Income Homogamy across Time and Countries

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Abstract

This study examines the micro-level and macro-level determinants that explain the extent of income homogamy across time and countries. This is done using different waves of the Luxembourg Income Study (LIS) between 1980 and 2010. Furthermore, this study is a cross-national one, comparing the US, Sweden, Germany and Italy. It is of interest to study these different countries, because they all fall within a different welfare regime. To test the compositional and contextual effects an in-depth analysis (separately for countries) and a pooled analysis have been conducted. Income homogamy has increased in time, except Italy and differs between the welfare regimes. At the micro-level, educational homogamy and female labour supply influences the odds of income homogamy positively. At the macro-level, a more balanced sex ratio has a positive effect on income homogamy and in the countries where the sex ratio is less balanced, female labour supply at the individual level has a greater effect on income homogamy than the countries where sex ratio is more balanced.

Keywords: Income, educational homogamy, female labour supply, sex ratio, contextual effects

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[1] Nazım Hikmet, Piraye'ye Mektuplar

Chapter 1: Introduction

1.1 Introduction

The extent to which mobility chances of families and individuals in the social hierarchy exist is one of the major concerns in the study of social stratification. An important way of measuring the openness of a society is to assess the degree of interaction between groups originating from different status groups (Kalmijn, 1991). To understand the openness of social structures and inequalities between groups and societies intermarriage patterns show to be one of the major sources of information (Glass, 1954; Ganzeboom et al., 1989). The *"closure thesis"* explains that the more advanced groups in a society will use their sources to protect their privileges and will not let in more people than is needed to maximize the required places (Goldthorpe et al., 1980; Smits, 2003). Marrying those within the own group is a way of accomplishing the "closure thesis" (Weber, 1972[1921]). Who marries whom and the emerging family formations can have considerable consequences on inequalities due to the maintenance of boundaries across different groups or the extent of inequalities between the households and individuals (Smits, 2003).

On the one hand marrying someone from a person's own group – called homogamy or endogamy – is not only a reflection of the boundaries that separate the groups, but also shifts the cultural and socio-economic changes in the society (Kalmijn, 1998). On the other hand, if marrying would be considered as a long-term relationship with substantial commitment, marrying someone from a different group – heterogamy or exogamy – would be an indicator of accepting someone from not your own group as the lifetime partner and getting through the distinctions between the groups that would spread to the upcoming generations. If the extent of homogamy would be low in a society, more people from different backgrounds would enter into marriage and the social distances between various groups would be less. In other words; the extent of homogamy would represent the "social openness" of a society (Smits et al., 1998).

Previous studies mainly focused on the extent of educational homogamy, occupational homogamy or the association between the labour market positions of the spouses. Studies show that a strong extent of homogamy can be found between the educational attainments (Smits et al., 2000; Smits, 2003; Schwartz & Mare, 2005; Blossfeld, 2009; Katrňák et al., 2012) or the occupational achievements (Hout, 1982; Smits et al. 1999; Kalmijn, 1998; Verbakel et al., 2008) of partners. One should consider that these patterns do not only reflect the extent of social acceptance among the society. If the resemblances

between the educational or occupational traits of the individuals would move towards their earnings, it could enlarge the socio-economic inequalities between the households. Homogamous partner selection may lead to a concentration of "highly qualified" couples to be at the upper half of the society and a concentration of "lowly qualified" couples to be at the bottom half of the society. Karoly & Burtless (1995) summarize that employment and wage gains were concentrated among the women who were married to men that are at the upper parts of the wage distribution. In another study Hyslop (2001) estimates that assortative partner selection can explain 23 percent of the household income inequality among the couples in the United States. However; there is evidence showing that homgamy may not always enhance income inequalities (Breen & Salazar, 2010; 2011). When the couples, especially women, can use their skills such as educational attainments at the labour market efficaciously, homogamy may enlarge income inequalities.

Yet, there is a clear gap in research studying income relationships of the partners. Few studies explored the association between the incomes of the spouses. Those studies that are conducted are based on bivariate analyses (Smith, 2005; Esping-Andersen, 2007) or based on the United States (US) (Schwartz, 2010). Hence, the underlying patterns causing the differences or similarities across the countries are not clear. Moreover, no studies have explored the micro-level and macro-level determinants that may cause the association between the incomes of the spouses in a comprehensive way. Burgeoning literature (Verbakel & de Graaf, 2008; Verbakel et al., 2008) emphasize some of the patterns that cause occupational homogamy (e.g. educational homogamy, partner influencing); however for income homogamy this is lacking.

The current study adds to earlier studies by investigating the degree in which a relation can be observed between spouses incomes comparing Sweden, Germany, the US and Italy and over time within the countries. This is done using data from the Luxembourg Income Study (LIS). A cross-country, time perspective that explores the patterns that cause income homogamy both at the contextual and at the individual level is new in the literature. The first reason to conduct this study is to observe whether income homogamy increased across the welfare regimes likewise several scholars found for educational homogamy (Blossfeld & Timm, 2003; Schwartz & Mare, 2005). Is inequality – measured by income homogamy – increasing as well in the Western world? Another reason to study country and time variation in income homogamy is that it allows testing how individual (e.g. educational homogamy, labour supply of women) and country-level factors (e.g. availability of the partners at the

higher strata of income distribution) shape the association between the incomes of the spouses.

1.2 Literature Review

As mentioned above, studies focusing on the association between the incomes of the spouses are scarce. The studies conducted by of Esping-Andersen (2007) and Smith (2005) investigate income homogamy based on bivariate analysis and no multiple causes are investigated. Esping-Andersen (2007) explores the underlying sociological patterns that cause an alteration in the income distributions. He claims that if the educational homogamy would spill to labour supply and earnings, the income inequalities between the households might increase. In this study the variation of labour supply homogamy and the correlation of the earnings across 8 Western countries are examined by using the European Community Household Panels from the years 1993 and 2001. The findings point out that the labour supply homogamy is considerably higher in the Scandinavian countries where the gender egalitarian norms are more common. Moreover; it is correspondingly weaker in the Mediterranean countries such as Italy and Spain. What is interesting is that the dissimilarities between the labour supplies of the couples do not produce high-earning correlations. Esping-Andersen (2007) suggests that one reason causing these similarities may be that women are more likely to interrupt their careers. Despite that the female employment rates are low in Italy and Spain; the earnings are more correlated compared to the other countries. This could be the consequence of the fact that even if few women work in Italy and Spain, these women may earn relatively much compared to their sisters from the Western countries. On the other hand; negative earnings correlation for Germany points out that the wives of men with high-income are not spending much hours at the labour market. The study emphasizes the considerable correlation between the incomes of the spouses in Western countries and Esping-Andersen (2007) suggests that the labour supply and income homogamy could be the consequence of educational homogamy. However, what lies behind these resemblances is not explored or explicit yet.

Smith (2005) compares the dual-earning patterns of 6 European countries according to the working time and occupational status. Similar with the findings of Esping-Andersen (2007), dual-earner couples that have similar working hours and occupational levels can be found more often in Southern Europe, even though the female employment rates are low. Couples living in France and Italy have the highest proportion of similarities in their earnings-

ranked occupations. By contrast spouses living in UK and Germany show lower resemblances in terms of equal occupations and fewer double full-time households are found. The results indicate that the dual-earner households are progressing in different rates across Europe and the relationship between the dual-earner couples is not linear. The analyses are based on the cross-tabulations of the working hours and earnings-ranked occupations of the spouses, thus the determinants causing these relationships are not examined in a comprehensive way, even though Smith (2005) makes some suggestions for the emerging assets.

Schwartz (2010) investigates the trends in the association between the spouses' earnings and estimates how this association influenced the growing earnings inequality between the married couples between the period 1967 and 2005. To achieve this; log-linear models and data from the March Current Population Survey (US) is used. The findings of Schwartz (2010) indicate that the increases in income inequality between the married couples would be 25 percent to 30 percent less in the absence of the increased association between the earnings of the partners. Moreover, this scholar emphasizes that the variations in the association between the earnings of the dual-earner couples have contributed more to growing inequalities at the top of the income distribution.

The study of Breen & Salazar (2010) for the United Kingdom - which investigates how the educational attainment of women influenced the income inequalities between the households - is an exception to the studies that find that homogamy increases income inequalities. The authors include not only the wives, but also other women in the analyses. Furthermore, with the multivariate decomposition model they developed, the impact of changes in the educational attainment of men and women, marriage patterns and labour supply are examined in a comprehensive way. The counterfactual models allow the authors to examine changes in marginal distributions and the relationships between the variables used in a multivariate distribution. They emphasize that the rising inequalities are attributed to the proportion of male household heads who are not working and not to educational homogamy.

In conclusion; on the one hand the study of Smith (2005) and Esping-Andersen (2007) describe the income relationship between the partners across the countries. On the other hand; Schwartz (2010) describes how the association changed discussing several underlying patterns between 1967 and 2005 for the United States. Yet all three studies did not address the underlying causes for (cross-country and cross-time differences) income homogamy. My study enriches the literature by investigating the patterns that may explain the differences in

income homogamy both at the individual and contextual level across the countries and over time.

