Migrant-Native Household Poverty Divide in Germany: The Role of Differences in Women's Labor Force Participation Behaviour

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Contents

List of Figures

List of Tables

Abstract

This thesis examines the differentials in the propensity to be living in poverty between different household-types in Germany and how it relates to the labor force participation pattern of the women in these households. Although the primary analysis involves migrant- and native-couple households, families with inter-married migrant/native couples are also considered. It employs, for its analysis, logistic regression and the Fairlie-Oaxaca-Blinder's non-linear decomposition technique using the 2017 cross-sectional data from the German Socio-economic Panel Survey (SOEP). As expected, migrant-couple families are found have significantly more chances of living in poverty compared to native families. No significant difference is observed between native and inter-married couple families. Additionally, families with part-time working women have slimmer chances of falling below the poverty line compared to those non-working women; the chances are even lesser for households with full-time working women. An extended analysis of the probability of living in poverty for the different household types based on the employment status of the wives reports greater migrant-native household poverty divide among families with full-time working and part-time working women and lesser difference for families with non-working women. The results further reveals that while women's participation in the labor force reduces a household's probability of being poor, this effect is stronger if the household were a native household compared to if it were a migrant or inter-married couple household.

Decomposition results find women's employment status to be the strongest contributor to the explained differences between migrant and native families' poverty rates, followed by men's employment status and the number of children. Substituting the migrant households' distribution

of women's employment status to the levels of native households' was shown to reduce the migrant-native poverty rate differential by 10.9 percent.

Chapter 1

Introduction

Poverty alleviation is a key goal of most modern governments. The desire to reduce poverty outcomes in the society has prompted a substantial number of literature on the topic. One of the key observations that have been drawn from these scholarly works is that despite the ever-growing standard of living, reduction in unemployment rates, increase in real GDP per capita over the past 30-40 years, poverty still persists in large pockets of the populations of many countries. In the United States for example, it is noted that despite the increase in female labor force participation, educational attainment levels and increase in social spending between 1970 and 2003, poverty rates among the non-working population still grew from 10 percent to around 13 percent (Gorman, 2013). Among OECD countries, no substantial progress was noted to have been made in reducing poverty for working-age people and children between the period 1971-2013 despite economic growth and increased social spending (Nieuwenhuis et al., 2020). It is further observed that the poverty prevalence is spread disproportionately across as well as among different sub-groups. Inter-group disparity in poverty outcomes are critical as they influence public attitudes towards poverty(Waldfogel, 2001). The poverty divide between migrant and native families represents one of such inter-group disparities, with the general understanding being that migrants are at more poverty risk than native-born. Exploring the poverty divide between migrant and native families is all the more important against the background of the political salience of immigration in Ger-

many particularly in recent years. The factors that underlie this inequality are, of course, complex and overlapping. Yet, a growing body of literature have intimated the potential impact of the differences in the labor force participation of the wives of these households. Generally, migrant women are recognized to be have a weak attachment to the labor force due to a myriad of factors (e.g. lower educational attainment levels, presence of more children in their households, restricted access to child care facilities), most of which translate into systematic differences between their work-lifestyle preferences and that of native-born women.

The attraction of women's labor force participation as a possible explanation for family poverty outcomes is not surprising. Women's labor force participation has seen a dramatic increase since the 1960s. Ever since then, there has been a lot of research on the impact of the increasing women employment in fostering socio-economic development, promoting efficiency as well as economic sustainability (Esping-Andersen et al., 2002; Fatima and Sultana, 2009). The question of whether women's employment impacts household socio-economic inequality has also been raised in many corners, prompting a lot of research on the topic. Indeed, the general literature on the impact of women's employment on family inequality concludes that women's participation does have an effect on inequality. The general debate has been, however, about the direction of this effect. One strand of literature, on the basis on many empirical studies, conclude that women's employment has had an equalizing effect on family inequality. The theory behind this finding, as is often argued, is that women's decision to work is inversely related to the income of the husband. Hence, most women who joined the labor force have come from low-earning families. The wives' participation and their earnings have thus reduced inequality among households. A contrary argument is presented by the other side, which asserts that the increase has been more profound among women with higher earning potential (i.e. better educated) who have been incentivized to join the labor force due to expected higher earnings (i.e. higher opportunity cost of performing household work makes household work less attractive). Along with this, they make an argument about the prevalence of assortative mating (mating of people with similar educational levels and socio-economic characteristics) which has further exacerbated the equality gap among families. While the effect

of women's labor force participation on household's socio-economic inequality remains one of the unresolved, yet potentially important, questions, one overlapping observation from both sides of the debate is that the increase in female labor force participation has not been uniform across all sub-groups. A number of studies have pointed to an even widening divide among women in terms of labor force participation in recent times, and raised concern about its potential to exacerbate the socio-economic inequality between families (Esping-Andersen, 2009; Konietzka and Kreyenfeld, 2010).

Against this background, this paper seeks to investigate the migrant-native poverty divide in Germany and the role of differences in the labor market patterns of migrant and native women in explaining this divide. While a lot of research has been done on related topics such as the migrant-native wage gap, migrant-native wealth gap, and also one on the poverty gap between migrants and natives in Germany (see Kesler, 2015), there exists no research, to the best of our knowledge, that has explored this topic vis-à-vis the differences in women's labor force participation in Germany. More so, although poverty outcomes are a great indicator of socio-economic inequality, it as received considerably less attraction in the discussion about the impact of women's labor force participation, with much focus being given instead to disparity in the distribution of household income (Cancian and Reed, 1999; Gottschalk and Mayer, 2002; Reimers, 1984; Zick et al., 2008). Accordingly, to lay the ground work for the analyses, two straightforward questions are asked: 1) Do migrants families face significantly greater poverty risks than native families in Germany, and to what extent? 2) To what extent does married women's labor force participation affect their household's chances of falling below the poverty line? Building on these two questions, the objective of this paper is to examine how the effect of women's employment varies among household types and also to quantify the actual contribution made by women's labor market participation to explaining disparities in household's poverty outcomes. The paper thus asks the final questions: 3) How does the effect of women's employment behaviour vary by household types (i.e. migrant, native and mixed-couple households)? 4) To what quantifiable extent does the migrant-native difference in women's labor force participation behaviour contribute to the poverty disparity between migrant

and native households?

The rest of the paper is organized in the following manner: The next section presents an overview of the theoretical framework underpinning women's participation in the labor force, engages in discussions on previous related works to our topic and ends with the formulation of the hypotheses for subsequent analyses. The next chapter presents the data, measurements and the empirical approach adopted for the given objectives of the paper. Afterwards, the descriptive and empirical analysis are conducted and their results presented. The final section discusses the results and plausible implications.

Chapter 2

Literature Review

2.1 Women Labor Force Participation: Theoretical Framework

Many theories on women labor force participation (WLFP) have emerged from attempts by various scholars to explain women's labor supply decisions. The theoretical framework on WLFP basically identifies the impact of various economic and socio-demographic factors on women's decision to become active members of the labor force or not. This section presents an overview of some of the mainstay theories that underlie WLFP.

2.1.1 Work-Leisure Choice Model

Also known as the neoclassical model of labour-leisure choice, this model considers an individual with a well-behaved preference function over consumption of goods and hours of leisure, the combination of which determine the maximization of their utility (i.e. level of satisfaction).[1] To facilitate their consumption of goods, a person is inclined to devote time to work so as to obtain income to purchase desired goods. Consequently, the task of maximizing their well-being depends on the choice between the amount of time to devote to work and the amount of time to allocate

[1]Leisure is assumed to be a normal good

to leisure. The choice of either option results in a trade-off, with more time devoted to leisure necessitating the sacrifice of the income that would have resulted from more time spent on work, and vice-versa. Accordingly, the female's decision to work or not is dependent on the amount of income the market is willing to pay for her work-devoted time (i.e her wage rate) relative to the value obtained from devoting her time to leisure. Thus, the higher the wage rate, the less attractive leisure becomes for the woman compared to work.

Depending on the relationship between work hours, leisure time and wage rate, two types of effects dominate in this model: the income effect and the substitution effect. The former refers to a situation where for a given amount of hours worked, an increase in the wage rate constitutes an increase in income, which stimulates the purchases of various goods, including leisure time. The implication is a negative income effect, according to which the hours of work tend to decrease in favor of time devoted to leisure as income increases. Under the substitution effect, a wage increase raises the price of leisure by making work look more attractive for non-working individuals. For individuals already in the labor force, the thought of how much they might be foregoing, given a wage increase, impairs the attractiveness of leisure time such that the idea of working more hours become more tempting. As noted by Biddle and Hamermesh , "When the wage rate is high... we will often hire a nanny or send our children to day care, rather than withdraw from the labor market. And we will order pizza or take-out Chinese food, rather than engage in lengthy meal preparations" (Biddle and Hamermesh, 1990). The effect of an increased wage rate, depends on which effect dominates the other.

However, the binary choice between work hours and leisure time does not represent an exhaustive list of the fundamental activities between which women have to choose. Building on his work-leisure choice theory, Mincer argues that women may also have to choose between remunerative production in the labor market and "non-paid" work at home or some educational activities constituting some form of self-investment (Mincer, 1962). A vast majority of women still shoulder a greater proportion of the home work duties. The analysis of labor force behaviour of women, thus, necessitates a recognition of the family context and work choices, and the division of work

between home and the labor market. An increase in wage could encourage women labor force participation by making household production relatively less valuable at the same time that it increases the price of leisure. The household production theory is discussed in the Sub-section 2.1.2.

2.1.2 Household Production Theory

Due to its limitations with regard to explaining the gender division of labor in the family, the work-leisure choice theory was extended to incorporate the household production process in its analysis. The elementary framework of the household production theory was developed by Mincer (1962), who points out the importance of considering a three-way choice between leisure, paid work, and non-paid housework. According to Mincer, the choice between these three alternatives has to be decided by the family unit. Under the household production theory, married women's labor force participation is dependent on various socio-economic factors such as the income of the husband, wife's earnings, relative desires for market goods, home goods and leisure, as well as the degree of interchangeability between market goods and home goods (e.g. doing the laundry at home vs paying for one's clothes to be laundered). To the extent by which income affects the substitutability between home goods and market goods, an increase in real wage rate, will induce entry into the labor market or more work hours. For example, the substitution of daycare centres for mother's care of young children, although doable, might be, given its time-intensive nature, difficult to implement relative to the substitutability of other house chores like laundry. Thus, the likelihood that a woman will participate in the labor force is expected to be inversely related to the presence of young children (Angrist and Evans, 1996).

