+p} be the set of dummies denoting whether marriage occurred in year $t+p$, let s be the maximum years before and after marriage, and this model can be written

$$Y_{it} = \sum \beta_j X_{jit} + \sum_{p=-s}^{s} \delta_{t+p} YM_{it+p} + \delta_{t-11} Married_{i,t-11} + \alpha_i + \varepsilon_{it} \quad (2)$$

3.2 Description of Data

I employ population-wide longitudinal data from Norwegian administrative registers. The baseline dataset included the entire population of foreign-born male residents with foreign-born parents from the comprehensive tax-based income register. Using a unique identification key for each individual, these data were linked with corresponding registers such as the National Database of Education (NUDB) and the Family and Generation Data based on the Central Population Register (CPR). The panel commences in 1993, the year in which local tax offices began to use IT to process personal tax returns in Norway, and ends with the last day of 2010. These data are considered to be of very high quality (Røed and Raaum 2003; Rindfuss et al. 2007). During the 18-year panel there is detailed yearly information on demographics (complete history of changes in civil status, child births), education (level and type) and income (wages, labor earnings, capital income, self-employment, transfers etc.), as well as data on time-constant variables such as country of origin, time of immigration and birth. Spouses are identified and linked, and in principle all accessed information is available for both (given that the spouse is alive and a resident).

As the present design necessitates information on the timing of marriage, immigrants married abroad (Hwang and Saenz (1990)) are omitted. Individuals marrying within a year after immigration are also omitted, because they are very likely to have been "imported" as spouse (Lievens 1999, González-Ferrer 2006). The sample of marriages is further reduced to those registered with a first transition from single to married between 1994 and 2009, requiring at least one year of earnings before and after the year of marriage. As a consequence of these restrictions, all individuals included are no younger than 17 when entering the panel, and no older than 54 when leaving the panel.

3.3 Operationalizations

I distinguish between three types of marital union: endogamy (or intramarriage) occurs when individuals marry someone from the same country of origin, minority exogamy (or immigrant intermarriage) occurs when individuals marry outside their own national group but within the immigrant population, and majority exogamy (or native intermarriage) occurs when individuals marry someone of Norwegian background (i.e. natives with native parents). Note that this definition classifies unions between immigrants and members of the second generation from the same national-origin group as endogamy. In all main specifications, the definition of a marriage includes both registered marital unions and non-marital cohabitation with common children. The latter category is relatively more common among the exogamous, which could bias the comparison of pre-marital labor market profiles between the endogamous and the exogamous. As a robustness check, models have been estimated separately for formal marriages too.

The main dependent variables in this study are employment and labor earnings. Both are tied to the Norwegian public pension system where individuals'

Table 2: Descriptive Statistics by Type of Marriage

	Unmarried	Endogamy		Intermarriage with Native		Intermarriage with Immigrant	
Age at marriage		30.71		32.48		32.15	
Year of birth	1977	1971		1969		1971	
Year of arrival	1996	1990		1989		1991	
Age at arrival	18.21	18.81		19.93		20.21	
Years since migration	8.82	12.21		11.63		10.71	
Education							
Primary or lower	29.66	37.73		14.80		24.60	
Secondary	22.99	32.38		29.13		29.17	
Lower Tertiary	13.33	14.21		31.24		22.24	
Higher Tertiary	5.78	5.67		13.79		11.58	
Not available	28.23	10.02		11.03		12.41	
		Before	*After*	*Before*	*After*	*Before*	*After*
Earnings	945	1,308	2,418	1,482	2,912	1,303	2,412
Employment	.476	.645	.807	.680	.873	.631	.797
Earnings, all*		1,416	2,513	2,328	3,437	1,928	2,712
Log earnings^	ref.	.359		.428		.343	
Log earnings, all	ref.	.135		1.331		.421	
Small child							
0-3 years	.067	.083	.587	.229	.447	.109	.543
4-7 years	.033	.032	.449	.100	.390	.045	.370
N (individuals)	*15,343*	*10,302*		*3,510*		*3,108*	

Note: Earnings refers to annual labor earnings in 100 NOK, and adjusted to 1998 prices. ^Log earnings refers to results from an unadjusted pooled OLS estimation of log labor earnings for employed male immigrants of non-western background. *Earnings, all refers to annual earnings in 100 NOK in 1998 prices, including western immigrants in the sample.

accumulation of credit points are based on labor-related earnings. Following Bratsberg et al. (2010), I define employment at the cut-off point of the social security base figure ("1G"), equal to 72881 NOK or $12900 in 2009. Robustness checks using different cut-off points have been run, all of which can be requested from the author (the present appendix includes results from models with 2G as the cut-off, which makes no difference to the conclusions). To approximate comparability with studies on wages for the employed, and the recent analyses by Dribe and Nystedt (2014), models on labor earnings exclude all non-employed by the above definition. Annual labor earnings is thus defined as the sum of income from wages and self-employment above the social security base figure. Results should therefore be interpreted as possibly related to either hours worked, higher wages or both.