1.3 Research Questions

The first question this study investigates is as follow; "*What are the micro-level patterns that influence the association between the incomes of the spouses*"? One of the underlying patterns that could explain the association between the incomes of the spouses could be educational assortative mating. Several studies point out that educational homogamy is a non-negligible phenomenon in contemporary societies (Uunk, 1996; Smits, 2003; Schwartz & Mare, 2005; Verbakel, 2008; Blossfeld, 2009). In addition; educational homogamy has also been used to explain occupational homogamy. However, educational attainments of the individuals can be the indicators of the cultural resources and the socio-economic resources of the individuals that provide well-being and status which play considerable roles in the mate selection process (Kalmijn, 1998). Henceforth educational homogamy can explain the association between the incomes of the spouses if it spreads to the earnings.

Moreover; there can be the so called "after effects" of partner selection and spousal consequences on the incomes. After the partner selection process, the available resources of the partners can enhance or restrict the labour market outcomes of the individuals (Verbakel & de Graaf, 2008; Verbakel & de Graaf, 2009). On the one hand the economic theory (Bernasco et al., 1998; Bernardi, 1999) suggests labour market participation of a partner would have a negative impact on the labour market outcomes of the other partner. On the other hand; social capital mechanisms show that the resources of the partners would have a positive influence on each other (Lin et al., 1981). Thus; the association between the incomes of the partners may be influenced after the partner selection process by the patterns like the bargaining power of women or the available resources of the partners. A central factor that is investigated here is whether women in couples are working and how many hours.

At the macro-level; income homogamy may differ across different countries and generations based on several reasons such as structural opportunities for mating (Kalmijn, 1998), gender roles, and institutional contexts (Gornick & Jacobs, 1996; Gornick et al., 1997). The second research question is; "*To what extent does the association between the incomes of the spouses differ across different countries and cohorts*"? Examining countries within different welfare regimes is an important way to compare these structural and institutional

differences, because welfare state regimes do not only reflect different labour market structures, but also point out how different contexts deal with gender stratification (Stier et al., 2001). Therefore; it is chosen to compare Sweden, Germany, United States and Italy. The first three countries chosen are the typical examples of Esping-Andersen's (1990) different welfare regimes. Sweden represents the social-democratic regime; Germany stands for the conservative regime and the United States is classified under the liberal regime. In addition; Italy represents the Mediterranean regime. Moreover; three different waves obtained from the Luxembourg Income Study between the years 1980 and 2010 are compared to examine the variation of income homogamy across the different cohorts.

The last research question is; *To what extent can country/wave variation in income homogamy be explained by micro-level determinants (educational homogamy, female labour supply) and macro-level determinants (sex ratio, general female labour supply)"?* In other words; it is questioned whether and how differences in income homogamy across the welfare regimes and time can be explained.

Chapter 2: Theoretical Background and Hypotheses

2.1 Introduction

As mentioned above; there is an extensive literature about the partner selection of individuals that examines the extent of racial homogamy, educational homogamy, occupational homogamy or the association between the labour market positions of the spouses (Hout, 1982; Kalmijn, 1991; 1994; 1998; Smits et al., 1998; 1999; 2000; Blossfeld & Timm, 2003; Smits, 2003; Verbakel et al., 2008; Blossfeld, 2009). However; studies exploring the extent of association between the incomes of the spouses are scarce and not cross-comparative. In addition; no studies examined the underlying patterns of this relationship. The current study focuses on patterns that are considered to influence the income resemblances of the partners both at the micro-level and macro-level. I start at the micro-level in order to understand cross-comparative differences in income homogamy because these cross-comparative differences may be due to differences in the distribution of micro-level factors across countries and waves. E.g., cross-country differences in income homogamy may be due to cross-country differences in educational homogamy, and such an explanation is an individual one (compositional differences in an individual-level factor). At the micro-level the impacts of educational homogamy and female labour supply are examined. On the other hand; the structural opportunities, namely sex ratio distribution of incomes and contextual female labour supply are taken into account at the macro-level. These factors are contextual and may influence all individuals living in the context beyond micro-level factors. At the following section it is discussed how these patterns may influence the extent of income homogamy and what hypotheses derived from this.

2.2 Educational Homogamy

One of the crucial patterns to understand marriage selection is the preferences of the individuals related with the traits and the characteristics of the potential spouses (Kalmijn, 1998). Kalmijn (1998) explains that the resources offered by the potential spouses and the available resources of the individuals that are offered to the spouses in return influences the marital preferences of the people. One important aspect that plays a considerable role in partner selection of the individuals is the socio-economic resources what produces economic well-being and status.

The economic consequences of marital selection were generally based on the vital work of Gary Becker (1981) who argues that the traditional work division within the households drives the partner selection preferences. Men have mainly taken the responsibilities for the paid labour and women have taken care of the household labour. It could be claimed that the paid and domestic labour resources were exchanged between the partners. Women barely contributed to the economic well-being and status of the families and the socio-economic resources of women did not have a significant impact on partner selection preferences (Becker, 1981). However; these patterns have considerably changed with the transition from a male breadwinner model to dual-earner families. Hence, the socio-economic resources of women have gained importance in the partner selection process (Eggebeen & Hawkins, 1990). With this revolutionary transition, the economic well-being and status of the family is not only determined by the men, but also by the contributions of women. Both men and women are looking for spouses with attractive socio-economic resources to utilize their position among the society (Kalmijn, 1998). The income resources of women are becoming prominently attractive for men in the partner selection process (Oppenheimer, 1988). Moreover; Buss et al. (2001) explain that the financial prospects of women play a crucial role in mate selection for men. Henceforth, the preferences of women and men in mate selection are becoming more symmetric. It is more likely for women in the high income group to be in a relationship with men from higher occupational status and high earnings potential than that generation of women with lower wages (Sweeney & Cancian, 2004).

Another important aspect that influences the preferences of the individuals in marriage selection is the cultural resources (Kalmijn, 1998). The socio-economic resources are related with what a partner prospect offers to maximize their economic status; however cultural resources are based on people who want to marry with a partner that is similar to them. Individuals marry with others who are similar to them because people are likely to have positive attitudes towards people that are comparable to them (Osbeck et al., 1997). Kalmijn (1998) explains that the resemblances between the values and opinions – similarity between the tastes – among the partners would lead to create more opportunities to participate to joint events and a common basis for conversation.

Educational attainments of the individuals can provide substantial information about the attitudes of the individuals towards many subjects such as traditional values, gender roles, domestic labour division (Alwin et al., 1991) or voting behavior (Van der Waal et al., 2007). Conversely; education is not only related with the tastes and values of the individuals, but also

has a strong relationship with the economic well-being and income of the individuals. Thus; based on the socio-economic and cultural preferences assortative partner selection based on educational attainment can play an important role in the partner selection process. The dissertation of Uunk (1996) which conducts multivariate analysis for different types of homogamy across countries and cohorts, namely educational, social-economic and cultural homogamy point out that educational homogamy is the most crucial form of homogamy in the industrialized Western world and the other types of homogamy are the consequences of educational homogamy. Similarly; Verbakel's (2008) findings in her dissertation finds the same.

In the study of Smits et al. (2000); different generations from 60 countries are compared to test the general openness hypothesis which predicts that the trends of educational homogamy will diminish in modernizing societies. There is a 2.5 percent decline in educational homogamy between the period around the 1940s and approximately in 1970s under study. However; educational homogamy decreased only in 15 countries significantly and increased in 7 countries. Moreover, there were no significant changes in 38 countries which points out that the trend towards less homogamy is not widespread in all of the countries. On the other hand; Schwartz & Mare (2005) point out that educational assortative partner selection is even higher than it was in 1940s for the United States. With almost similar variables and methods used in the study of Smits et al. (2000); Smits (2003) conducts models for highly educated individuals of 60 countries. The results indicated that even in the countries with the most developed welfare states; the tendency among the higher educated individuals to have partners with high educational levels is considerably strong. For example the log odds indicate that having a spouse with higher educational level is 8.5 times more likely to mate an individual that has a higher educational level compared to an individual with a lower educational level in the United States. From another point of view; Skopek et al. (2010) use data from a German online dating platform which is neither restricted nor structured institutionally. The results indicate that the normative rules and the structural influence continue even in an online dating platform. Expectedly; the level of preferring a partner with a similar level increases when the level of education of the respondent increases. Moreover (Katrnack et al. (2012) show that educational homogamy is a stronger indicator of social stratification compared with educational mobility what indicates the similarities between the educational attainments of the individuals and their fathers (Katrnack et al., 2012). Educational enrollment can be taken into account as a measure of human capital

investment, because it is highly correlated with the career prospects and the future earning potentials (Esping-Andersen, 2009). To the extent that potential economic outcomes are based on educational attainment, educational marital selections and incentives for intermarriage may affect the association between the incomes of the spouses. Educational homogamy could be one crucial explanatory reason of the association between the incomes of the spouses if it would spread to the incomes of the spouses (see Figure 1 at following page). Moreover; educational homogamy may explain the cross-country and cross-time differences in income homogamy, because the extent of educational homogamy differs across the countries and times (Smits et al., 1998; Smits, 2003). Hence; one could expect that the countries and cohorts with higher educational homogamy will show higher income homogamy. Therefore, I expect the following:

H1a: The greater educational homogamy, the higher the odds of income homogamy.