In his analysis, Mincer finds a negative relation between wives' labor force participation and the husbands' income (and by extension, the family income).[2] But he also finds that wives' labor force participation is positively related to wives' earning power (i.e. the more the wife is capable of earning the more likely she is to enter the labor force). Ultimately, Mincer ascribes the increase in

[2]This is based on the assumption that a husband's income means a higher family income

married women's labor force participation during the early 90's to the their rising earnings which exerted an effect large enough to offset the negative effect of their families' rising income.

The analysis of the economic factors influencing married women's LFP carries the implication that household income composition and distribution closely relate to their consumption behaviour as well as labor supply. When family income is considered, the income effect on wives' labor supply implies a reduction in income inequality, given that wives of low-wage men would be drawn into the labor force to compensate for the disadvantaged labor market position of their husbands (a phenomenon referred to in the literature as the 'added worker hypothesis')[3]. The wage-rate effect, on the other hand, implies an increase in inequality as a result of wives' labor supply, since incomes of husbands and wives' market earning powers are positively related. Thus, for particular groups, the weaker the association between the wage rates of the family members, the greater the equalizing effect of female labor supply on family income distribution. See more discussion on this in Section 2.3.

2.1.3 Human Capital Theory

Closely related to the decisions about the consumption of time is the productivity of time. Factors such as wives' earning power which strongly influence married women's work choice, make human capital an integral part of the theory of consumption behaviour, thereby tying the production model to the human capital literature. The human capital theory was introduced by economists Gary Becker and Jacob Mincer in 1975 to study labor market distributions. This theory rests on the basic belief that over the years, through expenditures made on various undertakings such as on-the-job-training programs and education, an individual would develop certain skills, talents, personal characteristics and social attributes that impacts his/her productivity, income and occupational status. Hence, education and training are considered to be key determinants of an individual's chances of success in the labor market and, on account of this, their decision to join the labor force: due to the positive relationship between education and wages, the more educated an individual

[3]According to this hypothesis, the labor force rates of women increases in times of depression because deteriorating labor market conditions of the main breadwinner causes the other family members to seek employment

is, the costlier the opportunity cost of not participating in the labor market (through foregone potential earnings), thus the more willing the individual will be to participate in the labor market (Mincer and Polachek, 1978). Making investments on education and training, however, is tied to opportunity costs such as the time and resources consumed in the process, yet they possess the potential to increase the income and socio-economic status of an investee (Mincer and Polachek, 1974). Becker also observed that factors such as age can depreciate the impacts of human capital Becker, 1983.

In the WLFP context, the human capital literature implies that women'´s labour force participation increases with education. Women with low educational qualifications are dissuaded from the labor market while better educated women are incentivized to join (Blossfeld and Huinink, 1991; Psacharopoulos and Tzannatos, 1989; Schultz, 1995). There are however instances where lowly-educated women might be encouraged to participate in the labor market. For instance, a number of studies point to the existence of a U-shaped relationship between education and women's LFP in some countries: higher working rates among lowly-educated women and among high-skilled women (Klasen and Pieters, 2015; Möller and Aldashev, 2006; Sudarshan et al., 2014). This phenomenon is attributed to the positive relationship between education and wage rate. Low levels of education are associated with low household income, thus to ensure the subsistence of the family, the women are pushed to join the labor force, albeit in menial and low-skilled jobs (Schultz, 1994).

To facilitate an understanding of the presence of low-skilled women in menial jobs, it becomes necessary to introduce the segmented labor market theory. This theory highlights the subdivision of labor market into primary and secondary, augmented by economic and political forces, with different characteristics and rules (Reich et al., 1973). The primary sector, distinguished by high wages, job stability, higher employee satisfaction and improved working conditions, employs skilled individuals whose chances of upward mobility are increased due to on-the-job trainings. The secondary market, on the other hand, attracts and employs unskilled individuals, mostly women, disadvantaged youth and immigrants from the underprivileged sections of the society, and offers low job stability, wages, returns on investments in human capital stock. The low levels of job stability

in the secondary market explains why women with such low educational attainment might be demotivated to join the labor force in the first place.

Also worthy of note is the fact that, although the human capital literature suggests a positive relationship between education and women's LFP, the impact of education might vary across countries or groups. While studies for developed countries find a positive relationship (Chase, 1997), some studies show an insignificant or, in some cases, negative effect for women in other countries (for instance in some Asian or Latin American countries). One cited explanation for such findings in developing countries is that the rise in the returns to education in the labour market is not fast enough to offset the increase in the returns to education in the marriage market (Cameron et al., 2001; Lam and Duryea, 1999).[4]

2.2 Migrant-Native Differences in Women Labor Force Participation

Although women's labor force participation has been widely researched, research on migrant women labor force participation quickly reveals one major challenge: migration research tends to concentrate on male migrants, while there is very limited and inconsistent research for females. Among the few studies that have been conducted for migrant women, it is common to see comparisons between migrants and natives on the basis of their human capital attributes, household structure, cultural perspectives, earnings or occupational sector. In general, migrant women typically exhibit lower education, raise more children, and live in lower-income families, and these factors have implications for their labor market decisions and work-lifestyle preferences. According to Duleep and Sanders (1993), for migrant and native women, the decision to participate in the labor force might be differentially influenced by certain underlying characteristics such as family structure (number of children, age of youngest child) (Duleep and Sanders, 1993). This may result in sys-

[4]Kaufmann et al report that a reputable university program has a considerable effect on the quality of one's partner for female students in Chile, and although female college enrollment rates have increased to the men's level, they still have lower labor force participation rates compared to the men (Kaufmann et al., 2013)

tematic differences in labor force participation behaviour, even when the opportunity sets are held constant (Duleep and Sanders, 1993; Dustmann and Schmidt, 2001). Reimers (1985), for example, having analyzed the labor force participation of different ethnic groups in the US labor market, attributes most of the differences in wives' participation behaviour to differences in their observable characteristics: language, family size, age structure and education. He finds, surprisingly, that Hispanic wives with the same schooling, language, and family size as US-born women have even more participation rate (Reimers, 1985). Given the complex nature of female labor force participation, it is important to point out the key factors that influence the women's decision and their ability to engage in the labor market. The main, often overlapping, dimensions highlighted in the literature include: level of educational attainment, household and spousal attributes, institutional structures (policies, laws, benefits), as well as societal norms influencing women's roles outside the home (Gaddis and Klasen, 2014; Gornick and Meyers, 2003; Mincer and Polachek, 1974; Verick, 2014). The ensuing paragraphs discusses some of these factors.

Differences in labour market behaviour of migrant and native women could be explained by compositional differences in educational levels. Regarded as specialized form of human capital, education is considered to be an important factor for better employment. Consequently, gains in female education has incentivized more women to join the labor force, while availing them to opportunities of white-collar job placements. The positive effect of education has been explained, in theory, to be as a result of increase in earnings potential associated with higher levels of education. (Becker, 1975; Mincer and Polachek, 1974). Alongside increase in women's participation rate, there has been differential changes in their employment pattern based on educational levels. In general, there has been a sharp increase in part-time and marginal employment among women (Blossfeld and Drobnič, 2001; Hakim, 2000; Jaumotte, 2003). Furthermore, highly educated women have been found to be more likely to have full-time jobs than women with lower levels of education, and also more likely to return to the labor market after the birth of a child whereas women with lower levels of education are less likely to be in part-time employment. Given that migrant women generally have lower levels of education than migrant women, it can expected that greater

percentage of migrant women will be out of the labor force compared to native while more native women will be found in part-time employment than migrant women (Dustmann and Schmidt, 2001; Konietzka and Kreyenfeld, 2010).

Family responsibilities, and household composition, also play a significant role in explaining differences in women's labor force participation patterns (Kneip and Bauer, 2007; Vere, 2007). One of the early empirical observers of the impact of family responsibilities on female labor market participation was Cogan (1978), who found differences in demand for work at home among households to be linked with the presence of children under the age of six. In households with children below six years of age, the probability of the wife joining the labor force decreases by nearly 20 percentage points (Cogan, 1978). Cogan attributes the increase in female labor force participation between 1950 and 2000 to the drop in total lifetime fertility of the average woman (from 3.3 to 2.1 children). He admits, although, the existence of a reverse causality issue in which it is possible that the increased participation rate in female employment may have made childbearing to be an expensive household activity, thereby causing fewer children to be born. Other scholars have suggested that the presence of children does have explanatory power for the differences in migrant-native women's participation rates. Indeed, Dustmann and Schmidt (2001) report fertility differences as a "prime candidate" for the differences in native and migrant married women's participation behaviour in Germany. With smaller number of children and greater presence of children of school age, coupled with the greater access to formal child care arrangements for native-women, migrant women are reported to be less likely to work than native women (Dustmann and Schmidt, 2001).

Equally of importance to the discussion on factors affecting women's labor force participation patterns is the influence of social structures and policies. It is almost undisputed that generous schemes such as maternity, paternity and parental leaves enhance women's labor market participation as well as fosters their return to work after childbirth (Gornick and Meyers, 2003; Ray et al., 2010; Wagner et al., 1998). However, some studies have suggested that policies that encourage a long leave and child benefits may cause families to return to the traditional male breadwinner models thereby exerting a negative effect on women's labor market participation (Brinton and

Mun, 2016; Olivetti and Petrongolo, 2017; Pettit and Hook, 2009).[5] Schönberg and Ludsteck, for example, associate expansions in maternity leave coverage with slower return of mothers to the German labor market (Schönberg and Ludsteck, 2014). Yet, another distinct feature of family-related policies that is relevant to this discussion is the availability and usage of public child care services. In 2013, child care reforms were introduced in Germany. One of the aims of these reforms to compensate households with no access to child care services for children below the age of two, through the provision of home care allowance, *Betreuungsgeld*. These reforms, however, were not spared from criticisms which were associated with the fear of decreased work incentives, especially for mothers with lower labor market perspectives. Fendel and Jochimsen (2018) investigated these reforms and their effects on labor market of migrant and native mothers. While a positive effect was found for native mothers, the effect on migrant mothers was insignificant (Fendel and Jochimsen, 2017). Notwithstanding their results, limited access to public child care services is known to constitute a barrier to labor market (re-)integration. Given that child care usage rates are lower among migrant mothers compared to native mothers in Germany (see Binder, 1995; Büchel and Spieß, 2002), one would expect this to influence the migrant-native differences in women's labor force participation rates.