Educational level before marriage is measured with four dummy variables, with reference being primary or lower (<ten years): secondary education (10-14 years), lower and higher tertiary education, and missing. All models adjust for subsequent divorce and the death of a spouse, i.e. observations are censored when marriages end. Other controls include calendar year (1993-2010), age, age squared, country of origin, age at marriage, duration of residence, a binary variable measuring present enrollment in full-time education, two binary variables measuring the presence of children in the household (aged three or less, aged four to seven).

Table 2 presents descriptive statistics by type of marriage, separating the never-married (unmarried) from those who enter their first marital union within the period studied. It illustrates that the ever-exogamous marry slightly later, their average age of immigration is slightly higher and their average levels of pre-marital education is substantially higher than that of the ever-endogamous. Unmarried and the premarital observations on the ever-endogamous display similarly low rates of tertiary education.

The lower panel of the table indicates time-varying measures of labor market assimilation. Compared to the unmarried, ever-married of all three types are earning a premium both before and after marriage. However, the average premarital labor earnings and employment rates are very similar across the three marriage types, with the to-be native exogamous about 10 percent above the others. Post-marital differences are consistent with a premium for the native exogamous, whose average labor earnings are about 20 percent higher than those with immigrant wives. In the row below, the same measures are displayed for the entire group of male immigrants including those of Western origins. This gives a more immoderate picture of the relative intermarriage premium, as the pre-marriage earnings of those marrying natives is almost as high as endogamous immigrants' post-marriage earnings, and post-marriage native exogamy earnings are 37 percent higher as that of the endogamous. The row entitled "Log earnings" displays results from an unadjusted pooled OLS estimation of log labor earnings for the employed. Unadjusted marital earnings premiums are 53 percent ($100 \times (e^{.428} - 1)$) for native intermarriage, and slimly above 40 percent for endogamy and immigrant intermarriage. If Western immigrants are included, the corresponding OLS estimations are 278 percent (native intermar-

riage, $(100 \times (e^{1.33} - 1)))$, 14 percent (endogamy) and 52 percent (immigrant intermarriage) higher earnings than the unmarried.

Those who marry a native are also relatively more likely to have a small child before marriage yet relatively less likely to have a small child after marriage compared to those married to other immigrants. This most likely reflects the fact that the former group more often engage in pre-marital cohabitation.

4 Results

4.1 Marriage Premiums as Fixed Effects

The first set of analyses are individual fixed effect models with dummy variables for marital type. Table 3 displays these benchmark results on the average within-individual change of employment and labor earnings associated with endogamy, native intermarriage and immigrant intermarriage. Results are divided in three sets of columns according to the age at which respondents came to Norway, including members of the second generation.

The first observation is that the massive unadjusted marriage premiums regardless of spouse background reported in Table 2 are washed out in the fixed effects specification. In the case of endogamous marriages, none of the coefficients across all specifications are significantly different from zero, implying that there is no average within-individual change of employment or labor earnings associated with endogamy.

For those who migrated above the age of 15, the average change in employment and earnings associated with native intermarriage is 7 and 10 percent respectively, statistically highly significant. The premiums associated with immigrant intermarriage are lower, for earnings about half, and the difference is statistically significant at $p<0.01$. Overall, this is consistent with the idea that native intermarriage is more helpful than marriage to other immigrants, and particularly so for earnings. Still, the results for immigrant exogamy are more alike the results for native exogamy than endogamy, which could indicate out-group marriage selection on time-varying confounders.

Turning to those who migrated at 15 years or below, the only employment premium visible is that of the native exogamous, at slimly 3 percent. Earnings premiums associated with both types of intermarriage are still significantly different from zero and the endogamous, changes are at 6.7 and 8.5 percent but no longer statistically different from each other. For members of the second generation, the only statistically significant marriage premium found is and earnings premium of almost 5 percent associated with intermarriage to women of native background.

The fact that the gap between intermarriage and endogamy is not reduced from the unadjusted OLS models would suggest that there is little selection bias on OLS estimates for the *relative* intermarriage premiums. Fixed effects parameter estimates indicate an intermarriage premium, but except in the case of earnings development of those who migrated as adults, immigrant exogamy