H1b: Country and time differences in income homogamy can be attributed to educational homogamy. E.g.: The higher educational homogamy at a certain time/country, the higher income homogamy.
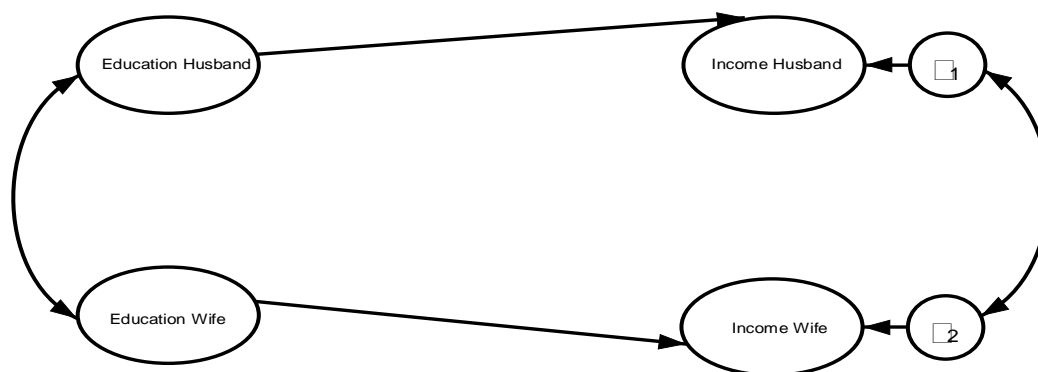

Figure 1 The relationship between educational homogamy and income homogamy

2.3 Female Labour Supply

The association between the incomes of the spouses may not only be the result of partners pre-selections based on socio-economic and cultural resources. When partner's resources merge during the marriage it may influence the income homogamy as well. Thus, once married the available resources of the partners can influence the labour market achievements

of the individuals (Verbakel & de Graaf, 2008). As a result, the resources of the partners can either support or restrict the labour market success of the other partner.

According to Becker's (1981) economic theory for example the paid and unpaid labour will be divided between the couples and the career resources of the partner will influence the labour market outcome of the other partner negatively. If one of the partners would have a favorable labour market position, it would restrict the other partner's labour market entrance - success due to maximizing the benefits by specialization between domestic work and paid work. In the traditional male-breadwinner model, the man is the economic provider for home and the woman's role is to take care of family and domestic work. Thus, this would limit the investments in women's paid careers. The amount of time allocated to the paid labour by the partners would depend both on their productivity at home and in the labour market. Likewise their spouse's productivity at home and in the labour market. When the men would allocate their time to the paid labour and wives to the domestic work, one could assume that there will be no association between the incomes of the partners, because wives would not have any out of employment based income and hence gender-role specialization would attach women more to the home (Becker, 1981).

For the emergence of income homogamy; women should increase their labour supply and allocate time to paid labour. However; increasing working hours of women would not necessarily influence income homogamy if the paid work and domestic work will be divided between the couples as suggested by the economic theory. This is because the domestic labour is not gendered, but it is related with the usage of time and the performance in the labour market (Geist, 2005). Thus, based on the economic theory it is assumed that even though the working hours of women increase the working hours of men would decrease. Therefore, according to Becker's theory, income homogamy would not be affected by female labour supply.

A rival theory is the bargaining theory. The relative resources of the partners may influence the division of labour between the husbands and wives (Geist, 2005). As for example Brines (1994) emphasizes the division of domestic work would be based on the negotiations between the partners. Higher gender equity could be achieved by a more equal bargaining power in both household and labour market opportunities between the spouses. It could be assumed if the working hours of women increase, their paid work increase and if the domestic work would be divided equally, the probability of achieving income homogamy would be more likely.

Several scholars discuss the changing role of women, their independency and gender equity (Fuchs, 1990; Goldin, 1994; Hakim, 1996). As Geist (2005) explains women are dependent on their husband because they do not have any earnings or educational attainments to secure a job to become independent. Moreover; Verbakel & de Graaf (2008) show that stimulation can influence the labour market success of the partner positively. Individuals can be stimulated to put effort in their careers and utilize their labour market outcome when their partners' achievements in the labour market are salient. Kalmijn (1994) argues that the human capital resources of women can facilitate the partner to access networks that would utilize his skills and be helpful for his career. According to this approach; if the partners have not mated due to their occupational achievements; increasing bargaining power of women can lead to more gender egalitarian family structures and the domestic division and paid division may be divided in-between the partners more equally. Thus; resemblances between the labour market outcomes of the spouses may increase. If this is true; the employment of women may enhance income homogamy (i) firstly with the additional income and (ii) secondly with the increasing bargaining power of wives in the households. Therefore, I expect from this theory:

H2a: The greater women's labour supply in a couple, the higher the odds of income homogamy of that couple.

H2b: Country and time differences in income homogamy can be attributed to female labour supply (compositional explanation). E.g.: The higher female labour supply, the higher income homogamy.

The hypotheses shown above assume that the female labour supply is an individual effect, even in the case of a change across time. According to this assumption; income homogamy can increase due to an increase of women working in a country would be a compositional (individual) effect as the change in population would cause a change in income homogamy.

On the other hand; the labour supply of women can have a contextual effect on income homogamy as well. It would be interesting to find out whether a contextual effect of female labour supply exists, over and above an individual effect. One could expect that the extent of income homogamy can be stronger for a couple with a working wife if the share of working women in the country is higher. In this case; both the female labour supply of the individual and the country-level female labour supply may then affect income homogamy. The contextual effect may be understood from a normative perspective, namely the norms that

influence individual's female labour supply and hence also income homogamy. Uunk (2015) suggests that gender norms and attitudes among the society may influence female labour supply directly by normative sanctioning or indirectly with the socialization of individual-level attitudes towards gender. Moreover; the findings of Uunk (2015) point out that one-fourth of the national gender-role attitude impact could be attributed to individual-level gender-role attitudes. Thus; the share of working women at the contextual-level may influence the female labour supply of women and thus income homogamy. It could be expected that when the general female labour supply in the country is higher, the association between the incomes of the spouses would be higher as well. That is:

H2c: The greater women's labour supply in a context (country/wave), the higher the odds of income homogamy of that couple (contextual explanation).

Even though the steadily increasing participation rates of women to the labour force is one of the most significant changes in economy, these participation rates considerably vary across countries (Harkness, 2010). Luxembourg Income Study provides a brief overview of the trends in participation of women to the labour market and Mediterranean countries just remain in 50 percent rates while the Nordic countries have almost achieved a gender egalitarian employment models with women employment rates over 80 percent in Denmark and 90 percent in Sweden. If in a context female labour supply is smaller and thus women's labour are less accepted, increasing working hours of the wives as well as the bargaining power may have a greater effect on income homogamy compared to the countries where the women's labour are accepted more. The findings of Geist (2005) emphasize that women in conservative regimes are able to reduce their time allocated to domestic work more for each additional working hours than their sisters in other regimes. With a similar approach; I expect that increasing labour supply of women in countries where the female employment rates are low will have greater impact on income homogamy. This implies an interactive effect of female labour supply at the contextual level with individual women's labour supply. That is:

H2d: The effect of women's labour supply (individual level) on income homogamy is greater in countries with a smaller female labour supply (contextual level).

2.4 Gender Distribution of Incomes

In his review about intermarriage and homogamy; Kalmijn (1998) points out that the emergence of marriage patterns are the consequences of the three social forces, namely (i) the preferences of the individuals based on the traits and characteristics in a potential spouse, (ii) third parties that influence the individuals based on their social groups and (iii) opportunities and constraints available at the marriage market where the individuals are looking for partners. At the micro-level the preferences of the individuals, namely educational assortative mating and how the available resources of women (female labour supply) may influence income homogamy are discussed. At the macro-level; the opportunities and constraints that may influence the marriage patterns and the association between the incomes of the spouses are taken into consideration.

Kalmijn (1991) claims that one aspect that shapes the marriage patterns of the individuals is the opportunities to meet with partner prospects within or outside the group. The chances to marry with someone within the group become higher with the frequent interactions with the group members on a day-to-day basis. If one would assume that most people spend their life in certain places such as schools, workplaces, clubs or associations, it would be more likely for them to meet with their future partners at the places where they spend most of their time (Kalmijn, 1998). For example; Mare (1991) points out the importance of structural factors and constraints when one of the most severe types of homogamy, namely educational homogamy is considered. Since individuals spend more times in schools and the time gap between marriage and leaving school diminishes, people – especially the higher educated – are more likely to meet with their spouses at the schools (Mare, 1991). Growing opportunity to meet people with the similar levels of educational attainments is a by-product of the educational structure that increases the probability of educational assortative mating (Blau & Schwartz, 1984).

Moreover; in his literature review about educational assortative marriage, Blossfeld (2009) suggests that educational expansion will lead to an increase in the levels educational homogamy across cohorts, since the educational attainments and the time spent for education are enhanced for the younger cohorts. A similar approach can be adapted for the income homogamy.

A considerable number of studies discuss the changing role of women, seeking for independency and gender equity (Fuchs, 1988; Hakim, 1996). Goldin (2006) explains the

changing behavior of women as the quiet revolution that transformed women's employment, education and family. Participation of women to the labour force has severely increased in modern societies, but in different rates (Harkness, 2010). Thus; one could claim that there are now more women employed or available at the higher status jobs compared to the earliest cohorts. Similar with the educational expansion; there are now more opportunities for men to meet women with higher income levels with the transition from male-breadwinner families to the dual-earner families. The upward marriage of women and the downward marriage of women have been a consequence of the structural limitations (Blossfeld, 2009). The findings of Blossfeld & Timm (2003) show that hypogamy is mainly the consequence of the structural availability of the qualified women at the marriage market.