Concerning market segregation, migrant women are faced with a double disadvantage of being both migrant and women. They find themselves in a disadvantaged position not only compared to their native-counterparts but also relative to migrant men. Rubin et al., having analyzed the EU Labour Force Survey (LFS) dataset for 20 EU countries in 2005, evidences migrant women's disadvantageous position in the labor market in their higher unemployment rates, greater likelihood of temporary-contract employment, and higher experience of 'deskilling' (i.e. working at jobs below one's skill level) compared to native-born women and migrant men (Rubin et al., 2008). Majority of migrant women were found to be employed in occupations requiring low-skills, most of which relate to sales and personal and protective services. Their employment positions are thus characterized by limited rights as workers, limited mobility and opportunities for career advancement, and limited

[5]Home care benefits lowers the relative price of own care, which may in turn exert a negative incentive to participate in the labor market. (Blundell and MaCurdy, 1999; Schøne, 2004)

chances for further human capital development. With regard to skill level, highly-skilled migrant women face lower employment rates in comparison with their female counterparts. Rubin et al. tie this phenomenon to such factors as language barriers, and limited access to public sector jobs. Although Rubin et al. found higher education to improve labor force participation and employment rates for women, for women with higher educational levels the migrant-native difference in women labor force participation rate was significantly higher than for women with lower levels of education. Lowly-educated migrant women were found to exhibit very similar labor force participation and employment rate as lowly-educated native-born women, although the former were more likely to be unemployed. Regarding deskilling, their paper puts the number of highly-educated migrant women with low-skilled jobs as a 'significant minority' of migrant women. Migrant women with high educational levels were found to be twice as likely to be employed in low-skilled jobs as native-born women of equivalent education. In general, their findings highlight that despite the lower labor force participation rate of migrant women, even when employed, they are still exposed to grave socio-economic vulnerability due to poor employment conditions, which might reinforce their unwillingness to participate in the labor force. This reasoning holds true in the case of Germany, where the labor market is known to be highly segmented with a rather small low-skilled service sector, making access to the labor market an arduous task for migrant women (Shavit and Muller, 2000). With lesser chances at gainful employment, they might be compelled to regard homemaking and parenthood as a resort to labor market activities — the discouraged worker effect (McDonald, 2000).

In essence, it has been argued that systematic differences could exist in women labor force behaviour between migrant and native families. These differences, thus, reflect inter-group differences in the distribution of time between market work, non-market work, and leisure, and could in turn translate into socio-economic inequalities at the household level. Esping-Anderson, for example, echoed this sentiment when he noted the coincidence of the growth of the knowledge economy and the changes in women's roles, and how it holds great implications for matters of social welfare. According to him, with the emergence of dual-career couple trend there has also risen an ongoing

polarization between highly educated, highly paid couples and couples with low educational levels which could exacerbate family inequality in the society (Esping-Andersen, 2009).

2.3 Women's Labor Force Participation and Household Inequality

Given the importance of the issue of inequality in socio-economic well-being in any society, there has been a large outpouring of research on this topic. Due to its ability to reflect the well-being of individuals as well as households, most previous investigations have largely concerned themselves with household income inequality as the measure of inequality. They have sought to identify the determinants of the increasing inequality in the distribution of household income, and generally recognize factors such as increasing unemployment and the increasing male wage inequality as key determinants (see, for example, Breen and Salazar, 2010). Along with this, the increased presence of women in the labor force has seen the emergence of another branch of the inequality literature which has sought to incorporate women's labor force participation into the set of explanatory factors. Still, the effect of women's labor force participation on inter-household income distribution remains one of the unresolved, yet potentially important, questions.

As generally observed, there has been increase in female labor force participation across countries over the years (see Figure A.1 in Appendix). The socio-economic value of this increase has also drawn a great deal of attention. For instance, Esping-Andersen et al. (2002) argue that greater presence of women in the labor market would translate into increased number of taxpayers, and as a consequence, the sustainability of the welfare state (Esping-Andersen et al., 2002). Others point to the importance of the increased presence of women in the labor market for progress in the empowerment of women, which in turn promotes equity, enhances human capital utilization, and ultimately increases the capacity for economic development and poverty reduction (Fatima and Sultana, 2009; Schultz, 1995; Winkler, 2016). While all this has been widely documented, conceptually the actual contribution of women's labor force participation on household income

distribution remains uncertain with previous investigation presenting mixed evidence on the topic.

It is widely believed that although women carry out a lot of unpaid work within the household, it is the paid work that translates into raised standard of living for the family as a whole (Gottschalk and Mayer, 2002). One of the early scholars to address this issue was Mincer (1962) in his work on married women's labor force participation rate. Reporting the negative relationship between wives' labor force participation rates and the income of husbands, he argues that the participation of women in families with low-earning husbands would reduce the total family income inequality (Mincer and Polachek, 1974). Following on Mincer's work, Reimers (1984) analyzed the gaps in family income between Hispanics and blacks and between Hispanic and white non-Hispanics in the United States in the year 1976. He demonstrates that differential female labor force participation rates are a major source of disparities in family income among racial and ethnic groups in the United States. After adjusting for differences in demographic composition, Puerto Rican families were found to have lower income due to the lower labor force participation or higher unemployment rates among its females (Reimers, 1984). Another suggestion of the impact of female labor market participation on household income inequality stems from the work of Gottschalk and Danziger (2005), who revealed similar trends between family income inequality and male wage inequality in the U.S., having studied both for the period 1975-2002. They argued that there would have been a greater increase in inequality had other members in the household not increased their working hours. While they did not investigate this case further, their work seemed to have lent credence, albeit in a suggestive manner, to the offsetting role of female labor force participation on the effect of increasing male wage inequality on family income distribution in the US. Gottschalk and Danzinger's work confirm the findings of Cancian and Reed (1999), who investigated the earnings of couple-families in the United States for the period 1968-1995. They found married women's labor supply and their earnings to be inequality-reducing (Cancian and Reed, 1999). In sum, a great deal of the literature on the impact of women's labor participation on family income inequality has focused on cases in the United States (Cancian and Reed, 1999; Daly and Valletta, 2006; Larrimore, 2014; Shaw, 1989), and they have mostly concluded that women's entry into the

labour market contributes to lower household income inequality. A few empirical studies outside the United States include works of Del Boca and Pasqua, 2003 on Italy and Breen and Salazar, 2010 on the UK, which find similar results to the US cases.

The few studies that report the opposite effect point to reinforcing influence of marital homogamy (i.e. marriage between persons of similar socio-economic status or educational level) in contributing to inequality between couple households (Karoly and Burtless, 1995; Maxwell, 1990; Zick et al., 2008).[6] As noted by Maxwell (1990) who analyzed the annual US Population Survey data for the period 1947-1985, women's labor force participation had an equalizing effect before 1970 due to the concentration of high participation rates among women who were married to low-income husbands. Post-1970, however, the labor market saw an increased presence of women with high above-average earning potential who were married to high-earning men (Maxwell, 1990). Zick et al. (2008) confirmed Maxwell's findings in his work. They argued that although the entrance of more women into the labor market in the United States initially slowed the increase of household income inequality, the effect soon changed due to increase in housework inequality. They analyzed data for the period 1975-1976 and 2002-2003, and found that women with higher earning potential reduced their non-paid work time at home more than low-wage women. As a result, there was an increased inequality across households. Johnson and Wilkins (2004) analyzed family income distributions in Australia for the period 1981-1998, and concluded that changes in the labor force status of household members increased family income inequality (Johnson and Wilkins, 2004). They however do not distinguish the wives' labor force status from that of other household members. In Norway, Wennemo, and Aaberge (2005) analyzed the impact of the rise in women's labor force participation to the probability of high-wages women being coupled with high-wages men which they term "flocking together effect". They find a tendency for assortative mating among all married couples and as a consequence, an increase in family income inequality (Aslaksen et al., 2005). In an interesting finding for Japan, Sudo (2017) reveals the absence of a broadening effect of marital homogamy on household income inequality, but acknowledged the

[6]Marital homogamy has been shown to boost a positive relation between spouses' earnings - leading to an increase in family income inequality

presence of an accelerating effect of assortative mating on the already widening inequality in the country (Sudo, 2017).

Indeed, the general debate regarding the effect of women's labor force participation on the distribution of household income concerns whether their participation is good or bad for household income inequality. The mixed results so far seems to suggest that the effect largely depends on which women work more. As pointed out by Amin and DaVanzo (2002), if participation is higher for women in low-income households, their earnings would uneven the overall income disparity among households. If, on the other hand, it is mostly women from high-income families who work more, then, one would expect an increase in household inequality (Amin and DaVanzo, 2004).

A less studied indicator of household inequality as it relates to women's labor force participation is the differences in poverty risks across households, with widening poverty gaps being observed between different socio-demographic groups in the society. Poverty rates have been on the rise across many countries (especially for children and working-age people) since the mid-1980s even amid the continuous trend of economic growth, increasing employment rates, and increasing levels of social spending (Fritzell and Ritakallio, 2010; Sarfati, 2009). The distribution of income inequality and poverty differences across households are generally believed to be two sides of a coin. Their close link stems from the fact that both are measured on the basis of household income. Indeed, empirical evidence show both to be correlated: the decline in income inequality has substantial poverty-reduction effects (Ferreira et al., 2008). While the literature on women participation rates and its effect on poverty distribution is not as extended as for household income inequality, a few studies have called attention to this issue.

Sotomayor (2009) sought to analyze the effect of women's labor force participation and their earnings on the distribution of household income in Brazil, and found no effect. He however found significant poverty reduction as a result of the increased labor force participation of low-earning women (Sotomayor, 2009). Using micro-level data from Luxembourg Income Study Database Nieuwenhuis et al. studied the impact of trends in women's employment on poverty outcomes in fifteen OECD countries between 1971 and 2013. Taking households as the unit of analysis, they find

an association between women's rising labor force participation and reduced poverty levels: a 10 percentage point increase in women's employment caused a percentage point reduction in poverty (Nieuwenhuis et al., 2020). Furthermore, they emphasized a noticeable differentiation of women's employment patterns across households which took place along with growing female employment. They reported that the proportion of households with employing their maximum labor capacity (i.e. rich households) has increased substantially relative to the proportion of working-poor households, thereby widening the poverty gap between these households. Additionally, although they acknowledge that not all employment protects to the same degree against poverty, their analysis falls short of differentiating the types of employment (and associated household poverty) of women with different social backgrounds.