Table 3: Marriage Premiums, Fixed Effects Estimations

	Age at Migration					
	≥ 16		≤ 15		$2^{nd}Gen$	
	Empl.	*Earn.*	*Empl.*	*Earn.*	*Empl.*	*Earn.*
Endogamy	0.007	0.001	-0.011	0.011	-0.021	0.013
	(0.005)	(0.005)	(0.007)	(0.008)	(0.012)	(0.016)
Native	0.068***	0.101***	0.026**	0.082***	0.013	0.046*
Intermarriage	(0.008)	(0.011)^^	(0.008)	(0.012)	(0.016)	(0.023)
Immigrant	0.041***	0.054***	0.012	0.065***	0.015	0.034
Intermarriage	(0.008)	(0.011)	(0.011)	(0.014)	(0.019)	(0.026)
Controls	Yes	Yes	Yes	Yes	Yes	Yes
Individuals	*42221*	*31296*	*20978*	*15656*	*9251*	*6409*
Observations	*269877*	*167231*	*171843*	*98686*	*61226*	*34607*
adj. R^2	0.156	0.473	0.190	0.565	0.273	0.599

Male non-western immigrants marrying 1994-2009 or remaining single throughout the period 1993-2010. * p<0.05, ** p<0.01, *** p<0.001. ^^ behind the standard error signifies statistical difference to immigrant intermarriage at p<0.01. Clustered standard errors in parenthesis. All models include controls for year (1993-2010), age and age^2, small children (0-3, 4-7), educational level (9 categories), educational status, duration of residence (4 categories), county of residence (20 categories) and country-level fixed effects (175 countries). Earnings models exclude all observations on non-employed.

yields returns close to native intermarriage. However, if these marriages were randomly assigned conditional on time-invariant factors and the time-varying covariates adjusted for, the exception cited could be interpreted as support of spillover effects.

The trustworthiness of these results correspond to estimates from many previous studies on marriage premiums. However, to obtain results that may indicate the role of time-varying selection, as well as better evidence concerning the relative importance of the different trajectories within each marriage type, the distributed fixed effects model proposed in Eq. 1 is estimated.

4.2 Results Before and After Marriage

The following section presents results from the distributed fixed effects estimations for leads and lags of the year of marriage (Parameter estimates with clustered standard errors can be found in Table 5 in the Appendix).. Replacing the model of the premium as a discrete event with a discrete effect on earnings, this model allows for the possibility that returns may be instant, gradual or delayed. It also enables us to investigate the development of employment and earnings before marriage, which can be taken to indicate the importance of time-varying selection. The reference point within each model are those who remain unmarried and those who eventually will marry observed eleven to fif-

teen years before marriage. As noted by Dougherty (2006), the change in the omitted marital status category (model intercept) from those who are single and later marry to those who remain single throughout the period will increase all estimates substantially as compared to the conventional fixed effects model, because the former group is earning a premium before marriage.

Figure 1:

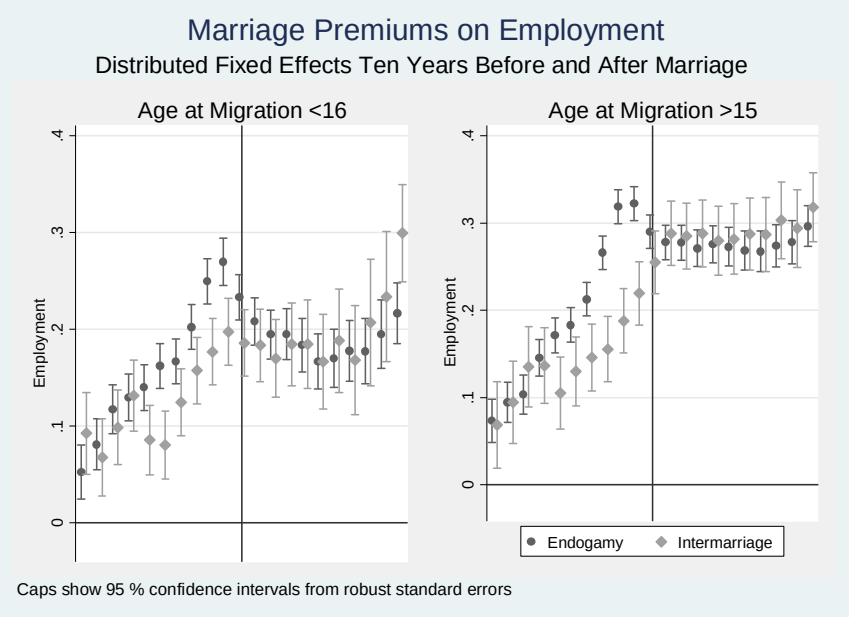
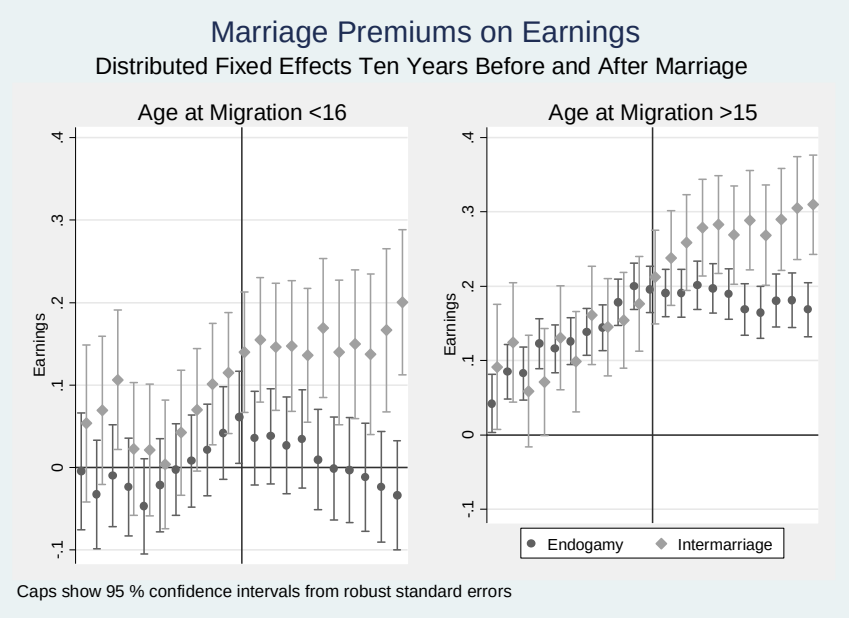