The sex ratio which is the proportion of females compared to males in a population can be considered as a measure of partner availability. If the sex ratio between high-earning men and high-earning women becomes more balanced, the extent of income homogamy may get stronger. In other words; more women with higher earnings are emerging at the marriage market which increases the opportunities for men to have a partner with higher incomes. These growing opportunities may lead to an increase in the association between the incomes of the spouses. I expect that:

H3a: The more balanced the sex ratio (more people of other sex from the same income), the higher the odds of income homogamy (contextual explanation).

H3b: Country and time differences in income homogamy can be attributed to sex ratio. E.g.: The more balanced the sex ratio (more people of other sex from the same income), the higher income homogamy.

A potential issue in here is the high correlation between sex ratio and female employment rates at the macro-level. In countries where many women work, the sex ratio may be more balanced. However, the four countries used in the study differ enough to separately estimate the effects of sex ratio and female employment rates. For example; Esping-Andersen (2007) shows the correlation between the earnings of the spouses is high in Spain and Italy; despite that the female employment rates and the labour supply homogamy is low. Similarly; Smith (2005) shows that the highest proportion of similarities in-between the partners based on the earnings-ranked occupations is observed in France and Italy.

Similar to the interaction effect between the female employment rates and female labour supply at the individual level, I expect that; in countries where the available women at

the high income level is less compared to other countries (sex ratio less balanced), additional working hours of women may have a stronger impact on income homogamy. In other words; when there are fewer women found at the positions with high-earnings, women can have more supremacy with the increasing bargaining power and the influence on income homogamy may be greater. That is:

H3c: The effect of women's labour supply (individual-level) on income homogamy is greater in countries with a less balanced sex ratio (contextual-level).

Table 1 Summary of the Hypotheses

H1a: *The greater educational homogamy, the higher the odds of income homogamy (individual-level explanation).*

H1b: *Country and time differences in income homogamy can be attributed to educational homogamy (compositional explanation).*

H2a: *The greater women's labour supply in a couple, the higher the odds of income homogamy (individual-level explanation).*

H2b: *Country and time differences in income homogamy can be attributed to female labour supply (compositional explanation).*

H2c: *The greater women's labour supply in a context (country/wave), the higher the odds of income homogamy (contextual explanation).*

H2d: *The effect of women's labour supply (individual-level) on income homogamy is greater in countries with a smaller female labour supply (contextual-level) (micro-macro explanation).*

H3a: *The more balanced the sex ratio (more people of other sex from the same income), the higher the odds of income homogamy (contextual explanation).*

H3b: *Country and time differences in income homogamy can be attributed to sex ratio (contextual explanation).*

H3c: *The effect of women's labour supply (individual-level) on income homogamy is greater in countries with a less balanced ratio (contextual-level) (micro-macro explanation).*

Chapter 3: Data, Measurements and Method

3.1 Data

To test the hypotheses; data is drawn from the Luxembourg Income Study. LIS is a cross-national data center that is designed to serve a global community of researchers, educators and policy makers. It acquires datasets with income, wealth, employment and demographic data. Some scholars like Kentworthy (2008) even claim that it is the best source of data for cross-national comparisons.

There were 30 countries available at the LIS database in 2006 for four continents and information about some countries are available for more than 30 years. Four waves are selected for the comparison of different times. Wave II stands for the period around 1985, Wave IV is around 1995, Wave VI is around 2004 and Wave VIII is around 2010. In my study, I choose to study Sweden, Germany, Italy and United States to assess cross-national differences. Unfortunately, LIS data does not provide information about the working hours of the respondents for the Scandinavian countries, except the second and fourth wave for Sweden. Furthermore, for Italy instead of Wave II; Wave III from the year 1989 is used because of the restrictions at Wave II. The main advantage of focusing on specific countries and waves is in-depth assessments of different contexts to understand the cross-country and time variations can be achieved (Van der Lippe & Van Dijk, 2002). Moreover; focusing on specific countries allows conducting a detailed individual-level analysis to understand the causes and effects for each country (Stier, 2009). The countries are chosen to represent the different gender, welfare regimes found across the Western countries. In addition; the countries used in the study substantially differ in terms of macro-level determinants (is discussed below) which allows me to test the hypotheses conducted properly and to assess whether the differences across these countries can be attributed to micro- and macro-level determinants. Waves before the 1980's were available for some countries, but for the others it started in mid-1980; thus the analysis started with the period around 1985.

To compare the variations in the association between the incomes of the spouses across the waves and the countries; the sample is restricted to working-age population that is defined as respondents aged between 25 and 64. Moreover; the analyses are restricted to married couple households because cohabitation was not a common phenomenon in the first waves that are taken into account for many of the countries, except Sweden. However, in Sweden cohabitation rates are high even back in the 1980s and they are already considered

together with the married couples at the LIS data as "married/in union". Thus, cohabiting couples are included in the sample for Sweden. Household income is considered as the income acquired from the earnings of the husband and wife and couples with no paid employment earnings or working hours are included at the sample. The earnings and labour supply of other respondents living in the household are not taken into account.

Households headed by same sex partnership and households in which the head had more than one partner/spouse are also excluded from the analysis (because these formations were absent for the earlier periods that are considered in the examination). Thus; it could be claimed that there could be four possible household types emerging in the sample after the restrictions: (i) conventional male breadwinner family, (ii) dual earner couples, (iii) female breadwinner households, and (iv) non-working couples. The final sample consists of 155,239 couples.

3.2 Measurements

Dependent Variable

Since total income of the individuals would include components like rents and, income benefit, the direct returns of the skills and the labour market achievements of the individuals such as educational attainment can be measured more clearly with earnings at the labour market. Thus, including additional incomes from rents or benefits may lead to biased results in measuring the direct return from the skills and the achievements of the respondents. To examine that; the item "paid employment income" that is available at the LIS data is used in the study. "Paid employment income" captures the mean incomes from wages, salaries and self-employment from the several jobs of the respondents.

Paid employment income distribution of the respondents is divided into quintiles; (i) low, (ii) lower-middle, (iii) middle, (iv) upper-middle, and (v) high. By doing so, a representative sample size showing the high income group, low income group and two middle income groups for each country and wave is provided. Categorization of the income distribution is important because income homogamy is not the same across the countries and it is handy to describe income homogamy with few categories. Secondly, it is handy to compute the sex-ratios and have enough cases in the cross-table with the categorization. The division of the income distribution into quintiles is made separately and based on the

countries and waves to examine their position regarding the periods and countries, because within the LIS data some countries report the individual earnings before taxes and some after the taxes. Moreover; respondents from some countries may be overrepresented in some quintiles if the division of income distribution would be made after appending the data. Thus; after their income position is assigned according to their country and wave, data from different waves and countries are appended. In some waves of Italy the low quintile is overrepresented, because more than the 20% of the individuals living in Italy have no income or substantially low-income at the same levels; thus distinguishing between those respondents is not feasible. On the other hand; if those individuals at the same income levels match with each other, this would also point out income homogamy. Hence; it is preferred to keep the distribution as it is calculated.

Based on the division of the income distribution into quintiles; the income position of the household is calculated. A point system is created for the income quintiles to measure the income position of the households. 1 point stands for low income, 3 points for lower-middle, 7 points for middle, 9 points for upper-middle and 10 points for high income. By summing up the income points of the spouses living at the same household; the total income points of the households are calculated (see Table 1). For example; when a household consists of a husband from the middle income (7 points) strata and a wife with low income (1 point), the total income points of the household are calculated as (7+1) 8 points. When the total income point of the households is 2 (low + low), 6 (lower-middle + lower-middle), 14 (middle + middle), 18 (upper-middle + upper-middle) or 20 (high + high); it indicates that the partners are at the same income quintile. Thus, having these points is considered as income homogamy. The income points are chosen specifically, henceforward the possible household points of partners from different income strata would not be the same with the couples that have income homogamy.

Table 2 Income Points

Income Quintile	Points	Income Homogamy Points	Possible No-Income Homogamy
Low	1	2	4, 8, 10, 11
Lower-Middle	3	6	4, 10, 12, 13
Middle	7	14	8, 10, 16, 17
Upper-Middle	9	18	10, 12, 16, 19
High	10	20	11, 13, 17, 19

A dichotomous variable is created for the income homogamy as the dependent variable. "0" stands for no income homogamy and "1" stands for income homogamy if the income positions of the respondents match with each other such as both having low income, lower-middle income, upper-middle income or high income.

Independent Variables

At the micro-level educational homogamy and female labour supply are used for the analysis. Unfortunately; the educational attainments of the respondents are measured according to the educational classification based on the countries. Thus; the point-scale used by the countries substantially differs with each other. On the other hand; another item is available on LIS, indicating primary, secondary or tertiary education. For the classification of education; International Standard Classification of Education (ISCED) that is developed by UNESCO for comparison of educational attainments are used. The categorization of education consists of three broad levels:

Level 1 = ISCED 0 (early childhood education), 1 (primary education) and 2 (lower secondary education)

Level 2 = ISCED 3 (upper secondary education) and 4 (post-secondary, non-tertiary)

Level 3 = ISCED 5 (first stage of tertiary education) and 6 (second stage of tertiary education)

Similar with the approach for income homogamy; another point system is created for educational attainment of the individuals and when the total points of a household showed that the partners have the same levels of education, they are labeled as educationally homogamous. It is preferred to use a dummy variable for educational homogamy rather than other measures, hence whether the resemblances between the educational levels of the partners spread to their earnings and can the extent of income homogamy in a wave or country explain the contextual differences could be observed better. However; one should consider that this measurement suffers from having a broad educational category which makes educational homogamy for the individuals more likely.