Where the analysis of Nieuwenhuis et al. stops is where the investigation in our thesis begins. This thesis, hence, proposes to investigate the poverty difference between migrant and native households in Germany and how it relates to the differences in the work-lifestyle patterns of the women on these groups of households. To assist in this investigation, labor foorce participation is differentiated to highlight the relative effects of women's full-time, part-time and non-employment (see Section 3.2 for more details). As pointed out by Verick (2014), standard labor force participation rates presents an incomplete representation of the effect of women's employment. Such aggregate analysis involving the sheer rates conceal huge differences in participation rates and in forms of participation, which exist across subgroups and even across countries. While there has been a number of research on similar topics such as the west/east poverty divide, the migrant-native wealth gap or the migrant-native wage gap in Germany (see Bönke and Schröder, 2011; Caner and Pedersen, 2019; Ingwersen and Thomsen, 2019; Lehmer and Ludsteck, 2015; Porpiglia et al., 2011), there appears (to the best of our knowledge) to be no study on the poverty gap between these two groups, especially with regard to how it relates to women's employment behaviour in Germany. The only study that comes close to our analysis was conducted by Kesler (2014) who investigates host country differences in migrant-native poverty disparities for three European countries namely: Sweden, Germany, and the United Kingdom. Although, her findings reveal the

poverty rates in Sweden to be the lowest among the three countries, it also reported Sweden as having the biggest migrant-native poverty gap. This gap was attributed to the differences in the labor market outcomes between both groups, with migrants facing harsher labor market prospects compared to natives. Additionally, Kesler argues that the effect of the a partner's employemnt (dis-)advantage on a household's poverty risk might vary based on the type of partnership. An inter-married couple household, for example, is expected to face better socio-economic situations than the household where both couples are migrants since the native-born partner experiences relatively little to no obstacles to the labor market. More so, households with intermarried couples may exhibit a high degree of assortative mating in terms of their educational and socio-economic background, thereby making them a self-select group. Following Kesler's approach inter-married couple households are included in our analysis. The next section presents the hypothesis.

2.4 Hypotheses

The previous two section contains discussions on the migrant-native differences in women's work-lifestyle preferences, the candidate factors underpinning these differences, and these differences could explain the poverty divide between migrant and native households. Against the backdrop of these discussions, the following hypotheses are made.

First, given the higher chances of employment for natives compared to migrants, one would expect native households to have lesser poverty risk than their migrant and mixed (inter-married) counterparts. Additionally, one would expect households with working women to be better protected against poverty than households with non-working women. Households face less poverty chances when at least one household member is employed, moreover dual-earner households are better protected against poverty than traditional breadwinner families (Maldonado and Nieuwenhuis, 2015; Morissens, 2006). Furthermore, natives have been found to have higher levels of education compared to migrants. That coupled with the assumption of assortative mating would imply that a greater proportion of native families with full-time or part-time working women are highly-educated

dual-earner households. On the other hand, given that migrant women are found in lower paying jobs to a higher degree than their native counterparts, one would expect a greater percentage of migrant households to fall under the low-skilled households. As such, the largest native-migrant gap is expected to be found among households with full-time or part-time working wives while a much smaller difference is expected among households with non-working wives. If such were the case, then this would point to a dis-equalizing effect of female labor force participation on household socio-economic inequality in Germany (i.e a widening polarization among dual-earner households). Lastly, regarding the decomposition results, it is expected that women's employment status will contribute significantly towards the migrant-native household poverty divide.

Hypothesis 1 *Migrants households face more poverty risks than native households*

Hypothesis 2 *Households with full-time working wives face less poverty risks than households with part-time and not-employed wives.*

Hypothesis 3 *There is smaller migrant-native poverty gap among households with non-working wives than among households with part-time or full-time working wives.*

Hypothesis 4 *Women's labor force status is a significant contributor to the migrant-native poverty disparity.*

Chapter 3

Data and Methodology

3.1 Data and Sample Size

For the purpose of our analysis, we take advantage of the cross-sectional dataset for the year 2017 from the German Socio-Economic Panel Survey (GSOEP). Organized annually since 1984 by the German Institute for Economic Research (DIW), the German SOEP is a representative longitudinal household survey of nearly 15000 households and 30000 individuals living in Germany. The SOEP files encompasses a wide range of subjective and objective data on various topics. These files, hence, present themselves as a rich source of data that not only adequately represents all households in Germany, but also provides extensive information on individual and household socio-economic and demographic characteristics. Moreover, the SOEP contains representative household micro-data on income, taxes, social security contributions and transfers necessary to operationalize our dependent variable.[1]

A common approach from previous studies is to represent the household by means of the household head or the sampled individual in the household. By this approach, the characteristics of the individual coincides with those of the household. Given that poverty is largely a household concept, our research takes the actual household as the unit of analysis. In this case, the value of different observable characteristics refer to the attributes of the household as a unit; where

[1]More detailed description of the GSOEP is available from (Goebel et al., 2019)

individual characteristics are considered, these are explicitly specified. Furthermore, a household is represented as a *native household* if it has an endogamous native couple (i.e. both spouses are natives), and a *migrant household* is defined as one in which both spouses have a migrant background. Our analysis also accounts for households with an intermarried immigrant/native-born couple — *mixed households*.

To obtain our sample size, the data is restricted to households for which both spouses successfully completed the survey in that year. Single-headed and same-sex couple households as well as households with missing information about the spouses' age, education, and employment status are further excluded from the sample. In addition, issues of poverty in pensioner households are of a different nature to households in which both partners are in the working-age population, hence consideration is given only to households in which the head of the household and his/her spouse are at least 25 years old and less than 65 years old. These restrictions, coupled with the removal of missing values, produce a final sample size of 4797 households.

3.2 Measurements

The analysis makes use of a number of key variables, some of which are already defined in the SOEP documentation, others were constructed specifically for this analysis. The dependent variable in our analysis is a household's risk of poverty (i.e. whether it is relatively poor or not). As in previous studies, we follow certain conventions to construct our dependent variable. First, we generate estimates for poverty assessment from the annual household disposable income variable included in the SOEP dataset. The household disposable income consists of all labor earnings, asset flows, private retirement income, income from private transfers, public transfers, and social security pensions of all household members above 16 years old minus their total tax payments and all other

transfers paid.[2,3] For descriptive analytical purposes, the household pre-government income is included.[4] This provides the opportunity to analyze the re-distributive effects of the German tax and transfer system by comparing the poverty rates for our subgroups before and after transfers and taxes. Following international standard practice, we account for household differences in needs by means of the OECD modified equivalence scale, which results in a disposable equivalent income that is comparable across households[5]. To ensure comparability of household incomes, we also restrict our analysis to households in West Germany.

Classifying households as relatively poor or not requires a threshold which represents the minimum level of income required to secure the basic necessities for survival (usually called the *poverty threshold*). Following the recommendation of the European Statistical office (Eurostat, 2000), the relative poverty threshold is computed to be 60-percent-of-median equivalent income. Hence a household is considered relatively poor compared to the economic standards of living of other households, if they have to live on less than 60 percent of the median equivalent income, and not poor otherwise.

Poverty risk can be caused by two main types of factors: the first group of factors influences the level of "resources" and includes such characteristics as the level of educational attainment of the partners as well as their employment status. The second group relates to factors such as the size of the household, the presence of children, age, that influence a household's level of "need" (Eurostat, 2002).

The main independent variable is the employment status of women. This variable is generated from the annual question on current employment status, which is formulated with a filter function

[2]Labor earnings include wages and salary from all employment including training, self- employment income, and bonuses, overtime, and profit-sharing. Asset flows include income from interest, dividends, and rent. Private transfers include payments from individuals outside of the household including alimony and child support payments (Grabka, 2008, p. 41)

[3]Public transfers include housing allowances, child benefits, subsistence assistance, government student assistance, maternity benefits, unemployment benefits, unemployment assistance, and unemployment subsistence allowance. Social security pensions include payments from old age, disability, and widowhood pension schemes. The tax burden includes income taxes and payroll taxes: health, unemployment, retirement insurance and nursing home insurance taxes (Grabka, 2008, p. 42)

[4]Pre-government income is a total of all labor earnings, asset flows, private retirement income and private transfers from all household members above 16 years old

[5]For a detailed description on how this is computed, see (OECD, 1982)

to separate employed people from those not-employed. Employed people are further differentiated into full-time and part-time (regular and marginal irregular part-time) employed. Thus, three categories are differentiated: full-time, part-time and not employed. The employment status of the woman's partner is also included in our analysis.

A woman's labor market attachment propensity is influenced, inter alia, by the presence or absence of children. Since our analysis is restricted to households in which both spouses are present and successfully completed the survey, the household structure is represented by the presence of children in the household. This results in the formation of four groups: families without children, families with one child, two children, and three or more children. Households are further characterized by the presence of pre-school age children based on the age of the youngest child in the household. Accordingly, two categories are distinguished: households with pre-school age children and households without. Moreover, the ages of the spouses are included in the analysis and classified into: Age 26 to 35, Age 36 to 50, and Age 51 to 64.

The household's educational level is represented by two education variables: the educational attainment level of the husband and the wife. These variables are constructed based on the International Standard Classification of Education from UNESCO, ISCED11 and identify three categories: low (ISCED11 0-2), medium (ISCED11 3-4), and high(ISCED11 5-8).[6]

An overview of the sample composition by household type is presented in Table 3.1. Native households make up the largest proportion of the sample (64.4 percent), while migrant and mixed households make up 22.2 percent and 13.5 percent respectively. More than half of the sample consists of households with part-time working women (51.2 percent). This composition is in line with findings from Konietzka and Kreyenfeld (2010) about the shift in trends in women employment, who report that part-time employment has become the major domain for women in the labor market. Additionally, there exists a large variation in poverty rates across household types. While 29.0 percent of migrant households are relatively poor, the corresponding proportion is 9.0 for mixed households and 6.8 for native households.

[6]see (UNESCO Institute for Statistics, 2012) for more details

Table 3.1: Sample Composition, by Household Type (Column Percent)

	All	Native	Mixed	Migrant
Pre-government poverty level				
Not poor	79.7	86.4	82.2	58.7
Relatively poor	20.3	13.6	17.8	41.3
Post-government poverty level				
Not poor	88.0	93.2	91.0	71.0
Relatively poor	12.0	6.8	9.0	29.0
Man's age				
Age 25-35	10.5	7.2	12.7	18.8
Age 36-50	49.1	44.9	55.6	57.2
Age 51-64	40.4	47.9	31.7	24.0
Woman's age				
Age 25-35	17.3	12.2	21.0	29.9
Age 36-50	52.6	50.6	59.0	54.8
Age 51-64	30.1	37.2	20.0	15.3
Man's educational level				
Low	9.1	5.0	8.2	21.8
Middle	52.6	53.6	47.7	52.7
High	38.3	41.4	44.1	25.5
Woman's educational level				
Low	10.9	6.7	9.1	24.5
Middle	58.4	62.8	52.5	49.2
High	30.7	30.5	38.4	26.3
Man's employment status				
Full-time	83.2	84.6	84.7	78.0
Part-time	6.4	6.3	6.2	6.7
Not employed	10.5	9.1	9.1	15.3
Woman's employment status				
Full-time	24.9	26.5	26.8	19.4
Part-time	51.2	54.8	48.0	42.5
Not employed	23.9	18.7	25.2	38.1
Household type				
Native	64.4	100	-	-
Mixed	13.5	-	100	-
Migrant	22.2	-	-	100
Number of children				
Childless	38.1	44.0	30.8	25.3
1 child	20.6	19.0	22.0	24.3
2 children	27.5	24.6	31.1	33.8
3 or more children	13.8	12.4	16.1	16.7
Presence of pre-school age children				
With	24.4	18.9	31.7	35.8
Without	75.6	81.1	68.3	64.2
Sample Size	4797	3088	646	1063

Source: The German Social Economic Panel Survey (SOEP), 2017. Own Calculations

Substantial compositional differences can also be observed in educational level of attainment, with migrant households have a substantially higher proportion of women with low educational attainment and lower proportion of better educated women. Concerning mother's labor force attachment pattern, migrant women are shown to have a higher share of non-working women and lower share of part-time and full-time working women, while with regards to children, they have a greater number of children and a higher presence of children in the preschool age bracket. Interestingly, migrant families also happen to have the higher share of wives in the age 25-35 bracket than native and mixed-couple households.