Figure 1 depicts the pattern resulting from estimating Eq. 1 on employment for those migrated below 16 years of age (left panel) and those who migrated at 16 or older (right panel), comparing results for endogamy and native intermarriage in both graphs. For both age-at-migration groups, pre-marriage employment relative to those who remain single increases in a steady climb until the year before marriage for both the endogamous and the exogamous. For the endogamous, the rate of increase is higher than that of the exogamous from around five years before marriage. At the year of marriage, however, the relative propensity of employment converges between the two types of marriage and levels off. In both graphs there is a drop in employment around the year of marriage for endogamy, more significantly for the younger age-at-migration group, whose pattern in the post-marriage period is convex.

For neither age-at-migration category is there clear sign of an intermarriage premium on employment, albeit the native exogamous do experience a sudden increase in employment after 6-7 years of marriage among the young immigrants, and the last estimate (ζ_{t-10}) is the only post-marital coefficient that is significantly different from the corresponding estimate for the endogamous (γ_{t-10}) at

Figure 2:



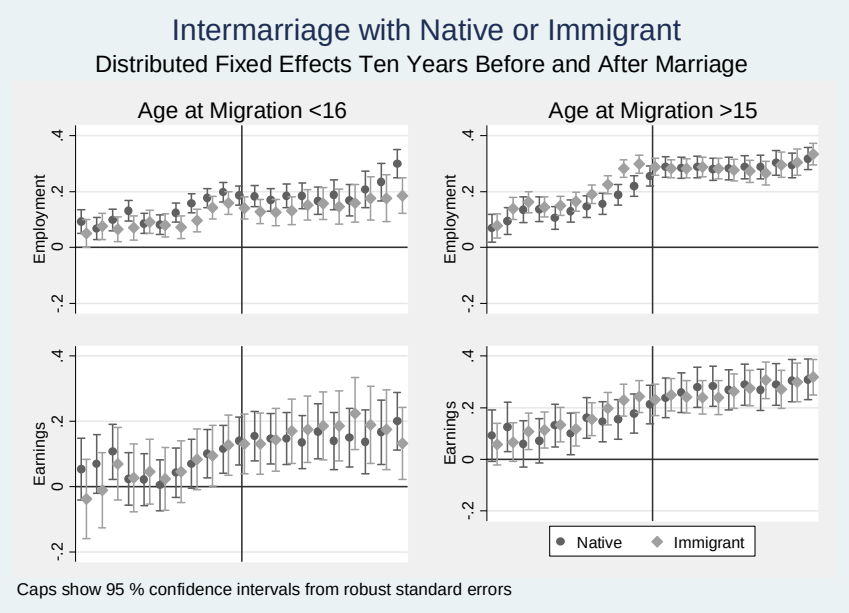
$p<0.05$. The principle difference between profiles of the two age-at-migration groups is the fact that both marriages are associated with larger overall employment premiums among the adult migrants. Still, none of the time-profiles support the idea that a marital union or cohabitation with common children impacts on the employment rates of these men, and all support the idea that both ever-endogamous and ever-exogamous increase their labor-market attachment *before marriage* in a way that sets them apart from those who remain single. The pattern is thus consistent with a positive selection on time-varying factors (such as "maturation", Dougherty 2006) and even a slight negative impact ("penalty") of endogamy on employment.

Figure 2 should be read the same way as Figure 1, except that Eq. 1 is now estimated for log annual labor earnings for the employed. Both graphs differ significantly from results on employment in that earnings development of endogamous and native exogamous diverge significantly after marriage. Comparing the panels, while this divergence is caused by a gradual decrease in labor earnings among the endogamous starting at about four years after marriage for those immigrated at a younger age in the left panel, the right panel displays a pattern more consistent with an actual native spillover effect. Thus, while time-profiles of earnings for former group are example of an increasing difference (*relative intermarriage premium*) that reflect post-marital decrease for the endogamous more than post-marital increase for the exogamous, in the adult age-at-migration group about half of the total premium vis-a-vis unmarried is

earned post-marriage for the exogamous, whereas all of the premium for the endogamous is already earned at the time of marriage.

Finally, Figure 3 introduces the patterns from the group that engages in immigrant intermarriage, plotted against the estimates for native intermarriage. Across ages at migration and outcomes, the two types of exogamy display remarkably similar patterns vs. the unmarried reference. Post-marital development in both employment and earnings is nearly identical for the adult age-at-migration group predicted by theory to have most to gain from *native* intermarriage, and the main overall difference found is in the higher increase of especially employment premiums for the minority exogamous in the last few years approaching marriage (the only statistically significant differences at $p<0.05$ being those between $(\zeta_{t+2,1})$ and $(\delta_{t+2,1})$).

Figure 3:



4.3 Results for Different Regional Groups

The immigrant population in Norway is very heterogenous. Some come from countries with similar language (Nordic) or culture (e.g. Western Europe and Northern America) and arrived as highly educated workforce in demand in the Norwegian labor market (e.g. engineers, oilworkers, scientists), while others are refugees from countries where both cultural and institutional arrangements differ significantly from the Norwegian context. Naturally, expectations regarding marriage premiums should be very different depending on the original situation of the immigrant. Indeed, there is some heterogeneity displayed in the

Table 4: Marriage Premiums By Region of Origin. Fixed Effects

Employment	Endogamy	Native int.	Immigrant	*N*
Western	0.02**	0.02***	0.02*	*166085*
	(0.01)	(0.01)	(0.01)	
Eastern Europe	0.02**	0.02	0.00	*101602*
	(0.01)	(0.01)	(0.01)	
Middle East & Africa	0.05***	0.07***	0.04***	*127095*
	(0.01)	(0.01)	(0.01)	
Rest of Asia	-0.03***	0.03**	0.03*	*190830*
	(0.01)	(0.01)	(0.01)	
Earnings				
Western	0.01	0.05***	0.02	*132671*
	(0.01)	(0.01)^	(0.01)	
Eastern Europe	0.00	0.05***	0.03*	*66640*
	(0.01)	(0.01)	(0.02)	
Middle East & Africa	0.04***	0.08***	0.04*	*65408*
	(0.01)	(0.02)^^	(0.02)	
Rest of Asia	0.00	0.11***	0.07***	*119833*
	(0.01)	(0.02)^	(0.02)	

Male non-western immigrants marrying 1994-2009 or remaining single throughout the period 1993-2010. * $p<0.05$, ** $p<0.01$, *** $p<0.001$. ^^ behind the standard error signifies statistical difference to immigrant intermarriage at $p<0.01$. Clustered standard errors in parenthesis. All models include controls for year (1993-2010), age and age^2, small children (0-3, 4-7), educational level (9 categories), educational status, duration of residence (4 categories), county of residence (20 categories) and country-level fixed effects (175 countries). Earnings models exclude all observations on non-employed.

fixed effects estimates of Table 4. For employment, the only statistically significant difference between premiums is seen for Asian men, whose average within-individual change in employment associated with endogamy is negative, yet positive for both types of exogamy (different at $p<0.01$). Men from the Middle East and Africa earn marital employment premiums for all three categories, the highest being native intermarriage at 7 percent.

For earnings, there are more significant differences. All groups have significantly higher native intermarriage premiums than endogamy premiums. The magnitudes are highest for men from the Middle East and Africa, but particularly and both in relative and absolute terms for men from the rest of Asia, whose intermarriage earnings premium is more than 11 percent. However, both for this group and for Eastern Europeans, exogamy with immigrants yield a premium closer to native intermarriage than endogamy (for whom there is no premium).

It has been suggested that group differences are expected on the basis of the causal hypothesis, in that "these groups [i.e. Middle East, Africa and Asia] have the most to gain from a transfer of Sweden-specific knowledge [e.g. language proficiency] and networks." (Dribe and Nystedt 2011: 12-13). However, both the selection hypothesis and the premium hypothesis would suggest group heterogeneity. Some of these groups are highly endogamous, while displaying lower rates of employment, lower earnings and more volatility in labor market attachment. On the one hand, this indicates that the proposed human capital spillover and network effects of intermarriage with a majority spouse could be of particular importance for individuals from these, broadly speaking, culturally distant groups. On the other hand, this also suggests that those who intermarry within these groups are more strongly selected on unobserved variables relevant to labor market assimilation, e.g. through having interacted frequently with majority Norwegians prior to marriage, and thus increased e.g. their language proficiency. In other words, the relative importance of selection and causality for the (inter)marriage earnings gap across these groups cannot be gauged before looking at the time-profile models of year-by-year estimates before and after marriage.

Figures 4 through 7 display results from estimating Eq. 1 on employment and earnings for the four regional groups singled out here, comparing results for all three marital types in each graph. As the number of observations is smaller (witnessed by the bloated confidence intervals), these have not been subdivided by age at migration. For all four figures, results for employment is in the left panel and earnings in the right panel.

Some trends from the graphs depicted earlier are refound in these patterns. Pre-marital premiums on employment diverge so that the endogamous gain more of their premium before than after marriage, and for Asians there is a peak around the two years before marriage followed by a rapid drop. However, neither type of exogamy exhibit signs of causal marriage premiums on employment for Asians, as the rate goes down during the first five years after marriage. Taken in isolation, the time-profile of employment premiums for native exogamous Africans and Middle Easterners could be seen as supportive

Figure 4: North Europe and America

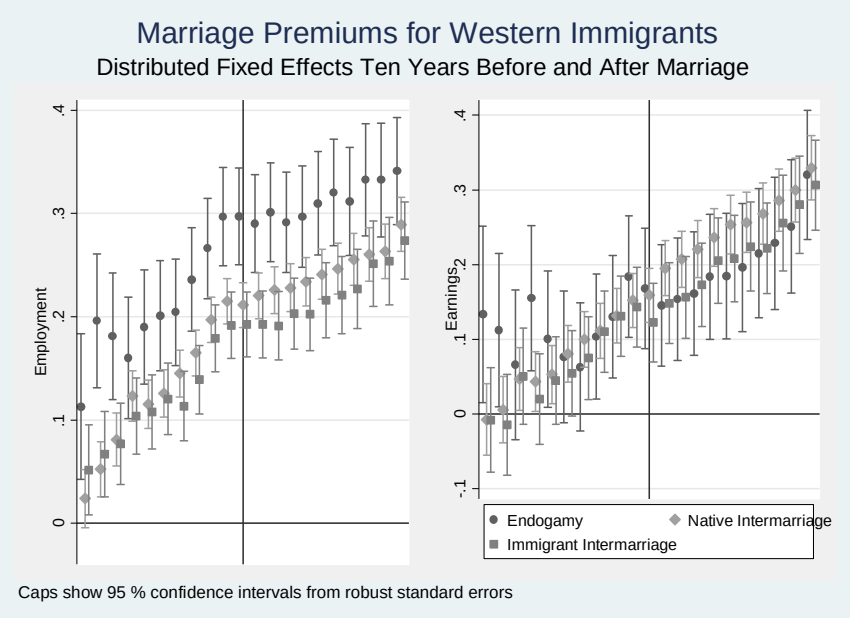


Figure 5: Africa and the Middle East

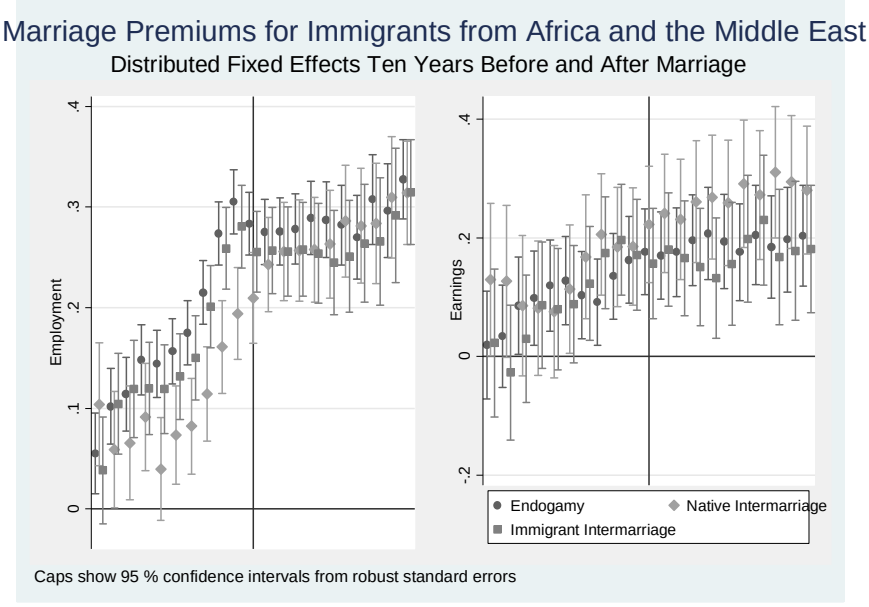
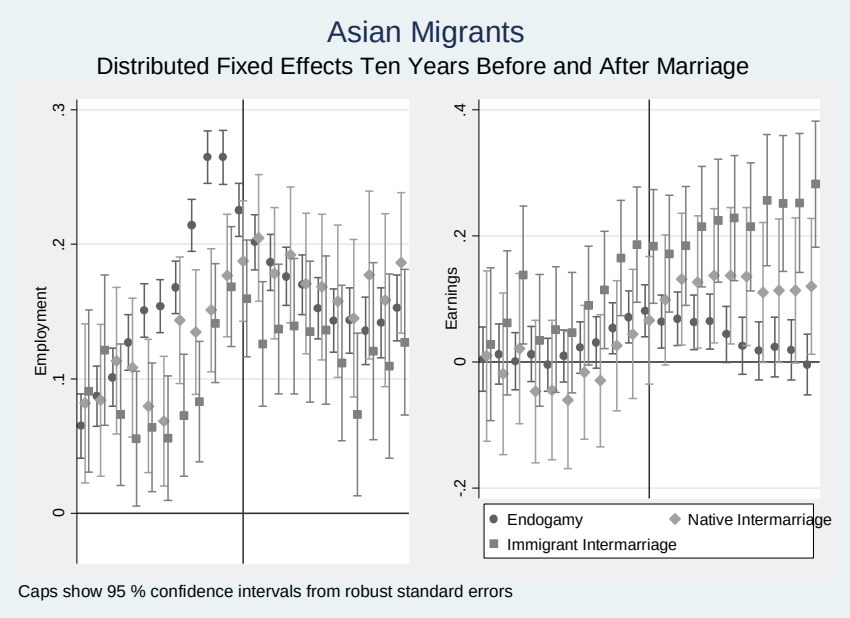


Figure 6: Rest of Asia



of a spillover-perspective, as post-marital growth in employment rate is almost as high as that before marriage. However, taken from a relative intermarriage premiums perspective, most post-marital across all three marriage types are similar, and none are significantly different in terms of statistical force. In Figure 4, the uniform two-percent premiums across marriage types depicted by the intercept shift models for Western immigrants in Table 4 is revealed to cover similar trajectories on different levels. Ever-endogamous and both types of exogamous earn most of their premium before marriage, the latter groups trailing the former in the magnitude of advantage relative to singles.

Turning to earnings, the time-profile most closely resembling the pattern found for native-exogamous adult migrants in Figure 2 is seen for men from Africa and the Middle East. However, while post-marital estimates increase from around 25 to about 35 percent, all post-marital confidence intervals are overlapping both within this marriage type and in comparison with marriages to other immigrants (endogamy and immigrant exogamy is more similar for this group). For Asians (Figure 6), the binary marriage shift models in Table 4 is shown to conceal the fact that those intermarrying with other immigrants consistently earn larger premiums both before and after marriage, and significantly different from the endogamous in the post-marital period (the latter mirror the relative decrease in the earnings premium seen by the average young age-at-migration group in left panel of Figure 2). While the pattern of this group most indicates an actual effect of marriage (or cohabitation with chil-

dren) among Asians, it is the post-marital time-profile of Western immigrants across all three marriage types that most closely resembles the pattern you would expect if marriage premiums were generated by assets gradually gained within the marital union.

5 Discussion

Do marriage premiums for male immigrants vary between endogamous and exogamous unions? Is it plausible that the intermarriage premium reflects returns from human capital and network "spillovers" from a native spouse? To address these questions, this study has analyzed employment and labor earnings premiums from three types of marriage, using distributed fixed effects estimations on high-quality longitudinal population data from Norwegian administrative registers.

The most general finding is that the marriage premiums of male immigrants in Norway are *to a large extent* being earned in years prior to the marital union, both for those marrying a native Norwegian woman, for those marrying endogamously with a woman of the same national origin, and for those marrying exogamously with another immigrant. A comparison of conventional and distributed fixed effects regressions suggests that treating the premium with dichotomous single-married dummy variables overestimate the *relative* intermarriage premium (the difference between the premium of endogamous and the exogamous). Further, I have argued that this differential is complicated, particularly when using a time-profile model to investigate the pre-and post-marital developments. For migrants arriving early, a large part of them being of Asian background, I have presented results of a relative intermarriage premium generated by a pattern where there is little or no post-marital increase in the premium of the exogamous while there is a post-marital decrease in the premium earned by the endogamous. More theoretically, while focus has been on sorting between selection processes into marriage and intermarriage, it is clear that this idea of a relative intermarriage premium presupposes a treatment homogeneity with respect to a shared "average" return to marriage, to which any additional advantages associated with intermarriage can be added. Ironically, this ignores the fundamental differences between marriages within the minority group and intermarriages, e.g. differences of gender specialization, which has been suggested by the most influential theory of marriage within social science. However, very few of the results here support the specialization theory.