As discussed above; increasing female labour supply may increase the odds ratios of income homogamy for two reasons; (i) additional income for women, and (ii) bargaining power. To measure that, the total working hours of the households are decomposed into two components by counterfactual conditions. Firstly, the total working hours of the household is

calculated based on only the working hours of the wives by considering as the husbands do not make any contribution. Secondly; the total working hours of the household is calculated by only taking into account the working hours of the husbands. The bargaining power variable is created by dividing the working hours of wives into the working hours of the husbands that are living at the same household. Wives have the advantage at the household in terms of working hours when the variable is greater than 1 and men have the advantage when it is smaller than 1. Furthermore, the working hours at the household is divided equally when the labour supply ratio of the spouses is 1.

At the macro-level; dummies for both the countries and the waves to examine how the extent of association between the incomes of the partners varies across the countries and the waves are included for the analyses. In addition; the sex ratio in the waves and the countries is considered to examine the structural opportunities. The proportion of men and women available in the sample for every income level is determined and the sex ratio is calculated by the share of own income group of partners in population. Moving towards 0 to 1 indicates that sex ratio becomes more balanced. Expectedly; men are overrepresented in every wave and country at the high income distribution and women are overrepresented at the low income distribution.

The other macro-level determinant used in the study is the female employment rates. It is calculated based on the percentage of employed women in a wave and country. The correlation between the sex ratios and employment rates are considerably high within the countries when the waves are compared; however it differs considerably across countries and allows me distinguishing between structural opportunities and female labour supply. Figure 2 and Figure 3 illustrates how the sex ratio and female employment rates of the countries vary across the waves in order.

Control variables

The models are controlled for other patterns that may influence the association between the incomes of the partners. It is evident that ethnic or racial differences in the society are another important pattern in the partner selection process. Diverse ethnic or national backgrounds of the individuals rather than educational or income homogamy may be the priorities during the mating process and may influence the independent and dependent variables. For example; a highly-qualified immigrant men/women can prefer a spouse from similar ethnical background, even though he/she may be from the lower levels of the income distribution.

Thus, it is controlled for immigrant status in the analyses. However, I consider that not only the immigrant status, but also the ethnicity or race of the individuals may play a major role in partner selection in United States. Henceforward, ethnicity/race is controlled for US in the analyses.

It is quite likely that the careers of the women and their involvement in economy could be restricted by the presence of children at home (Stier et al., 2001). Hence; the age of the youngest own child living in the household is taken into consideration in order to exclude partner influencing due to childbirth. A dummy variable indicating whether the respondent has a child aged between 0 and 6 is included. In addition; another dummy variable for the disabled respondents is included, because their involvement in the labour market could be restricted as well.

3.3 Methods

The different waves and countries from Luxembourg Income Study are pooled creating a micro-level dataset for 4 countries and 4 waves (2 waves for Sweden) with 14 contextual units. In order to analyze how the extent of income homogamy varies across countries and time; descriptive statistics are conducted firstly. How the married men and women in the society are distributed based on their incomes is examined separately per country and per wave. These distribution rates of income homogamy are compared with the sex ratios and women employment rates illustrated at Figure 2 and Figure 3. For the descriptive part, Wave VI from Sweden is included as well, however it is excluded from the logistic regression, because no information about the working hours of the respondents is available.

Since the dependent variable used in the study is a dichotomous variable, multivariate logistic regression method is used to test the hypotheses at the micro and macro-level. At first; country and wave dummies and the control variables are introduced to the empty model to compare macro-level differences. This type of model is called as fixed effect (FE) models and the estimates would be unbiased and consistent (Kollmeyer, 2012). At the second and third model; the dummy variable for educational homogamy and the relative positions of wives and husbands according to their working hours are placed in order to assess the impact of the micro-level determinants on income homogamy. Moreover; the changes in the marginal effects of the countries and waves are calculated to see how much of the differences at the macro-level could be explained by the micro-level determinants, namely the educational

homogamy and female labour supply. At the next model; sex ratio is introduced to understand whether the variations across the countries and different times are based on structural differences or not. Other macro-level determinant namely the employment rates of women per country and wave are introduced at the next model first excluding the sex ratio and then considering the sex ratio and women employment rates together to assess the macro-level effects. Even though there are only 4 countries in the study, there are actually 14 contextual units and thus degrees of freedom to test 1 or 2 contextual variables. The interaction terms are included in the last two models by adding "sex ratio x bargaining power" and "female employment rates x bargaining power" in order. The likelihood ratio tests are used to evaluate the differences between the models.

After the pooled analyses, logistic regressions of income homogamy are done per country. I do this to see more profoundly whether the determinants of income homogamy differ per regime type. Besides, the above hypothesized macro-micro interactions, "sex ratio x bargaining power" and "female employment rates x bargaining power", I explore with these country-specific regressions whether other macro-micro interactions exists. With a similar approach; logistic regression method is used for the separate analysis of the countries, including the control variables and dummies for the waves at the first model and the micro-level determinants, namely educational homogamy and female labour supply at the individual level are introduced at the next models in order. However, the degrees of freedom per country are seriously limited to 4 waves, thus the impact of sex ratio and female employment rates at the macro-level could not be examined.
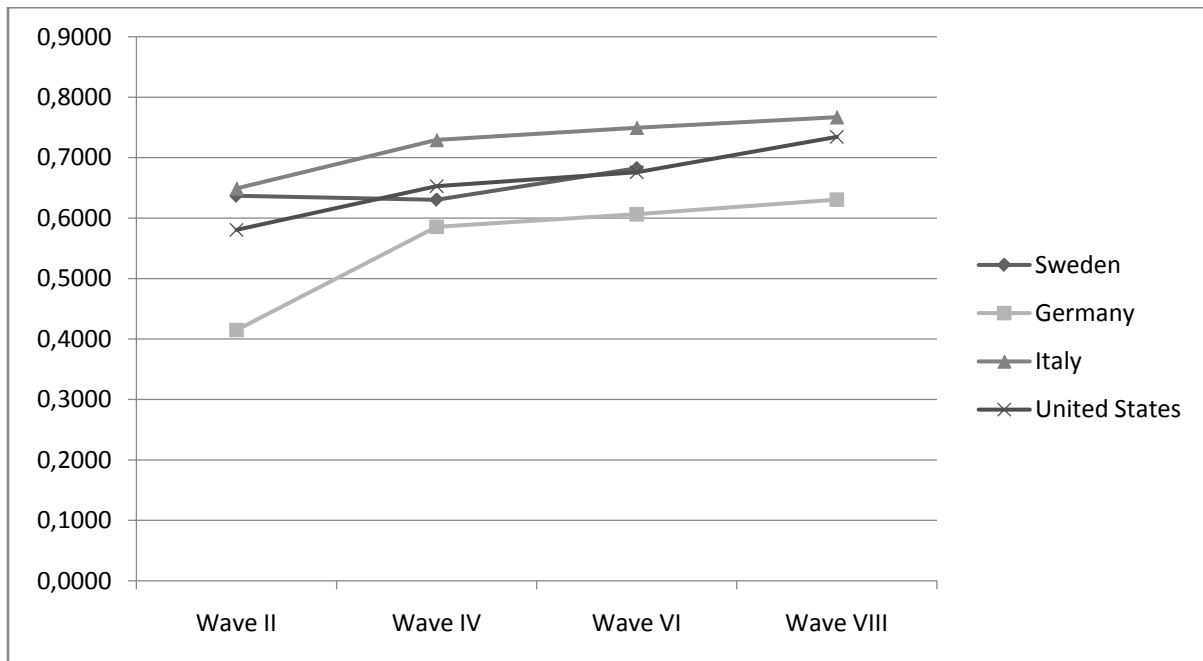
Chapter 4: Results