3.3 Methodology

The goal of our thesis is to examine the poverty gap between native and migrant households, how this gap relates to the differences in employment behaviour of women of these households, and ascertain the specific contribution of these differences to explaining the gap. To answer the first part of this question, binary logistic regressions are employed. Logistic regressions models are generally used for modelling relationships in which the dependent variable is a categorical variable. A binary logistic regression model is therefore used to study the relationship between a dichotomous dependent variable and one or more independent variables. This relationship is measured by estimating probabilities (i.e. predicted values are restricted to (0,1)) of the binary outcome using a logistic function, which is the cumulative logistic distribution. The model identifying the likelihood of a household unit i being relatively poor is specified as follows:

$$Y_i = Pr(Y_i^* < z) = F(X_i\beta) = \frac{\exp(X_i\beta)}{1 + \exp(X_i\beta)} \tag{3.1}$$

where Y_i is the dependent variable, which represents whether a household is relatively poor or not, X_i denotes a vector of household and its members' characteristics, which include the main independent variable women employment status and other variables described in section 3.2. F designates the cumulative distribution function from the logistic distribution. Furthermore, to in-

vestigate how the effect of women's employment status varies across household types, an interaction between household type and women's employment status is introduced.

The later part of the research question aims to identify and quantify the extent to which differences found between migrant and native households in terms of their chances of falling below the poverty line can be attributed to differences between native and migrant households in women labor force participation. The most common approach entails decomposing the inter-group differences in the mean level of the outcome variable by applying the Oaxaca-Blinder's decomposition. Typically, the Oaxaca-Blinder technique is applied to continuous outcome variables, but it can also be modified to apply to binary outcomes using an extended version called the Fairlie (non-linear) decomposition (Fairlie, 2005). The non-linear decomposition builds on the multivariate logistic regression explaining the likelihood of a household being poor (i.e. falling below the poverty line), conditioned on our set of explanatory variables. Using the Fairlie's technique and taking natives as the reference group for the decomposition analysis, the differences between migrants (M) and native households (G) in their poverty outcomes can be decomposed into two effects:

$$\overline{Y}^M - \overline{Y}^G = \left[\sum_{i=1}^{N^M} \frac{F(X_i^M \hat{\beta}^G)}{N^M} - \sum_{i=1}^{N^G} \frac{F(X_i^G \hat{\beta}^M)}{N^G} \right] + \left[\sum_{i=1}^{N^G} \frac{F(X_i^G \hat{\beta}^M)}{N^G} - \sum_{i=1}^{N^G} \frac{F(X_i^G \hat{\beta}^G)}{N^G} \right] \tag{3.2}$$

where N^j is the sample size for group j, $\hat{\beta}$ is the coefficient estimates from the logistic regression, and $\overline{Y}^j$ denotes the average probability of the falling below the poverty threshold for group j. The first term in square brackets on the right hand side of the equation indicates the part of migrant-native poverty disparity that can be explained by differences in observable characteristics (X) between immigrants and natives households (difference in characteristics effect), the second term in square brackets represents the unexplained part, usually attributed to the effects of differences in unmeasurable or unobserved characteristics as well as discrimination (difference in coefficient effect) (Fairlie, 2005, p. 3). The latter portion is rather difficult to explain, hence, following the approach of most previous studies, no explanation is given for it.

While the above description refers to the total decomposition of the migrant-native poverty outcome differential into an explained and an unexplained part of interest, the detailed contributions of differences in distributions of each variables to the inter-group difference in the outcome can also be assessed using the so-called detailed decomposition. Consequently, the role played by the difference in women's labour force participation in native and immigrant households in explaining the native-immigrant poverty difference is assessed. This is defined as the change in the average predicted probability from replacing the migrant distribution of female employment status with the native distribution while holding the distributions of the other variables constant.

Chapter 4

Empirical Analysis

4.1 Descriptive Statistics

Table 4.1 presents descriptive statistics on the poverty rates by the employment status of the woman in the household. Substantial differences can be observed across the three groups. Looking at the pre-government rates, one sees that households with non-employed women have a higher poverty rate (43.9 percent) than those with part-time (15.9 percent) or full-time working women (6.9 percent). After factoring in taxes and transfers, the poverty rate decreases for each group. This speaks to the poverty-reducing effect of the redistribution of income in Germany. The largest reduction, in absolute terms, as a result of the redistribution of income, is observed for households with non-working women (14.6 percentage points drop), and the smallest reduction is observed for those with full-time working women (3.8 percentage points drop).

Figure 4.1 presents a joint analyses of the post-government poverty rates by both household type and working pattern of the women in the households. Among households with full-time working women, native households have a lower poverty rate (1.8 percent) compared to mixed (3.5 percent) and migrant households (7.8 percent). Similar pattern is observed among households with part-time and non-working women. 22.1 percent of migrant households with part-time working women are located below the poverty threshold compared to 4.7 percent for native households

Table 4.1: Poverty Rates of Households by Women's Employment Status (Column Percent)

	All HH	HH with full-time working women	HH with part-time working women	HH with not-employed women
Poverty (Pre-goverment)				
Not poor	79.7	93.1	84.1	56.1
Relatively poor	20.3	6.9	15.9	43.9
Total	100	100	100	100
Sample size	4797	1197	2454	1146
Poverty (Post-government)				
Not poor	88.0	96.9	91.8	70.7
Relatively poor	12.0	3.1	8.2	29.3
Total	100	100	100	100
Sample size	4797	1197	2454	1146

Source: The German Social Economic Panel Survey (SOEP), 2017. Own Calculations

and 7.1 percent for mixed households. As expected, larger poverty rates are observed among households with not-employed women, with the mixed-couple households among them having the least poverty rate (18.4 percent). Almost half of migrant families with not-employed women fall below the poverty line.

Figure 4.1: Proportion of relatively poor households by household type and women's employment status

Interestingly, both native and mixed households where the women are not employed show lower poverty rates than migrant households in which women are partly employed. This could imply differences in circumstances surrounding labor market decisions among the women of these three

household-types, with migrant women being more likely to join the labor force due to the added-worker hypothesis (i.e. the need to support the husband either due to loss of his job or reduction in his wages). Additionally, there is no much difference in poverty rates of native and mixed families when the employment status of the wives in these households are considered. A Chi-squared test is applied to test the association between poverty rate and household type and women's employment status. The null hypothesis that household poverty rate is independent of women's employment status is rejected[1]. The null hypothesis that household poverty rate is independent of household type and the women's employment status is also rejected[2]

To evaluate the extent and significance of this relationship, logistic regression models are applied. The first model analyses the extent to which women's employment status determines whether a household is relatively poor or not (based on post-government poverty levels), and accounts for the characteristics of the woman in the household, the number of children in the household, the age of the youngest child, while also controlling for the partner's characteristics and the household type. The second model examines how the effect of women's employment status varies between household types. Accordingly, it interacts women's employment status with the household type. Regression results are presented in the next section; interaction results are presented in predicted probabilities.

4.2 Regression Results

The result of the first model are presented in Table 4.2. With respect to the household type, the regression analysis confirms the findings of our descriptive analysis and shows that migrant households are significantly more likely to live in poverty than native households. Compared with native households, migrant households have 257.8 percent significantly higher odds of being poor, while mixed households are no different from native households with respect to chances of falling below the relative poverty line. This result does not only lend support to our first hypothesis, but

[1]P-value: 2.2e-16
[2]P-value: 9.433e-250

Table 4.2: Binary Logistic Regression, Household poverty level: Not poor, relatively poor (reference) . Odds Ratios and Standard Errors

	Poverty
Household type (*Ref:* Native)	
Mixed	1.175
	(0.183)
Migrant	3.578***
	(0.127)
Woman's age (*Ref:* Age 25-35)	
Age 36-50	0.620***
	(0.176)
Age 51-64	0.615*
	(0.258)
Woman's educational level (*Ref:* Low)	
Middle	0.607***
	(0.147)
High	0.383***
	(0.197)
Woman's employment status (*Ref:* Not-employed)	
Part-time employed	0.341***
	(0.120)
Full-time employed	0.106***
	(0.203)
Presence of children (*Ref:* Childless)	
1 child	1.556**
	(0.195)
2 children	1.858***
	(0.198)
3 or more children	3.461***
	(0.215)
With pre-school age children (*Ref:* Without)	0.994
	(0.157)
Man's age (*Ref:* Age 25-35)	
Age 36-50	1.009
	(0.199)
Age 51-64	1.203
	(0.255)
Man's educational level (*Ref:* Low)	
Middle	0.953
	(0.159)
High	0.290***
	(0.204)
Man's employment status (*Ref:* Not-employed)	
Part-time employed	0.687*
	(0.197)
Full-time employed	0.088***
	(0.144)
Constant	2.251***
	(0.299)
Sample size	4797