The juxtaposition of post-marital earnings development of endogamous and native exogamous immigrants of non-western origins who immigrate as adults does indicate a relative intermarriage premium. However, all major mechanisms proposed to explain the hypothesized causal relationship between intermarriage and economic assimilation involve benefits contracted from the *native-born spouse*. If this is true, intermarriage with another immigrant should not bring about the same benefits. As noted above, one way to measure the relative intermarriage premium has been to contrast endogamy with native intermar-

riage (Dribe and Nystedt 2014). Another has been to contrast marriage to a native with marriage to another immigrant (Nottmeyer 2010). The results presented in this article suggest that the similarity of immigrant intermarriage and native intermarriage may be part of the reason why Nottmeyer finds no relative intermarriage earnings premium. Across specifications and outcomes, these display remarkably similar patterns, pointing to a distinction between marriages within the national origin group and marriages outside of the national-origin group, rather than a distinction between intermarriage and marriage to another immigrant.

If the intermarriage premium is a result of destination-country specific human capital and network spillover from the native-born spouse, it should stand out for adult migrants more than child migrants, for immigrants more than their children (second generation) and for those from culturally and linguistically different regions more than very similar regions. As noted above, some of the evidence is more convincing of a spillover for adult migrants than for those arriving earlier. There is some heterogeneity across regional groups, but the time-profiles indicate that Asian migrants seem to gain most from immigrant intermarriage, while Western immigrants most unequivocally increase earnings after marriage across all three marriage types. A comparison of conventional and distributed fixed effects regressions suggests that treating the premium with dichotomous single-married dummy variables overestimate the difference between the premium of endogamous and the native exogamous in particular for the largest non-western groups. Thus, results are mixed, but most do not indicate a pattern we would expect if "spillovers" were the main mechanism generating the premium.

For the endogamous, there is an upsurge in employment during the last three years before marriage which clearly suggests time-varying selection as depicted in the seminal work of Dougherty (2006). While there could be a courtship effect for this group too, rates of pre-marital cohabitation among endogamous immigrants are much lower than for the exogamous, who resembles the majority population more in this regard (Wiik 2012). This stronger growth, also seen for the immigrant exogamous, may be linked to state-sanctioned demands for family-forming migration. Although neither of these groups contain men who have been imported themselves, they may both involve imports of wives. The relative pre-marital increase for immigrant-immigrant unions could thus be linked to either formal or informal reasons for strengthening labor market attachment prior to importing a woman for marriage. The fact that this pattern is most forcefully demonstrated for the Asian subgroup, whose spouse import rates is known to be high, strengthens this possible interpretation.

Why is there a gradual yet drastic post-marital drop in earnings for some of the endogamous male immigrants? It has been suggested that the strong employment protection and social insurance with a high replacement ratio for household heads with low labor earnings, many children and a non-working wife, provide poor work incentives for immigrants in Norway (Bratsberg et al. 2010). The generous disability pension system includes means-tested transfers for spouses and children, given that the spouse is dependent on the recipient's

income. Bratsberg, Raaum and Røed calculate replacement ratios in the context of combining these characteristics, and show that the transfers in sum will exceed 100% these individuals' labor earnings (Bratsberg et al. 2010). The family structures more responsive to these systemic work disincentives are much more common among the endogamous majority of immigrants from outside of OECD. This suggestion, although forwarded in a context of findings for labor migrants already married at arrival, is consistent with this relative penalty. Thus, while there are empirical and theoretical reasons to expect (non-OECD) male immigrants to have high returns to endogamy, the Norwegian context might introduce a counterinfluence to the proposed comparative advantage of men with household-specialized wives. Clearly, this topic of investigation could be pursued further (e.g. through investigating the role of spouse characteristics and number of children more thoroughly).

The results bolster the selection hypothesis, while drawing into question the relevance of both the specialization hypothesis and the idea of human capital transfers within marriage. Being unable to rule out pre-marital courtship effects, it is particularly difficult to downright reject the hypothesis that the intermarriage premium might work through accessing the spouse's network. In sum, however, the results challenges the frequently assumed inherent relationship between intermarriage and assimilation, and suggest that there may be more to learn about family forming processes and economic assimilation from scrutinizing the post-marital labor market behavior of endogamous immigrants. In the context of previous research on the relationship between intermarriage and labor market assimilation, these findings confirm the pattern that longitudinal analyses support the selection hypothesis (while cross-sectional analyses support a causal interpretation). As suggested by Furtado and Trejo (2012), an important future avenue of research in this field would be to use different strategies of identification within the same context, and provide evidence whether this is indeed a pattern generated by data availability and methodological design, or different national contexts. The economic consequences of marriage migration and the effects of spouse selection for female immigrants are also important research topics that should be pursued in the future.

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Appendix