4.1 Bivariate Analysis

Figure 2 Sex Ratio of Countries Across Waves

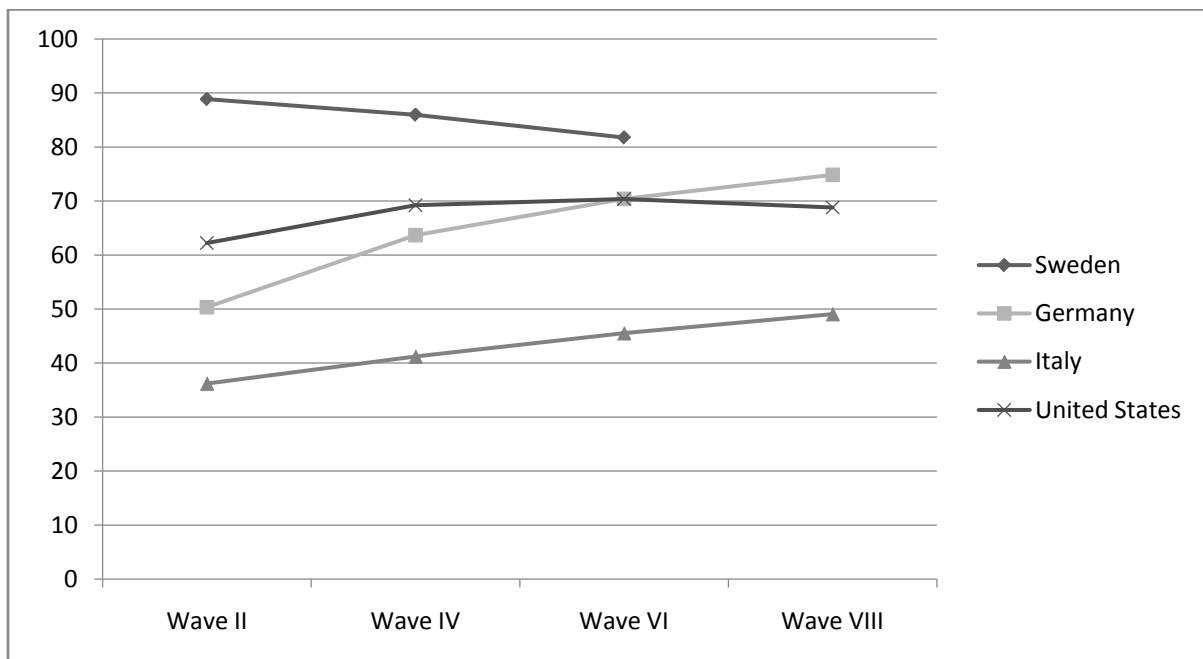*Source:* **Luxembourg Income Study**

Figure 3 Female Employment Rates of Countries Across Waves

Source: **Luxembourg Income Study**

To see whether the extent of income homogamy varies across the countries and waves, I first start by plotting income homogamy rates of each country for the four waves used in the study. Figure 4 illustrates the income homogamy rates for four countries by the waves. It emphasizes that income homogamy rates have increased for all the countries by time except Italy. Even though it is not controlled for any micro-level and control-level determinants, the income homogamy rates in Italy are substantially high in every wave compared to the other countries.

Italy having the highest sex ratio in every wave also has the highest income homogamy rates. Moreover, the income homogamy rates of Italy starts diminishing at Wave VI (3 at x-axis) and Wave VIII (4 at x-axis) as the dramatic increase of sex ratio slows down. Germany having the lowest sex ratios in every wave has the lowest homogamy rates across the countries as well in every wave. However, it should be considered that the income homogamy rates gap between Sweden and Italy is large, despite the fact that the sex ratio gap between these countries in not large at Wave II.
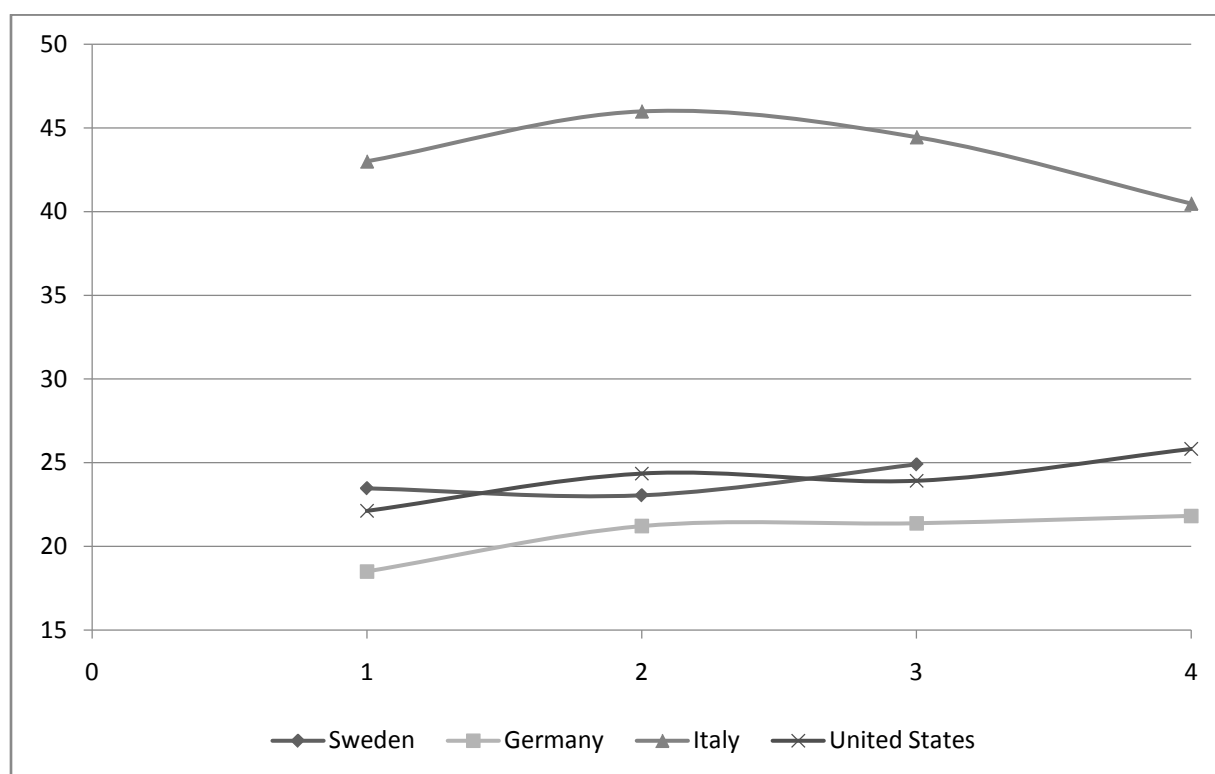

Figure 4 Income Homogamy rates by country and wave

Source: **Luxembourg Income Study**

On the other hand, the employment rates of women (see Figure 3) do not seem to have a considerable impact on the homogamy rates, because although the women labour supply at the macro-level does not increase in Sweden, income homogamy rates augment by time supporting the variations in sex ratios. Furthermore, the employment rates of Germany are prominently high compared to Italy and the labour supply gap of women between Germany and the Unites States closes at Wave VI, still Germany stands with the lowest income homogamy rates in all of the waves.

Trends and country differences in income homogamy seem to be best explained by the sex ratio and when the sex ratio becomes more balanced, the income homogamy becomes greater.

4.2 Multivariate analyses, on all countries

The logistic regression models in Table 3 estimate the influence of the micro-level and macro-level determinants used in the study on income homogamy. To understand the impacts of the determinants, log odds are used. The reference category for the countries is Italy, Wave II for the waves and white, non-Hispanic for ethnicity/race. The detailed categories for the ethnicity/race are not shown in the models. In addition same analyses are run with including only the married couples for Sweden and the results do not show any considerable differences.

Model 1 includes the control variables and the dummies for the countries and the waves and displays the variations across the countries and waves. At Model 1, similar findings are obtained with the scatter plot shown at Figure 4. The log odds point out that the probability of income homogamy for a couple increases with the more recent waves. However, the relationship does not seem to be linear and the probability of having income homogamy for a couple is higher for Wave IV then Wave VI. Furthermore, the income homogamy seems to be strongest in Italy, followed by Sweden and weakest in Germany. The likelihood of being at the same income level increases with the disabled and immigrant status. On the other hand, having a child aged between 0 and 6 at the household affects the odds of income homogamy negatively. The latter can be explained by the restrictions children pose on women's labour supply and hence on her contribution to household income.

At the second model, the influence of educational homogamy on income homogamy and whether the time and country differences in income homogamy can be attributed to educational homogamy is examined. The significant positive log odds of educational homogamy (0.130) indicate that having a partner with the same educational attainment levels increases the likelihood of income homogamy. The x-standardized coefficient (*bStdX*=0.0625) at Table 4 indicate that educational homogamy is a stronger estimator than most of the waves and the immigrant status. However, having a children aged between 0 and 6 is a stronger estimator than the main micro-level determinant educational homogamy.

Moreover, the log odds for countries and waves after educational homogamy is introduced into the model indicate that the time and country differences cannot be attributed to educational homogamy. Because the country and wave effects hardly change. The marginal effects of the countries and waves for the first and second models are compared as well to ensure that the cross-country and cross-time differences are not the consequences of educational homogamy and the findings point out the same. The highest impact on educational homogamy is for Italy, but still not substantial. Educational homogamy causes approximately a 0,48% increase in the marginal effect of Italy.

Model 3 adds the effects of female labour supply at the individual-level and examines the impact of it on income homogamy. Moreover, it is assessed whether female labour supply at the individual-level can explain the cross-time and cross-country differences. The odds (*b*=0.004) shows that the labour supply of women and hence bargaining power at the individual level increase the odds of income homogamy. The x-standardized (*bStdX*=0.0766) show that female labour supply at the individual level has a stronger effect than the effect of educational homogamy, but the impact is smaller than having a children aged between 0 and 6. However, the log odds and the marginal effects for the countries and waves for model 3 do not show any notable differences compared to the log odds and marginal effects of the countries and waves at Model 2. The marginal effect of Italy increases by 1% when the female labour supply at the individual level is introduced to the model. Thus, it could be claimed that the country and time variations are not due to differences in female labour supply at the individual level.

Model 4 estimates the effect of sex ratio at the macro-level. The positive odds (*b*=1.594) indicate that when the sex ratio for income levels become more balanced, the likelihood of income homogamy increases. X-standardized coefficient (*bStdX*=0.1504) of sex ratio show that sex ratio has the stronger impact on the models after the dummy used for

United States (*bStdX*=0.2421). Considering sex ratio causes a 12% at the marginal effect and 30% decrease in the log odds of Germany. Although the sex ratio does not cause any considerable changes for the other countries, cross-time differences change substantially with the sex ratio. Wave IV is not significant anymore showing that the differences between Wave II and Wave IV (an increase) can be attributed to the changes in sex ratio (it became more balanced). Moreover, the sign of the log odds of Wave VI and Wave III turn into negative from positive. If the structural opportunities across time would be the same, individuals from the former waves would have higher odds of income homogamy. Wave differences seem to be largely explained by the differences in sex ratio, and the marginal effects become considerably close to each other in Model 4. However, differences between the countries diminish less and only some decrease in Germany and Unites States is observed. Thus, sex ratio can explain time differences to a large extent, but country differences less.

Model 5 considers the effect of sex ratio and female labour supply at the contextual level together. Female labour supply at the contextual level is significant and has a negative influence on income homogamy (*b*= 0.011). In addition, the effect of sex ratio becomes stronger (from 1.6 in Model 4 to 2.3 in Model 5). Obviously, part of the sex ratio effect was suppressed by female employment rate. This is because sex ratio and female employment rates correlate positively and because female employment rate itself has a negative effect on income homogamy, thus part of the sex ratio effect was hidden. Adding female employment rate to the model does not diminish time and country differences in income homogamy, on the contrary they become larger. This implies that combining sex ratio and female employment rates cannot explain time and country differences in income homogamy, but only the sex ratio (at least time differences). This is somewhat surprising, but it may have to do with the high correlation between sex ratio and female employment rate.

On the other hand, another model (not shown on the Table) is run separately for female employment rates by excluding the sex ratio from the examination. Different from considering the female employment rates together with the sex ratio, the log odds of female employment rates were not significant when the sex ratio was not included in the analysis. In addition, the likelihood ratio test shows that the Model 3 is not rejected in favor of the model only with the female employment rates.

Table 3 Logistic Regression of Income Homogamy (Standard errors between parentheses; N=155,239 Couples)

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Constant	-0.260***	-0.351***	-0.385***	-1.417***	-1.499***	-1.512***	-1.501***
	(0.013)	(0.015)	(0.015)	(0.170)	(0.170)	(0.170)	(0.170)
Wave IV	0.080***	0.078***	0.070***	-0.037	-0.029	-0.018	-0.018
	(0.012)	(0.012)	(0.012)	(0.021)	(0.021)	(0.021)	(0.021)
Wave VI	0.054***	0.053***	0.041***	-0.111***	-0.091***	-0.072*	-0.074**
	(0.012)	(0.012)	(0.012)	(0.028)	(0.028)	(0.028)	(0.028)
Wave VIII	0.113***	0.110***	0.010***	-0.135***	-0.159***	-0.132***	-0.134***
	(0.012)	(0.012)	(0.011)	(0.040)	(0.040)	(0.043)	(0.041)
Germany	-1.132***	-1.114***	-1.117***	-0.863***	-0.495***	-0.472***	-0.474***
	(0.019)	(0.019)	(0.019)	(0.046)	(0.085)	(0.086)	(0.086)
Sweden	-0.896***	-0.874***	-0.898***	-0.820***	-0.272***	-0.214***	-0.221***
	(0.019)	(0.019)	(0.019)	(0.023)	(0.110)	(0.111)	(0.111)
United States	-0.942***	-0.936***	-0.960***	-0.856***	-0.540***	-0.512***	-0.514***
	(0.013)	(0.013)	(0.013)	(0.021)	(0.066)	(0.066)	(0.066)
Children 0-6	-0.306***	-0.309***	-0.297***	-0.296***	-0.297***	-0.297***	-0.297***
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)
Disabled	0.480***	0.486***	0.503***	0.503***	0.503***	0.503***	0.503***
	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)	(0.020)
Immigrant	0.091**	0.091***	0.100***	0.112***	0.103***	0.106***	0.106***
	(0.029)	(0.029)	(0.029)	(0.019)	(0.029)	(0.029)	(0.029)
Edu Hom		0.130***	0.132***	0.131***	0.131***	0.130***	0.130***
		(0.009)	(0.009)	(0.009)	(0.009)	(0.009)	(0.009)
Fem Emp (i)			0.004***	0.004***	0.004***	0.016***	0.014***
			(0.000)	(0.000)	(0.000)	(0.003)	(0.003)
Sex Ratio				1.594***	2.341***	2.200***	2.431***
				(0.261)	(0.299)	(0.238)	(0.300)
Fem Emp Rate (c)					-0.011***	-0.005**	-0.012***
					(0.002)	(0.002)	(0.002)
Sex Ratio x Fem Emp (i)						-0.017***	-0.017***
						(0.004)	(0.004)
Fem Emp Rate (c) x Fem Emp (i)							0.00002
							(0.000)
Log likelihood	-173342.18	-173232.9	-173060.27	-173041.55	-173028.52	-173019.52	-173018.87

*p<0.05, **p<0.01, ***p<0.001

Source: Luxembourg Income Study (LIS)

Model 6 tests whether there is an interactive effect between the sex ratio and female labour supply at the individual level. The significant log odds (b= -0.017) show that the effect of labour supply of women at the individual level is weaker in countries and waves with a more balanced sex ratio, and vice versa stronger in countries and waves with a less balanced sex ratio, as predicted (H3c). Figure 5 illustrates the average marginal effects of female labour

supply at the individual level for different sex ratios. As the sex ratio becomes more balanced and thus closer to 1, the marginal effect of individual-level female labour supply decreases which is consistent with the log odds coefficient of the interactive effect.

Model 7, finally, tests whether there is an interactive effect between the female labour supply at the contextual level and female labour supply at the individual level. However, the log odds for the interactive effect are not significant.

Table 4 Main effects of the estimators

	X-Standardized Coefficient	Fully Standardized Coefficient
Wave IV	-0.0125	-0.0067
Wave VI	-0.0402	-0.0217
Wave VIII	-0.0679	-0.0367
Germany	-0.1418	-0.0767
Sweden	-0.0754	-0.0408
United States	-0.2421	-0.1309
Children 0-6	-0.1330	-0.0719
Disabled	0.0964	0.0521
Immigrant	0.0161	0.0087
Educational Homogamy	0.0625	0.0338
Fem Labour Supply (i)	0.0766	0.0414
Sex Ratio	0.1504	0.0813
Fem Emp Rate (c)	-0.1167	-0.0631

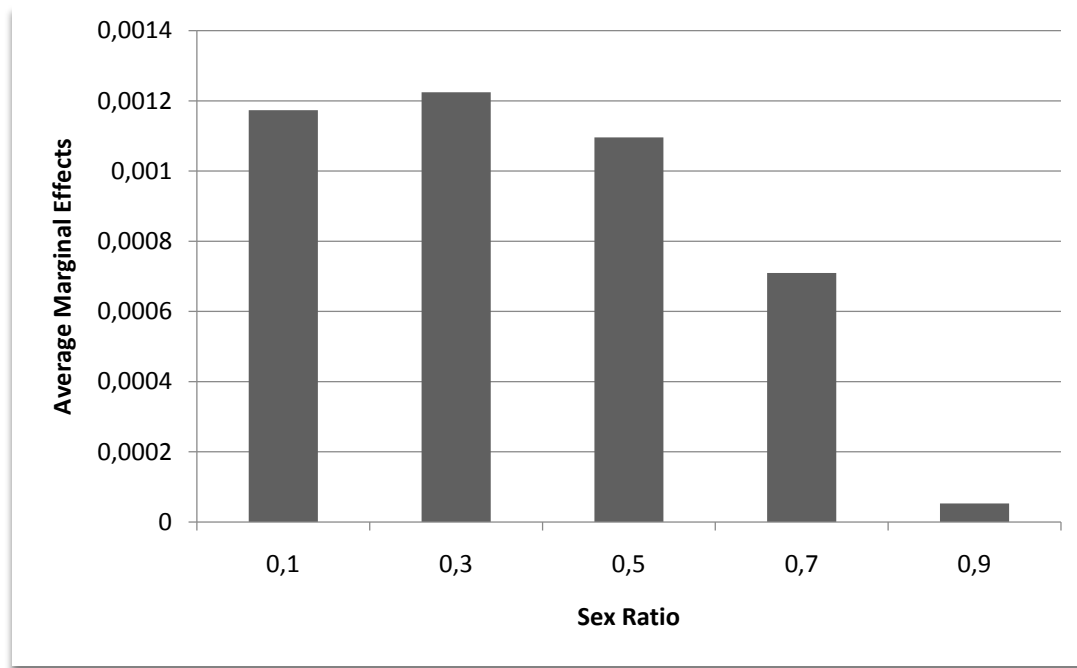*Source:* Luxembourg Income Study (LIS)

Figure 5 Average Marginal Effects of female labour supply at the individual level

Source: **Luxembourg Income Study (LIS)**

4.3 Multivariate Analyses

Because the effects of variables may differ per country/welfare regime, I also ran analyses per country. The logistic regressions are run separately per country after the pooled analyses. The log odds and standard errors are illustrated on Table 6 and Table 7 for each country. The similarities and differences between the countries are listed below.

Similarities:

- Having a children aged between 0 and 6 have a negative effect on income homogamy for all of the countries

- Educational homogamy has a positive effect on income homogamy for all of the countries

- Disability status has a positive effect on income homogamy for Italy, Germany and United States

- Immigrant status and ethnicity/race rather than white, non-Hispanic increase the odds of income homogamy

- For Italy, Germany and United States; income homogamy is stronger at Wave IV compared to Wave II
- The log odds of Wave VI for Germany and United States are slightly less than Wave IV and Wave VIII has the largest log odds for both of the countries
- The cross-time variations cannot be attributed to female employment for Italy and United States

Differences:

- The standardized coefficients show that the negative impact of having a 0-6 year old child seems to be strongest for Germany which represents the conservative welfare regime
- In Sweden, being disabled does not have a significant effect on income homogamy
- For Italy, immigrant status has a negative influence on income homogamy.
- In Italy, Wave VI is not significant and the log odds of Wave VIII is negative
- The comparison of main effects for educational homogamy points out that the impact on educational homogamy is strongest in Sweden and weakest in United States (interactions made for the pooled data with the country dummies and educational homogamy, the findings points out the same and the impact of educational homogamy is strongest in Sweden and weakest in United States)
- Different from the pooled data, female labour supply has a negative effect in Sweden and Italy, however when the impact of female labour supply at the pooled analyses is examined separately by conducting an interactive effect between country dummies and female labour supply at the individual level, similar findings are obtained
- Only Wave VIII remains statistically significant (at 5% p-level), when the effect of female employment at the individual level is added to the analysis for Germany
- The impact of female labour supply is stronger for Germany and United States compared to Italy and Sweden where the sex ratio is more balanced

Table 5 Separate Analyses for Italy (N=32,576) and Germany (N=27,994)

Italy	Model 1	Model 2	Model 3	Germany	Model 1	Model 2	Model 3
Constant	-0.181***	-0.341***	-0.328***	Constant	-1.408***	-1.513***	-1.521***
	(0.021)	(0.029)	(0.030)		(0.037)	(0.041)	(0.041)
Wave IV	0.121***	0.129***	0.130***	Wave IV	0.167***	0.158***	0.089
	(0.029)	(0.030)	(0.030)		(0.045)	(0.046)	(0.047)
Wave VI	0.061	0.078*	0.080*	Wave VI	0.164***	0.150***	0.081
	(0.032)	(0.032)	(0.032)		(0.044)	(0.044)	(0.045)
Wave VIII	-0.113***	-0.092**	-0.089**	Wave VIII	0.176***	0.160***	0.093*
	(0.033)	(0.033)	(0.033)		(0.045)	(0.045)	(0.047)
Children 0-6	-0.528***	-0.515***	-0.514***	Children 0-6	-0.669***	-0.672***	-0.645***
	(0.028)	(0.029)	(0.029)		(0.043)	(0.043)	(0.043)
Disabled	0.973***	0.947***	0.942***	Disabled	0.508***	0.518***	0.531***
	(0.087)	(0.087)	(0.087)		(0.055)	(0.055)	(0.055)
Immigrant	-0.331***	-0.329***	-0.328***	Immigrant	0.095*	0.091*	0.100**
	(0.070)	(0.070)	(0.070)		(0.037)	(0.037)	(0.037)
Edu Hom		0.207***	0.205***	Edu Hom		0.202***	0.199***
		(0.025)	(0.025)			(0.030)	(0.030)
Fem Lab Supply (i)			-0.002*	Fem Lab Supply (i)			0.006***
			(0.001)				(0.001)
Log likelihood	-22013.835	-21980.056	-21977.689	Log likelihood	-14127.844	-14105.503	-14087.246

*p<0.05, **p<0.01, ***p<0.001

Source: Luxembourg Income Study (LIS)

Table 6 Separate Analyses for Italy (N=26,100) and Germany (N=223,808)

Sweden	Model 1	Model 2	Model 3	United States	Model 1	Model 2	Model 3
Constant	-1.106***	-1.219***	-1.176***	Constant	-1.235***	-1.291***	-1.369***
	(0.022)	(0.028)	(0.030)		(0.011)	(0.013)	(0.014)
Wave IV	-0.012	-0.013	-0.017	Wave IV	0.089***	0.086***	0.074***
	(0.030)	(0.030)	(0.030)		(0.015)	(0.015)	(0.015)
Children 0-6	-0.432***	-0.445***	-0.448***	Wave VI	0.061***	0.058***	0.044**
	(0.034)	(0.034)	(0.034)		(0.014)	(0.014)	(0.014)
Disabled	0.061	0.050	0.036	Wave VIII	0.156***	0.152***	0.138***
	(0.291)	(0.291)	(0.291)		(0.014)	(0.014)	(0.014)
Immigrant	0.693***	0.690***	0.682***	Children 0-6	-0.229***	-0.232***	-0.212***
	(0.064)	(0.064)	(0.064)		(0.011)	(0.011)	(0.011)
Edu Hom		0.213***	0.213***	Disabled	0.443***	0.448***	0.473***
		(0.030)	(0.030)		(0.023)	(0.023)	(0.023)
Fem Lab Supply (i)			-0.003***	White, Hispanic	0.148***	0.148***	0.161***
			(0.001)		(0.016)	(0.016)	(0.016)
Log likelihood	-14023.919	-13998.037	-13992.187	Black, Non-Hispanic	0.297***	0.299***	0.288***
					(0.020)	(0.020)	(0.020)
				Black, Hispanic	0.314**	0.320**	0.320**
					(0.103)	(0.103)	(0.103)
				Other, Non-Hispanic	0.210***	0.206***	0.202***
					(0.020)	(0.020)	(0.020)
				Other, Hispanic	0.328***	0.332***	0.337***
					(0.081)	(0.081)	(0.081)
				Edu Hom		0.089***	0.091***
						(0.011)	(0.011)
				Fem Lab Supply (i)			0.006***
							(0.000)
				Log likelihood	-122938.24	-122902.35	-122669.9

*p<0.05, **p<0.01, ***p<0.001
Source: Luxembourg Income Study (LIS)

Chapter 5: Conclusion and Discussion

In this study, the degree in which a relation can be observed between the incomes of the spouses is explored. Earlier studies in the literature on income homogamy are based on bivariate analysis (Smith, 2005; Esping-Andersen, 2007) or based on the United States. Yet, no studies have explored the micro-level and macro-level patterns that can explain the cross-time and cross-country differences. Moreover, I investigated how much the variation in income homogamy across time and countries can be attributed to micro-level and macro-level determinants.

The study shows that income homogamy differs across time and countries. Income homogamy is strongest in Italy followed by Sweden and weakest in Germany. Furthermore, income homogamy seems to be increased in time for the countries studied, except Italy. These country and time differences may be due to micro-level and macro-level factors. I analyzed the effects of micro-level and macro-level factors on the odds of income homogamy and the extent to which these factors can explain country and time differences in income homogamy.

Both the pooled analyses and separate analyses of the countries have shown that having a partner with a similar educational attainment level has a positive effect on income homogamy. However, it has been observed that educational homogamy cannot explain the cross-time and cross-country differences.

Female labour supply at the individual level has a positive effect on the association between the incomes of the partners indicating that when women increase their working hours and hence their bargaining power at the household the resemblances between the incomes of the partners increase. On the other hand, it fails to explain the time and country differences for the pooled analysis.

Similar with the findings of Blossfeld & Timm (2003) for structural opportunities, when educational homogamy is considered, more balanced sex ratio and hence more structural opportunities for income homogamy enhance the odds of income homogamy. Sex ratio actually has the strongest effect of factors investigated. In addition, sex ratio can also explain wave differences, but not so much the country differences. Moreover, in contextual frameworks where the sex ratio is less balanced increasing labour supply of women can have a greater impact on the odds of income homogamy. The separate analyses of the countries support these findings and the impact of female labour supply at the individual level is

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stronger for Germany and United States. However, the hypothesis for the interactive effect between the female labour supply at the individual level and contextual level is not supported.

Female labour supply at the country level is only significant when sex ratio across time and countries are kept constant and the influence on income homogamy is negative which contradicts with the expectations. May be this is related with the few degrees of freedom at the contextual level. Sex ratio and female employment rate (c) correlate highly and they are hard to distangle.

So to conclude, income homogamy is influenced by the factors hypothesized, bit micro and macro, yet only sex ratio can account well for contextual variations. In addition, sex ratio modifies the effect of micro-level factor (female labour supply at the individual level). This indicates the strong role of opportunities for mating for actual homogamy, a finding similar to many other studies of income homogamy. Given that sex ratio is skewed (men more often have high incomes than women), it is the rise in incomes of women that increases income homogamy and makes countries stand out in income homogamy. Actually, relatively income homogamy in Italy can be explained by the surprisingly balanced sex ratio. Surprisingly, because Italy is often portrayed as a gender unequal country where many women do not work. Yet, those who work apparently earn not much less than the men and more women are available at the higher income quintiles. In addition, more men at the low-income quintile is available in Italy.

The study has some shortcomings that need to be taken into account. Firstly, understanding the dynamic variations between the partner selection and earnings of the spouses are not feasible with the cross-sectional research design. Thus, how partners and their resources such as the labour supply have an influence on each other can be understood better with using a longitudinal data. In addition, no information is available on Luxembourg Income Study (LIS) for the marriage duration, thus it could not be considered in the analyses. Duration of marriage can have an impact on the bargaining power of the partners. For example, Greenstein (1996) shows that the share of domestic labour decreases for the husband with the increasing years of marriage duration. Henceforward, the impact of labour supply of women could be partly suppressed by the marriage duration. Also, only two waves of Sweden could be included in the pooled assessments, because the LIS data set does not provide any information about the working hours for other waves of the Scandinavian countries (Estévez-Abe & Hethey, 2008). For this reason, the conclusions about the contextual frameworks should be treated carefully by taking this limitation into consideration.

Making any causal claims would not be appropriate, but the remaining differences across the waves and countries can be due to the differences in other characteristics of the welfare regimes/countries that are not (other than sex ratio and female employment rates). For example, it can be related with the cultural orientation (norms on homogamy) in the country. Heterogamy may be less accepted in some societies and an alternative explanation for the high income homogamy in Italy could be that.

Acknowledgement

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