***p < .01; **p < .05; *p < .1

Source: The German Social Economic Panel Survey (SOEP), 2017. Own Calculations

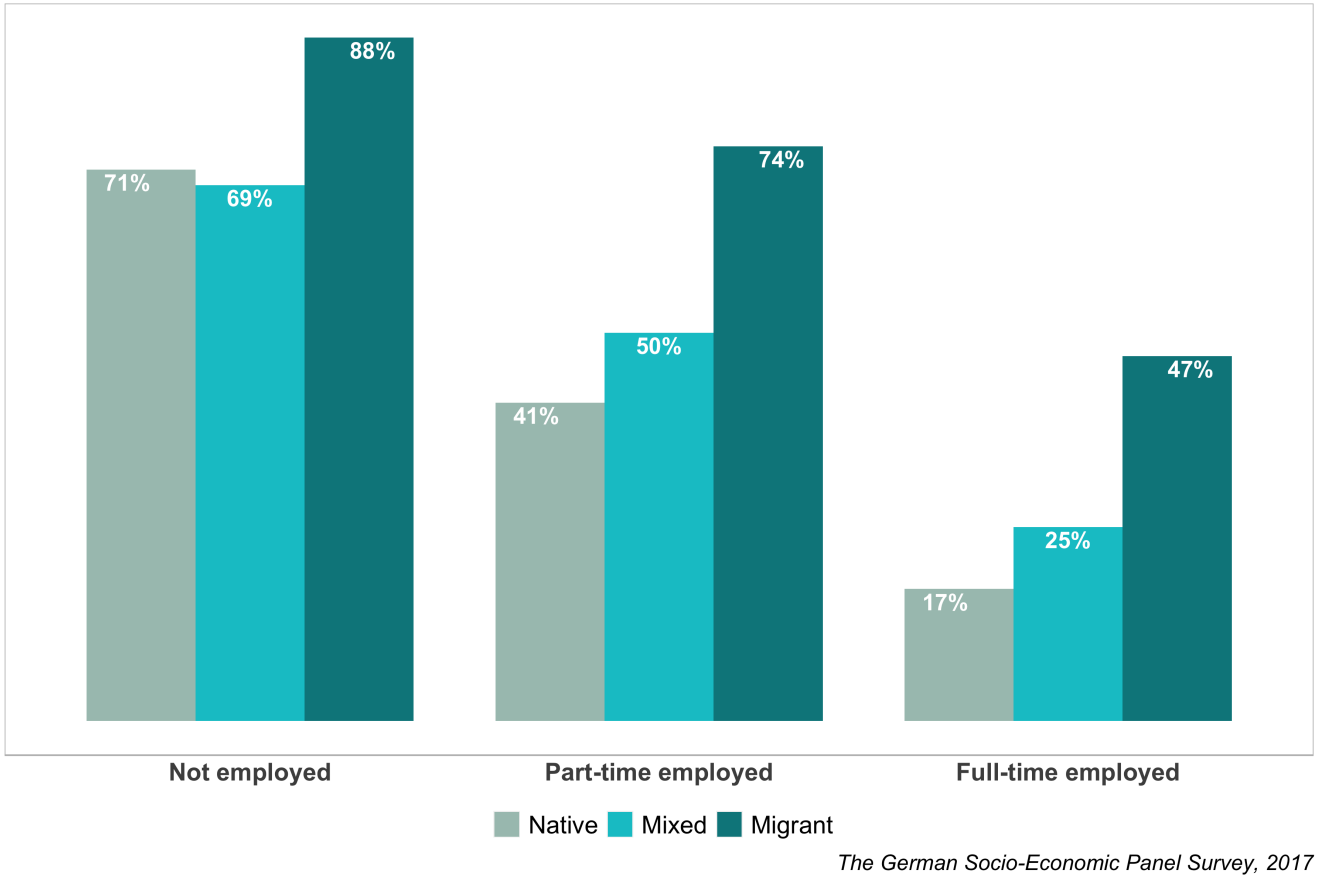
also confirms findings from Kesler (2018), who argues that intermarried and native-born couples are better protected against poverty, as the native-born spouse is faced with relatively little to no labor market barriers. More so, according to her, one would expect a higher degree of assortative mating among the inter-married couple in terms of educational attainment and socio-economic background.

In line with our second hypothesis, the employment status of the woman of the household also has a significant impact on the household's chances of being poor. If the woman is employed part-time, the family has 65.9 percent lower odds of being relatively poor compared to when the wife is not employed. Chances of being poor are even lower (89.4 percent) in households where the woman is employed full-time. Looking at the control variables, some interesting findings are extracted. While the chances of falling below the poverty line are higher with increased number of children in the household, the presence of pre-school age children exacts no significant impact of the household poverty chances. Additionally, while the woman's age has an impact on the household chances of being poor, the age of the man of the household has no significant impact. The chances of the household being relatively poor decreases with higher age brackets of the woman; households where the wive falls between 36-50 years are the most protected from poverty risks compared to other age categories. One also sees that the chances of the household falling below the poverty line is significantly dependent on the man and woman's educational level. In concordance with the argumentative lines of the human capital theory, households with highly educated women are substantially less likely (61.7 percent lower odds) to be poor than households with lowly educated women, while households with highly educated men have 71 percent lower odds of being relatively poor compared to the reference group. There is however no significant difference between households with mid-educated men and lowly educated men in terms of chances of being poor. As expected, men's employment status also significantly impact the household's chances of falling below the poverty threshold, with households with full-time employed men having 91.2 lower odds of being poor compared to households with not-employed men.

Next, we examine how the impact of women's employment status on the households' probability

of being poor varies across household-types. Results are presented in Figure 4.2.

Figure 4.2: Predicted Probability of Falling Below the Poverty Threshold by Household type and Women's Employment Status



The results in Figure 4.2 show that while migrant-native differences in chances of being relatively poor exists across board, the difference is stratified by women's working pattern. Among families where the wives are part-time employed, there is a 33 percentage-point difference between migrant and native households' probability of being poor, while this estimate is 30 and 17 among families with full-time and non-working women respectively. This implies lower migrant-native poverty gap among families with non-working wives compared to families where the wives work. Our third hypothesis is supported by this finding.

Looking at the poverty differences within household types, one finds, as expected, that, for all the household types, families with full-time working women have the lowest probability of falling below the poverty threshold. Among native households, those with full-time working women

have about 17 percent predicted probability of being poor compared to households with part-time working women where the probability is 41 percent and those with non-working women where the probability increases to 71 percent. Migrant households with full-time working women have 47 percent probability of being relatively poor. This probability increases by 27 percentage points for migrant households with part-time working women, and increases by additional 14 percentage points for migrant households with non-working women, who have the highest probability of being relatively poor (88 percent). The same pattern is observed for mixed-couple households. In all, the average marginal effect of having the wives work part-time compared to not working at all is higher for native families ($\|0.41 - 0.71\| = 0.30$) than for mixed (0.19) and migrant families (0.14). Moreover, the average marginal effect of having the wives work full-time compared to not working at all is 0.54, 0.44, and 0.41 for native, mixed, and migrant-couple households respectively. In other words, while women's participation in the labor force reduces a household's probability of being poor, this effect is stronger if the household were a native household compared to if it were a migrant or mixed household.

4.3 Decomposition Results

To answer the question about how much of the migrant-native difference in predicted probability of being poor is accounted for by group differences in female labor market participation pattern, the Fairlie-Oaxaca-Blinder's non-linear decomposition technique is employed. Different decomposition specifications could be computed using different sets of coefficients, which depend on the sample used to estimate the logistic regression.[3] However, to ensure that the sum of the contributions from individual variables will be equal to the total contribution from all of the variables evaluated with the full sample, as well as build on the results from Model 1 (see Table 4.2), logistic regressions are estimated using all pooled native, mixed and white samples. Additionally, to address the issue of sensitivity of decomposition estimates to the ordering of the variables in the decomposition, the

[3]The standard application of the decomposition technique requires the estimation of group-specific regression models,and then using the coefficient estimates from one of these models directly in the decomposition specification

ordering of the variables is randomized and simulated 1000 times. The resulting estimates are the average of the decomposition across all possible orderings of variables. Table 4.3 reports estimate of the decomposition of the migrant/native gap in predicted probabilities of being poor.[4]

Table 4.3: Non-linear Decomposition of Migrant/Native difference in Poverty Rates

	Coef.	Std. Err.	Pct.
Native poverty rate	0.0677		
Migrant poverty rate	0.2897		
Migrant/native gap	-0.2220		
Explained	-0.0836		37.7%
Unexplained	-0.1384		62.3%
Contributions from migrant/native differences in:			
Woman's age	-0.0074	0.0040	3.3%
Woman's educational level	-0.0097	0.0028	4.4%
Woman's employment status	-0.0242	0.0027	10.9%
Presence of children	-0.0129	0.0028	5.8%
Presence of pre-school age children	0.0001	0.0024	0.0%
Man's age	0.0031	0.0035	-1.4%
Man's educational level	-0.0096	0.0029	4.3%
Man's employment status	-0.0229	0.0021	10.3%

Source: The German Social Economic Panel Survey (SOEP), 2017. Own Calculations

As seen in Table 4.3, the absolute difference between the predicted probability of falling below the poverty threshold for native compared to migrant is 0.22. The explained part (i.e. the aggregate characteristics effect) reflects the mean decrease in the predicted probability of migrant households being relatively poor if they had the same characteristics as native households. Accordingly, the decrease of 0.084 indicates that compositional differences in the couple's age, level of education, employment status, number of children as well as presence of pre-school age children account for about 38 percent of the migrant-native poverty divide. About 62 percent of this divide remains unexplained.

A detailed decomposition of the contributions of the differences in observable characteristics reveals that migrant-native differences in women's labor market participation accounts for the largest portion (about 29 percent) of the explained gap between the poverty rates of migrant and

[4]As noted by Fairlie (2005), the predicted probability estimated is not necessarily equal to the proportion of the group below the poverty threshold as the logit function is concave for values greater than 0.5

native households. In terms of the contribution to the total difference, substituting the migrant households' distribution of women's employment status to the levels of native households' will reduce the poverty rate differential by 10.9 percent. With regard to other variables one finds, as expected, that men's employment status also accounts for a substantial part (10.3 percent) of the total difference in migrant-native poverty outcomes. Shifting the migrant households' composition in terms of the number of children to the level of native households' will reduce the migrant-native poverty outcome differential by 5.8 percent. While the migrant-native differences in the educational level of the woman and man combined account for about 8.7 percent of the total migrant-native poverty divide, migrant-native differences in the the presence of pre-school age children and the man's age do not seem to matter much.

Chapter 5

Discussion and Conclusion

The literature on socio-economic inequality at the household level widely acknowledges the significant role played by increased women's labor force participation on household inequality. The actual effect of this role, however, depends largely on where (i.e. among which groups of women) the increased participation in concentrated. To contribute to this growing literature, this thesis takes a slightly different approach from most of previous literature. While many studies have focused on the distribution of household income inequality vis-à-vis women's employment, there much less discussion has been made for the differences in poverty risks across families. Under the assumption of differences in the labor market participation of migrant versus native women in Germany, the thesis examines if these differences significantly influence the difference in poverty outcomes for migrant and native families in the country and to what extent. At the onset of the investigation, two straight-forward questions are raised: is there indeed a significant difference in the poverty rates of migrant versus native families, and does the employment status of the wife exert a significant impact on a household's propensity to live in poverty? These questions set the groundwork for further analysis, one of which is how the effect of the wives' labor force participation varies for migrant and native households. The concluding question quantifies the actual contribution of migrant-native differences in women's labor force participation to the difference in poverty risks between these households.

The descriptive analysis immediately confirms the existence of differences in the employment pattern of migrant versus native women, with migrant-couple families found to have a greater proportion of wives out of the labor force and lesser share of part-time and full-time wives compared to native-born couple households. Although not the primary focus of the research, a quick analysis of the redistribution effects of the German tax and transfer system on poverty was conducted. Results show a substantial reduction in poverty rates for all household types after taxes and transfer, with the largest reduction observed for migrant households. In line with conventional wisdom, migrant families are also found to face greater poverty risks than native families, while households with part-time employed women stand lesser chances of living in poverty compared to those with non-working women; the poverty risks are even lesser if the household has full-time working wives.

Further analysis show some interesting results. While a woman employment in the labor market reduces a family's poverty risk, this effect is found to be less strong for migrant-couple families compared to German-couple families. More so, the migrant-native difference in probability of being poor is larger among households where the wives are employed than among households with non-working wives; the largest difference is observed for household with part-time working wives. While the thesis does not purport to give conclusive answers about the reason behind these findings, they do imply the existence of wage gaps between migrant and native women. More importantly, they highlight a phenomenon that is well established in the literature: migrant women, upon joining the labor force, are more likely to occupy lesser job positions or accept jobs in low-paying sectors. Thus, beyond encouraging women's participation in the labor force, of greater relevance to the discussion about the impact of women's labor force participation to household's socio-economic well-being is the access to quality jobs. Hence, any policy that seeks to address the growing poverty gap among households should take this into account. In essence, in order to reduce (migrant-native) household inequality, policies that are aimed towards bolstering work incentives, especially for women of socio-economic groups with weak labor force attachment or increasing labor supply, should go hand-in-hand with policies that aim to improve the quality of

employment outcomes for women of these groups. Moreover, the results make another important observation: although families with working wives might have lower poverty rates than those with non-working women, inequality is a more salient concern among families with working wives. This observation lends support to findings from the strand of literature on the impact of assortative mating on growing household inequality. Based on the result, it isn't far-fetched to assume that there is a growing polarization among households where both spouses employed due to positive correlation of husbands' and wives' earnings in Germany.

Finally, the decomposition results reveal differences in women's labor force participation pattern between migrant and native households to be the strongest contributor to the explained difference between migrant- and native-couple households' poverty rates, followed by men's labor force participation and the number of children in the household. The fact that factors that determine the household's "resources" (such as educational or employment status of the partners) are generally greater predictors of risk of income poverty than the factors that determine the level of the household's needs (such as number of children, age, and size of the household) buttresses the idea that social policies must continue to emphasize the improvement of individuals' socio-economic background and not just on the re-distribution of income through means-tested transfers and the likes.

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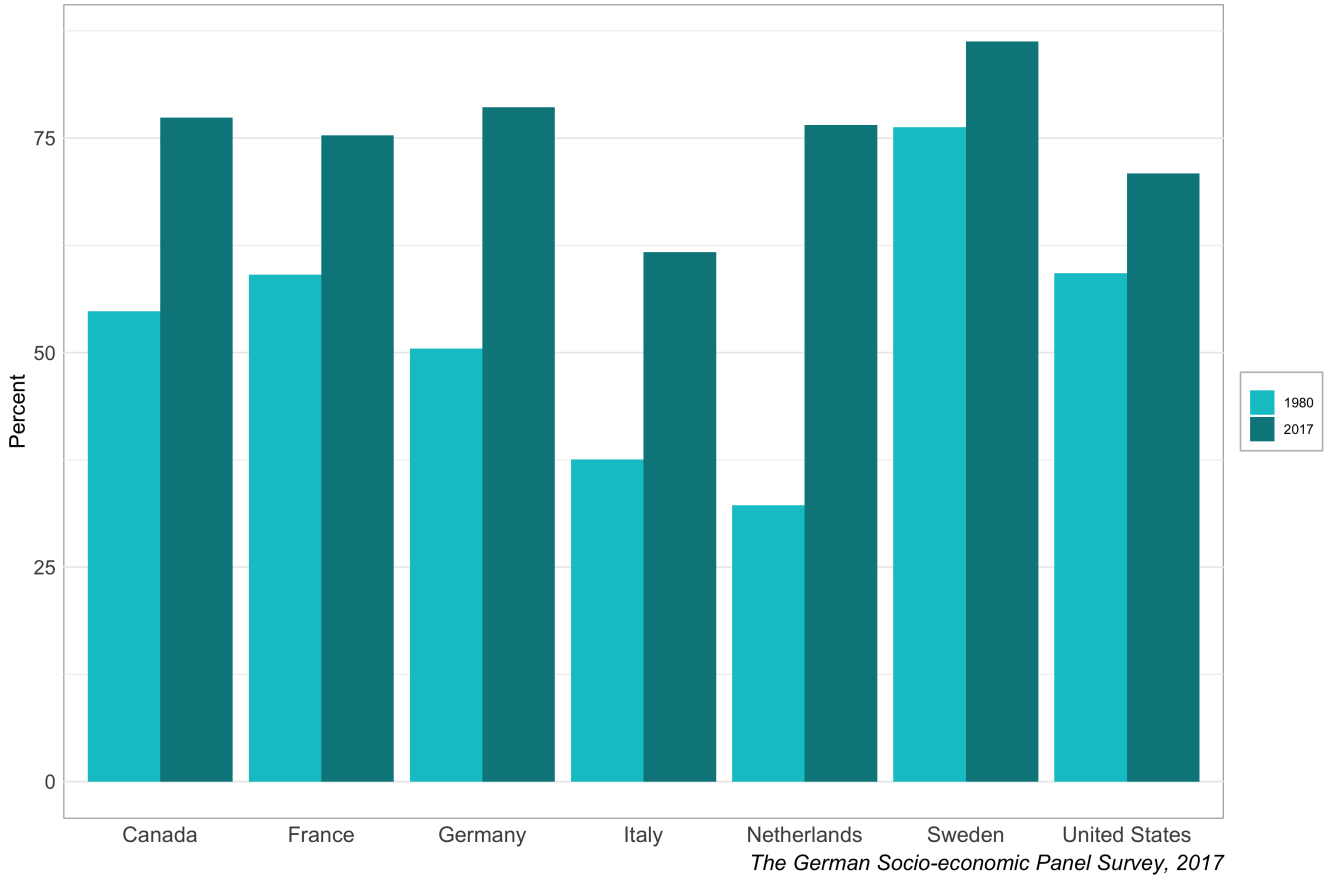
Appendix A

Figures

Figure A.1: Variation in Women's Labor Force Participation Rates for Selected Countries (Ages 25-64)



Appendix B

Code Snippets

The full code for this thesis is available at https://github.com/jayodele10/MN-Poverty-Div.git

B.1 R-Code

````
```{r functions}
# Function to create list of variables
  makeVlist <- function(dta) {
  labels <- sapply(dta, function(x) attr(x, "label"))
  tibble(name = names(labels),
         label = labels)
  }
```

```{r data import, warning=FALSE, message=FALSE}
#import persoanl pfad data
pfad <- read_dta("ppfad.dta")
pfadLabels <- makeVlist(pfad)

````
````

```
#import household path dataset
hpfad <- read_dta("hpfad.dta")
hpfadLabels <- makeVlist(hpfad)


#import generated dataset for personal dataset
personal_gen <- read_dta("bhpgen.dta")
#personal_genLabels <- makeVlist(personal_gen)

#import generated dataset for bhh
hh_gen <- read_dta("bhhgen.dta")
#hh_genList <- makeVlist(hh_gen)

# import bhkind (child) dataset
child <- read_dta("bhkind.dta")
#kidLabels <- makeVlist(kid)

#import bioagel (parent-child) dataset
bioage <- read_dta("bioagel.dta")

#import bhpequiv
bhp_equiv <- read_dta("bhpequiv.dta")
equivLabels <- makeVlist(bhp_equiv)
```
```{r variable selection}
# PFAD
core_p <- pfad %>%
```

```
42   select(persnr, sex, gebjahr, psample, bhhhnr, bhnetto, bhsampreg,
       bhpop,
43           immiyear, germborn, corigin, migback) %>%
44   filter(!psample %in% c(17, 18, 19), #exclude refugees
45           between(bhnetto, 10, 19), #successful interviews
46           bhpop %in% c(1,2)) %>% #private households (1- German HH-
                head; 2: Foreign)
47   mutate(age = 2017 - gebjahr) %>%
48   filter(between(age, 25, 64)) %>%
49   arrange(persnr)
50
51 # GENERATED PERSONAL DATASET
52 personal_gen <- personal_gen %>%
53   select(persnr, bhhhnr, bhfamstd, emplst17,
54           isced11_17, partnr17) %>%
55   rename(
56     "marital_status" = bhfamstd,
57     "emp_status" = emplst17,
58     "edu_level" = isced11_17,
59     "partner_persnr" = partnr17
60   ) %>%
61   filter(marital_status %in% c(1, 7)) %>% #married or registered
       partnership living together
62   arrange(persnr)
63
64 ## HOUSEHOLD GENERATED DATASET
```

```
hh_gen <- hh_gen %>% select(bhhhnr, nuts117, typ1hh17, typ2hh17,
    hinc17) %>%
  rename(
    state = "nuts117",
    hhtype1 = "typ1hh17",
    hhtype2 = "typ2hh17",
  ) %>%
  arrange(bhhhnr)

# BHP_EQUIV DATASET
bhp_equiv <- bhp_equiv %>%
  select(bhhhnr, persnr, d1110517, d1110617, d1110717,i1110117,
      i1110217, w1110217) %>%
  rename(
    "rel_to_head" = d1110517,
    "hh_size" = d1110617,
    "num_kids" = d1110717,
    "pregov_income" = i1110117,
    "postgov_income" = i1110217,
    "hh_weight" = w1110217
  ) %>%
  arrange(persnr)
```

```{r data wrangling}
# some data wrangling
merge3 <- merge3 %>%
```

```
90  mutate(adult = hh_size - num_kids,
91  other_adult = adult - 1,
92  pregov_income_eq = pregov_income / (1 + other_adult * 0.5 +
       num_kids * 0.3),
93  postgov_income_eq = postgov_income / (1 + other_adult * 0.5 +
       num_kids * 0.3),
94  poverty_level_pre = ifelse(pregov_income_eq >= (median(
       pregov_income_eq) * 0.60), "Not␣poor", "Relatively␣poor"),
95  poverty_level_post = ifelse(postgov_income_eq >= (median(
       postgov_income_eq) * 0.60), "Not␣poor", "Relatively␣poor"),
96  poverty_level_pre = factor(poverty_level_pre),
97  poverty_level_post = factor(poverty_level_post),
98  #num_kids = case_when(
99    #num_kids == 0 ~ "No␣child",
100   #num_kids == 1 ~ "1␣child",
101   #num_kids == 2 ~ "2␣children",
102   #TRUE ~ "3␣or␣more␣children"),
103 #num_kids = factor(num_kids),
104 rel_to_head = case_when(
105   rel_to_head == 1 ~ "Head",
106   rel_to_head == 2 ~ "Partner",
107   rel_to_head == 3 ~ "Child",
108   rel_to_head == 4 ~ "Relative",
109   TRUE ~ "Nonrelative"),
110 sex = ifelse(sex == 1, "Male", "Female"),
111 sex = factor(sex),
112 emp_status = case_when(
```

```
113   emp_status == 1 ~ "Full-time employed",
114   emp_status == 2 | emp_status == 4 ~ "Part-time employed",
115   TRUE ~ "Not employed"),
116   emp_status = factor(emp_status),
117   germborn = case_when(
118     germborn == 1 & migback == 1 ~ "native",
119     germborn == 1 & migback == 3 ~ "second_gen migrant",
120     TRUE ~ "first_gen migrant"),
121   germborn = factor(germborn),
122   edu_level = case_when(
123     between(edu_level, 0, 2) ~ "Low",
124     edu_level %in% c(3,4) ~ "Middle",
125     between(edu_level, 5, 8) ~ "High",
126     TRUE ~ "NA"),
127   edu_level = factor(edu_level),
128   bhpop = ifelse(bhpop == 1, "German HH-Head", "Foreign HH-Head"),
129         bhpop = factor(bhpop)) %>%
130   filter(!hhtype1 %in% c(3, 7, 8), # exclude other non-couple
        households
131          !rel_to_head %in% c("Child", "Relative", "Nonrelative"), #
             restrict sample to household head and partner
132          !partner_persnr < 0) %>% #remove persons whose spouse are
             not included in the survey data
133   arrange(bhhhnr)
134
135 #get unique personal id for all individuals who both completed the
      survey with their spouse
```

```
partner_persnr <- my_df$partner_persnr

unique_pernsr <- sort(union(my_df$persnr, partner_persnr))

#get unique household numbers
unique_bhhhnr <- sort(unique(my_df$bhhhnr))
```

```{r more data wrangling}
#filter for couples between the age of 25 and 65
remove_age <- my_df %>% filter(!between(age, 25, 64)) %>% select(
    bhhhnr, persnr, age)
remove_bhhnr <- remove_age$bhhhnr

#remove household with either couple being under-25 or over-64
my_df<- my_df %>% filter(!bhhhnr %in% remove_bhhnr)

#calculate freq distribution of the unique household ids
bhhhnr_freq<- table(my_df$bhhhnr)

#retain households with duplicate unique ids (i.e. for husband and
    wive)
my_df <- subset(my_df, bhhhnr %in% names(bhhhnr_freq[bhhhnr_freq >
    1]))

# remove same-sex couple
#get unique HH id  for the men in the sample
```

```
unq_hus <- unique(my_df[my_df$sex == "Male", "bhhhnr"])

#get unique HH id  for the women in the sample
unq_wife <- unique(my_df[my_df$sex == "Female", "bhhhnr"])

#get unique household ids
unq <- unique(my_df$bhhhnr)

# extract households where both spouses are women
same_sex1 <- setdiff(unq, unq_hus)

# extract households where both spouses are men
same_sex2 <- setdiff(unq, unq_wife)

#remove same-sex couple households
my_df <- my_df %>% filter(!bhhhnr %in% same_sex1,
                          !bhhhnr %in% same_sex2)
```

```{r descriptive statistics}
# generate sample composition
df %>% group_by(hh_label) %>% dfSummary(round.digits = 2)
df %>% dfSummary()

# set new themes for the plots
theme_flip <- theme(panel.background = element_rect(fill = "white"),
        axis.text = element_text(size = 15, face = "bold"),
```

```
187         axis.text.x = element_blank(),
188         axis.title = element_text(size = rel(1)),
189         axis.ticks = element_blank(),
190         axis.line.y = element_line(colour = "grey"),
191         axis.line.y.right = element_line(colour = "grey"),
192         axis.line.x = element_line(colour = "grey"),
193         axis.line.x.top = element_line(color = "grey"),
194         #plot.title = element_text(size=15, hjust = 0, vjust=2.12),
195         legend.position = "bottom",
196         legend.title = element_blank(),
197         legend.text = element_text(size = 15),
198         panel.grid.major = element_blank(),
199         panel.grid.minor = element_blank(),
200         plot.title = element_text(hjust = 0),
201         plot.background = element_rect(fill = "white"),
202         plot.caption = element_text(size = 14, face = "italic"),
203         strip.text.x = element_text(size = 15, face = "bold"),
204         strip.background.x = element_rect(fill = "light grey"))
205
206 caption <- "The German Socio-Economic Panel Survey, 2017"
207
208 pov_hhlabel_post <- df %>%
209   group_by(hh_label,woman_emp) %>%
210   count(woman_emp, poverty_level_post) %>%
211   mutate(perc = round(n / sum(n), 3),
212          pos = cumsum(perc) - 0.5*perc,
```

```
213           hovertext = paste(woman_emp, "\n", "Number␣of␣observations:
                ", n, "\n", paste0("Percentage:␣",perc *100,"%"))) %>%
214   ggplot(aes(x = woman_emp, y = perc, fill = fct_rev(
        poverty_level_post), label = ifelse(perc >= 0.04, paste0(100*
        perc,"%␣", "\n", "(",n,")"), ""))) +
215     geom_col(width = 0.3) +
216     geom_bar_text(position = "stack",  reflow = TRUE, colour = "white
          ", place = "center", fontface = "bold", min.size = 4, size =
          11) +
217     # geom_text(aes(label = ifelse(perc >= 0.06, paste0(100*perc,"%␣"
          , "(",n,")"), ""),y = pos), size = 2.8, color = "white",
          fontface = "bold") +
218     labs(title = NULL,
219      y = NULL,
220      x = NULL,
221      caption = caption) +
222   coord_flip() +
223   facet_wrap(~ hh_label, labeller = labeller(hh_label = c(native = "
        Native", mixed = "Mixed", migrant = "Migrant"))) +
224   scale_fill_manual(values = c("turquoise3", "turquoise4")) +
225   guides(fill = guide_legend(reverse = TRUE)) + #reverse the legend
        order
226   theme_flip
227
228 print(pov_hhlabel_post)
229
230 ggsave("pov_hhlabel_post.png", width = 13, height = 7)
```

```
231
232 #Chis-sqare tests
233 chisq.test(table(df$poverty_level_pre, df$woman_emp))
234
235 # 3-Way Frequency Table
236 mytable <- xtabs(~poverty_level_pre+hh_label+woman_emp, data=df)
237 ftable(mytable) # print table
238 summary(mytable) # chi-square test of indepedence
239 ```
```

B.2 Stata-Code

```
1 use "/analysis/thesis/df17.dta"
2
3 log using "/analysis/thesis/log.smcl"
4
5 generate migrant2 = migrant==1 if native==1|migrant==1
6
7 fairlie post_relpoor (mage: mage25_35 mage36_50 mage51_64) (medu:
    meduHigh meduMid meduLow) (memp: mempFull mempPart mempNot) (fage:
     fage25_35 fage36_50 fage51_64) (fedu: feduHigh feduMid feduLow) (
    femp: fempFull fempPart fempNot) (child: child0 child1 child2
    child3more) (presch: presch_without presch_with)
```

MIA/MPP Master Thesis group form

Name of student 1	Joshua A. Aje
Name of student 2	Amna Riaz
Thesis Advisor	Prof. Dr. Michaela Kreyenfeld

Master Thesis Title

Migrant-Native Household Poverty Divide in Germany: The Role of Differences in Women's Labor Force Participation Behaviour

Please indicate which part(s) have been elaborated by whom, go into detail and be specific*:

Student 1

I was responsible for conducting research on the methodology (Logistic regression and Fairlie-Oaxaca-Blinder's Decomposition) and for running our estimations using statistical software R and Stata. I was responsible for the data preparation, wrangling, and visualization. These task were conducted in R. I also ran the decompostion analysis, but used Stata for this task.

I drafted the following chapters/sections (approximate word count in brackets):

• Executive Summary (263 words)

• Literature Review: 2.2 Migrant-Native Differences in Women's Labor Force Participation (1698 words)

• Measurements and Methodology (2344 words)

• Empirical Analysis (2,258 words)

• Total: approx. 6563 words

After producing the preliminary drafts for the chapters/ sections mentioned above, Amna and I worked to edit the phrasing and formatting for all sections to ensure that the coherence of the paper.

Student 2

I was responsible for researching and developing the theoretical framework namely: the Work Leisure Choice Model, Household Production Theory, and Human Capital Theory. I also conducted research on the women's labor market participation and its effect on household socio-economic inequality. I also ran the regression models in R (Thanks to Joshua for putting me through how to do this).

I drafted the following chapters/sections (approximate word count in brackets):

- Introduction (1,108 words)
- Literature Review: Section 2.1, 2.3 and 2.4 (4073 words)
- Data and Sample Size (498 words)
- Discussion and Conclusion: (835 words)
- Total: approx. 6,514 words

After producing the preliminary drafts for the chapters/ sections mentioned above, Amna and I worked to edit the phrasing and formatting for all sections to ensure that the coherence of the paper.

* Please note that individual input has to be marked off and should be listed in this form; according to BerlHG §32 (5) individual, differentiated grading has to be possible.

We confirm that we both have equally invested our time and effort in the master thesis and that we followed good academic conduct in group work (see exam rules *§14 master thesis (5)*, and *§15 good academic conduct*).

25/05/2020 _____ _____

Date, signature student 1 Date, signature student 2

Statement of Authorship

I hereby confirm and certify that this master thesis is my own work. All ideas and language of others are acknowledged in the text. All references and verbatim extracts are properly quoted and all other sources of information are specifically and clearly designated.

DATE: 25/05/2020

NAME: JOSHUA A. AJE

SIGNATURE: 

DATE: 25/05/2020

NAME: AMNA RIAZ

SIGNATURE: