



Master's Thesis

Master's Programme in Nordic Welfare
(60 credits)

Gender Equality and Intergenerational Mobility: Cross- country Results

Health and Lifestyle HL8031, 15 credits

Halmstad 2023-10-09
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Abstract

Nowadays, intergenerational mobility and gender equality have captured widespread attention. This study aims to examine the relationship between the two to provide policy insights that benefit both polarized issues. This study reviewed the existing literature and formulated hypotheses that early childhood development has long-lasting impacts on adults' outcomes and is a decisive factor in determining social mobility in adulthood. Gender equality policies play huge roles in this period, mitigating adverse effects from childhood and providing opportunities for disadvantaged children in early childhood development. This study tests the hypotheses with multiple regression and performs sensitivity analysis with an alternative proxy. The result is that public spending on childcare, female labour market participation, and child poverty are statistically significant with social mobility, while weeks of maternity leave and poverty rates of single-earner families are not.

Keyword: social mobility, intergenerational mobility, gender equality, early childhood

Acknowledgements

I would like to use this opportunity to thank the Swedish welfare system, which inspired me to pursue this topic with a great degree of flexibility. Thanks to every Swedish taxpayer who extends their solidarity to cover healthcare costs for immigrants, curing the acute appendicitis I experienced during the first time writing this thesis without any cost. Thanks to Linus Andersson and Klara Öberg, who always took care of me with kindness. Also, thanks to Patiparn Boontun and Pholwat Ote for your technical assistances.

Table of Contents

List of Tables	vi
List of Figures	vii
1 Introduction.....	1
1.1 Research Aim & Research Questions	4
Research Aims.....	4
Research Questions.....	4
Sub-Questions.....	4
2 Literature Review.....	5
2.1 Theoretical Approach	5
2.1.1 Intergenerational Social Mobility & Transmission	5
2.1.2 Early-life theory	6
2.2 Previous Research	10
2.2.1 Intergenerational Mobility & Transmission	10
2.2.2 Gender Equality Policies	13
2.3 Theoretical discussion	19
3 Methodology & Data	21
3.1 Methodology	21
3.2 Motivations of Data Variables	22
3.2.1 Intergenerational Mobility	23
3.2.2 Childcare	24
3.2.3 Parental Leave	25
3.2.4 Female labour market participation rate	26
3.2.5 Child Poverty & Child Allowances	27
3.2.6 Control Variables	29
3.3 Limitations	30
4 Results & Discussion	32
4.1 Results & Discussion	32
4.1.1 Childcare	32
4.1.2 Weeks of Maternity Leave	34
4.1.3 Female Labour Market Participation	37
4.1.4 Poverty of single-earner families	39
4.1.5 Child Poverty Results	41

4.2 Sensitivity Analysis	43
4.3 General Discussion	46
5 Conclusion	48
5.1 Conclusion	48
5.2 Future Research	49
References	51
Appendix.....	57

List of Tables

Table 1 Summary of Statistics	29
Table 2 Multiple regression of Public Spending on Childcare (%) in 1991 and IGE	32
Table 3 Multiple regression of Weeks of Maternity Leave in 1970 and IGE.....	34
Table 4 Multiple regression of Female Labour Market Participation Rate in 1990 and IGE	37
Table 5 Multiple regression of relative Poverty Rates of Single-earner Families (%) and IGE.....	39
Table 6 Multiple regression of Relative Child Poverty in 2018 (%) and IGE.....	41
Table 7 Multiple regression of relative Child Poverty in 2018 (%) and IPE.....	43
Table 8 Multiple regression of weeks of maternity leave in 1970 and IPE.....	44
Table 9 Summary of the Results and Sensitivity Analysis	47

List of Figures

Figure 1 The Heckman Curve.....	9
Figure 2 The Great Gatsby Curve.....	10
Figure 3 Child Poverty Rates before & After Taxes and Transfers.....	18
Figure 4 Theoretical Framework of Gender Equality Policies and Intergenerational Mobility.....	20
Figure 5 Summary of proxies for gender equality policies.....	23
Figure 6 Percentage of Shared of actual total Parental leave days	26
Figure 7 Child Poverty Rates before and after taxes and transfers 2018, the data label indicates the impact of taxes and transfers.	28
Figure 8 Gross public to total net social spending, as % GDP in 2019	31
Figure 9 Weeks of Maternity Leave in 1970	36

1 Introduction

Inequality has been increasing globally in the last 40 years (Alvaredo et al., 2013). Inequality itself is already morally problematic as it fosters unfairness in various aspects within a society. Nevertheless, inequality is also connected to intergenerational persistence or social immobility, as displayed by the Great Gatsby curve (Corak, 2013). Low-inequality countries usually exhibit high social mobility rates, such as the Nordic countries. Conversely, high-inequality countries typically have lower social mobility, like Colombia, Brazil, and India. Only some born into poverty have managed to escape it while growing up, possessing lower chances of social mobility (Clarke et al., 2022; Corak, 2013). As a result, young and hard-working people perceive their opportunities to climb the social ladder as diminishing (Day & Fiske, 2017), leading them to call on their governments to address this issue, as witnessed in protests across the US.

However, solving intergenerational persistence is no easy task. Measures implemented to increase intergenerational mobility have not directly addressed the root causes of the problem. Research on social mobility in the developed world usually centrally focuses on the role of education in determining social mobility (Blanden et al., 2005). On one hand, education stands as one of the primary drivers of social mobility in developed countries (OECD, 2014). Education opens pathways to high-quality jobs that offer high earnings, better employer relations, and societal privilege. However, despite several countries boasting high-quality public education systems and significant spending on education, social mobility rates still vary. Increasing government expenditure on education does not eliminate intergenerational transmissions from various channels; on the contrary, it could lead to lower social mobility rates, as seen in the UK (Blanden, 2005), benefiting those who are already affluent.

Since inequality begins before the formal education period, originating during the fetal development in a mother's womb, the poor socioeconomic status of a family influences this phase of development. Children from the lowest socioeconomic backgrounds face a developmental gap 12 months shorter than children from advantaged backgrounds (Clarke et al., 2022). These gaps are unlikely to close during childhood, as early childhood development significantly impacts future outcomes. Children with a strong start distance themselves over time from others, while those with a poor start fall behind. Later remedial programs are costly to implement and not as effective as targeting the childhood period (Heckman & Masterov, 2007). In fact, countries differ in the amount of progressive public investments fostering

children's human capital, beyond education alone (Solon, 2002, p.65). Additionally, European countries differ in gender equality policies contributing to upward mobility, such as subsidized childcare, paid parental leave, child allowances, and a minimal gender pay gap (Esping-Andersen, 2015). Since inequality starts early, children might benefit more from health and nutrition effects than from education (Behrman, 2021).

The logic diverges in developing countries. However, education is not the primary driver of social mobility in these nations. Education qualifications in developing countries barely signal the skill level of prospective employees to potential employers. Moreover, the lower income per capita in developing countries seems to perpetuate the cycle of intergenerational persistence since parents cannot invest in their children (Becker & Tomes, 1979). Even when parents have disposable income, the high level of labour market information friction in developing countries discourages them from investing in their children since parents usually underestimate the returns on children's investment. This friction also impedes employee-employer matching, reducing disadvantaged children's opportunities to access high-quality jobs (Piraino, 2021, p.46-48). Nevertheless, the driver of social mobility in developing countries could simply be investment in the industrial sector, transitioning workers from agriculture to unskilled/semi-skilled positions in factories, thus increasing wages (Wongbuddha, 1988). These challenges compound the difficulties of addressing intergenerational persistence.

Alongside the burgeoning interest in social mobility, there's been an exponential global surge in interest regarding gender equality, particularly among the younger demographic. On the day of my study submission, Claudia Goldin received the Nobel Prize in economics for her significant contributions to understanding women's labour market outcomes. This underscores the increasing prominence of gender equality issues within academic circles. While there are dissenters to the moral principles of gender equality, it's crucial to assess the impacts of gender equality policies to construct irrefutable arguments that these policies not only address moral concerns but also foster economic prosperity. By examining the impacts of gender equality policies, particularly on economic aspects like social mobility, we could potentially establish new consensus among policymakers, achieving dual objectives.

Esping-Andersen (2015) suggests that gender equality is a decisive factor in determining social mobility. The prevalence of gender equality policies in Nordic countries significantly bolsters women's economic status, especially for single mothers. Other low-inequality European nations struggle to achieve as high an upward mobility rate as the Nordics

due to the influence of gender equality, despite having perceived high-quality public education systems. Essentially, disadvantaged children often stem from economically challenged mothers, while advantaged offspring typically arise from more privileged maternal backgrounds.

The Nordic Model encompasses four dimensions of gender equality: subsidized childcare, paid parental leave, flexible work arrangements, and equal opportunities at work (NIKK, 2018). These facets collectively contribute to a high female labour market participation rate, a low gender pay gap, minimal adherence to gender-assigned norms, and a significant representation of women in parliamentary positions. It's intriguing to ascertain whether these outcomes genuinely stem from these policies. If so, it could fortify arguments for implementing the Nordic Model beyond the Nordic territories.

This study will integrate successful Nordic gender equality policies from existing literature and analyze their relationship with intergenerational mobility. After reviewing relevant literature and gathering data, the suitable and viable policies for the analysis section will include childcare, parental leave, female labour market participation rates, and child poverty/allowances. I will delve into the rationale behind choosing these data variables in section 3.2.

The aim of this thesis is to examine whether gender equality policies are connected to upward intergenerational mobility, aiming to address gaps in existing studies. These studies primarily investigate the relationship of certain gender equality policies with factors related to social mobility, such as early childhood development and effects on parents' labour market, rather than directly exploring social mobility (Akgunduz & Plantenga, 2013; Esping-Andersen, 2012; Hallberg & Klevmarken, 2003; Han et al., 2009; Houmark et al., 2022; Le & Nguyen, 2022; OECD, 2010; Ruhm, 1998; Thevenon & Solaz, 2013). Examining the direct correlation between gender equality and social mobility contributes to the forefront of knowledge by offering additional measures to enhance intergenerational mobility rates while promoting gender equality simultaneously.

In the literature review section, I will delve into theories and previous research exploring the causes of intergenerational persistence and its mechanisms. Additionally, I will emphasize the theory that early childhood development significantly influences future outcomes for children. Finally, I will review empirical evidence on the impacts of gender equality policies on parents and children. The hypotheses, forming the basis for the association

between gender equality and intergenerational mobility, will be formulated in the theoretical discussion section 2.2. Furthermore, I will use the reviewed literature to analyze suitable proxies for each gender equality policy in section 3.2, exploring the motivations behind choosing data variables.

My primary methodology for analyzing the relationship between gender equality policies and intergenerational mobility involves multiple regression analysis. In this analysis, I choose intergenerational income elasticity (IGE) as a proxy for social mobility. IGE measures the income transmitted from parents to children, calculated through regression of parental and children's incomes. A lower IGE signifies higher mobility. For sensitivity analysis, I will use intergenerational persistence in education (IPE) as an alternative measure. To enhance reader comprehension and author convenience, I will combine the results section with the discussion section into a single 'results & discussion' section.

1.1 Research Aim & Research Questions

Research Aims

- Fill the gap of the literature by providing cross-country analysis of the relationship between gender equality policies and intergenerational mobility.
- Find new policy implications to increase social mobility by gender equality policies.

Research Questions

- *“Can gender equality policies explain the differences of intergenerational mobility across countries?”*

Sub-Questions

- *“Can childcare policies explain the differences of intergenerational mobility across countries?”*
- *“Can parental leave policies explain the differences of intergenerational mobility across countries?”*
- *“Can child poverty policies explain the differences of intergenerational mobility across countries?”*
- *“Can flexible work policies explain the differences of intergenerational mobility across countries?”*

2 Literature Review

2.1 Theoretical Approach

2.1.1 Intergenerational Social Mobility & Transmission

The socioeconomic status of parents, encompassing income, wealth, health, education, beliefs, and more, can be transmitted to subsequent generations through various channels. The transmission of lower socioeconomic statuses to children is the primary reason why new generations globally face challenges in ascending the social ladder for a better life compared to their parents. Parental income stands out as the strongest predictor of children's future income (D'Addio, 2007, p.25). Disadvantaged parents often pass on unfavorable traits to their children. Furthermore, spending early life in disadvantaged backgrounds has significant and enduring effects on later life, perpetuating the cycle of immobility.

The standard theory of intergenerational mobility, developed in 1979 by Becker & Tomes (1979), employs a utility framework within a family structure consisting of one parent and one child across two life periods. Within this model, parents must make trade-offs between their resources (disposable income, time) to maximize their utility, balancing personal consumption/leisure against investing in their children's human capital. These investments encompass education, healthcare, childcare, toys, and more, all of which benefit the children. Notably, a child's human capital during childhood significantly influences their income in adulthood, interacting with heritable endowments from parents in the model's second period. The theory emphasizes that social transmission occurs through two primary channels: direct investment in the human capital of parents (where higher-income parents have advantages) and the second channel, which involves income-generated heritable traits.

Subsequently, Solon (2002) modified Becker & Tomes's model, revealing that cross-country differences in intergenerational income elasticity in the steady state stem from both variations in the strength of the mechanical heritability of income-generated traits passed from parents to children and the returns on earnings from human capital investment. Additionally, differences among countries can be attributed to the progressivity of public investment in children's human capital, facilitated through the provision of education and healthcare.

Another early theory of social mobility comes from Leibowitz (1974). Home investments increase stocks of human capital during childhood, especially pronounced in

children from higher socioeconomic backgrounds. Home investments demonstrate a significant correlation with human capital and IQ. Notably, mother's education significantly correlates with children's IQ, whereas father's education does not. This highlights the influence of home investments on children's human capital compared to the transmission of genetic factors from parents. Therefore, the two primary theories of social mobility emphasize the importance of early childhood parental investment in children's human capital.

2.1.2 Early-life theory

Early-life theory underscores that experiences and exposures during early childhood significantly influence long-term life outcomes. During this phase, human cells and organs undergo rapid development, impacting cognitive abilities in childhood and individual skills in the long run. These processes cannot be fully compensated for by later experiences (Clarke et al., 2022), highlighting the critical importance of the fetal and early childhood stages for a child's development. Favorable early-life conditions often result in later-life advantages for children (Lundberg, 1991; Currie, 2009).

The socioeconomic status of parents affects child health in the early years. Inequality begins during fetal development in the mother's womb, making it challenging to close the inequality gap gradually as the child grows. Many intervention programs aimed at reducing inequality focus on the formal school years after a child reaches 6-7 years of age. Children experiencing poor health during their school years exhibit lower capacity to acquire skills compared to being absent from school (Clarke et al., 2022). Poor health directly impacts children's capacities, education, and later-life outcomes, influencing later-life outcomes through various channels (Currie, 2009, p.116). Evidence links poor early-life living conditions to adverse later-life outcomes in areas such as education (Blanden, 2013). Children from disadvantaged families face significant developmental gaps of up to 12 months before schooling, which cannot be bridged during their school years (Clarke et al., 2022). In terms of poverty, statistics reveal that poor children in the US have an approximately 50% risk of remaining poor in adulthood, and this risk stands at 30% in Canada (Corak, 2006, p.1), contributing to poorer health and lower status in adulthood (Case et al., 2005).

Empirical evidence demonstrates a negative association between early childhood disadvantage and parental employment. Across 24 OECD countries, men in the bottom quintile are 3% less likely to have been employed in the income reference year compared to men in the

third quintile if they experienced early childhood disadvantages. For women, this effect is even more pronounced, with a likelihood of 6% not being employed. In countries like Ireland and Spain, this effect can reach as high as 21% and 16%, respectively (Clarke et al., 2022, p.28). It's not just about employment but also income; men and women in the bottom quintile earn 20% and 21% less, respectively, than similar individuals in the third quintile. Denmark and Norway exhibit the smallest gaps for men, while Estonia and Finland show the smallest gaps for women (Clarke et al., 2022, p.30).

Moreover, motherhood significantly impacts employment for women with low levels of education, among whom gender equality attitudes tend to be low (Clarke et al., 2022, p.41). Since significant disparities in children's cognitive skills emerge during early childhood, the effects of health and nutrition may outweigh those of education because their impact manifests before school age and continues to widen in later life (Behrman, 2021).

Favourable early-life conditions yield lasting advantages to later stages. Birth weight and height demonstrate robust associations with outcomes like education, earnings, and health status (Heckman & Masterov, 2007). Children from higher socioeconomic backgrounds typically enjoy greater life expectancy, better health, higher educational achievements, increased earnings, and enhanced social mobility. Conversely, children from less advantaged backgrounds often contend with chronic conditions, asthma, mental health issues, dental problems, and so on (Case et al., 2005). They also face higher probabilities of working as semi-skilled or unskilled labourers and have diminished chances of securing upper-class occupations (Lundberg, 1991). These disadvantages in early childhood stem from poor cognitive development and limited behavioral stimuli (Heckman & Masterov, 2007), coupled with differences in life inputs such as food quality, housing, and healthcare (Case et al., 2005). In European OECD countries, children from the lowest socioeconomic families typically earn 20% less in adulthood than those from more favorable childhood conditions (Clarke et al., 2022).

The impact of shocks is even more pronounced in early life. Children born during the Dutch potato famine experienced a loss of 2.5-4 years after reaching age 50, particularly prevalent among lower-class children (Lindeboom et al., 2010). Similarly, those born during the 1918 influenza pandemic faced long-term negative impacts on cognitive and socio-economic outcomes, leading to lower educational attainment, reduced earnings, and higher poverty rates (Almond, 2006). Such evidence highlights that the enduring effects in early life are notably stronger in developing areas, where shocks occur frequently, inequality in early life

is higher, disease rates and malnutrition are more prevalent, and government intervention measures often lack sufficient capacity (Currie & Vogl, 2013).

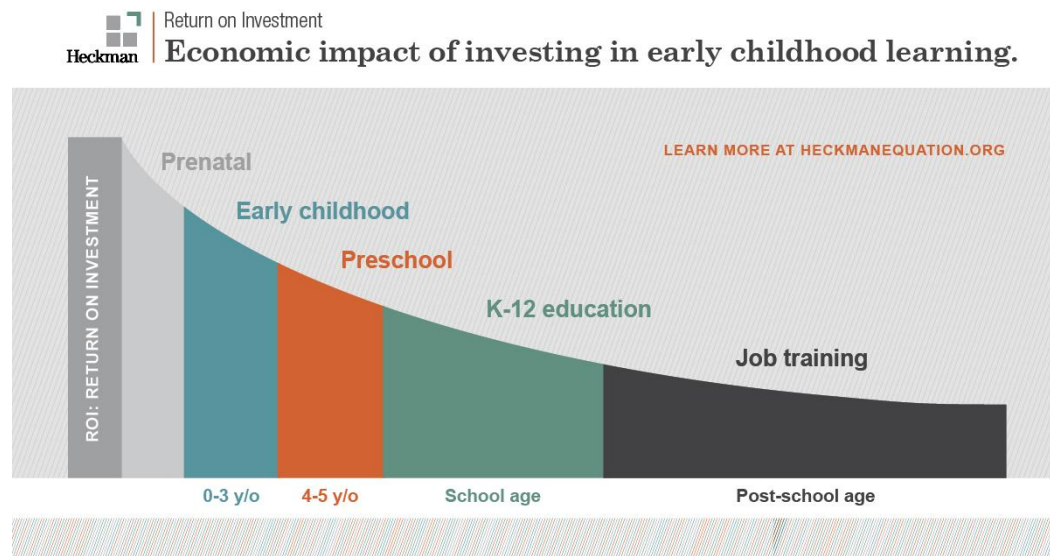
Conversely, interventions targeting the early childhood period provide enduring benefits to children. Figure 2, known as The Heckman Curve, illustrates that investing in children yields the highest returns during the early childhood years, specifically from 0 to 5 years. The return rates on investment gradually decrease as children age.

The effects of attending childcare extend well into adulthood. The provision of access to high-quality Early Childhood Education and Care (ECEC) enhances the quality of children's learning environments at home (Clarke et al., 2022). Evidence from Denmark and the US concludes that children who attended childcare centers exhibited better cognitive scores, and these effects lasted into adulthood (Esping-Andersen et al., 2012). Similarly, providing food stamps to children in the US during 1961-1975 had long-term consequences on outcomes in adulthood, such as the Human Capital Index, Neighborhood Quality Index, and likelihood of survival (Bailey, 2020, p.38). Similar results were found by Aizer et al. (2016), investigating cash transfer programs and food stamp provisions to poor families in the US during the 1910-1930s. Their research showed that these children lived longer lives, were less likely to be underweight, attained higher education, had higher earnings in adulthood, and experienced better-quality neighborhoods.

Furthermore, in the US, children whose families moved to better neighborhoods showed childhood exposure effects by being in a better environment, improving their long-term outcomes progressively, reaching parity with children already residing in the neighborhood at a rate of approximately 4% per year. These exposure effects persisted until the children reached their early twenties (Chetty & Hendren, 2018, p.1110).

The early childhood period holds tremendous significance not only for its immediate impact but also for its profound influence on children's futures. It shapes various long-term outcomes such as cognitive abilities, health, education, earnings, and better neighborhood quality. Early-life living conditions could potentially hold more importance than formal education, given that inequality emerges as early as the fetal development stage and is challenging to narrow once a child grows up. The early life theory offers further insights into the persistence of intergenerational disparities.

Figure 1 The Heckman Curve



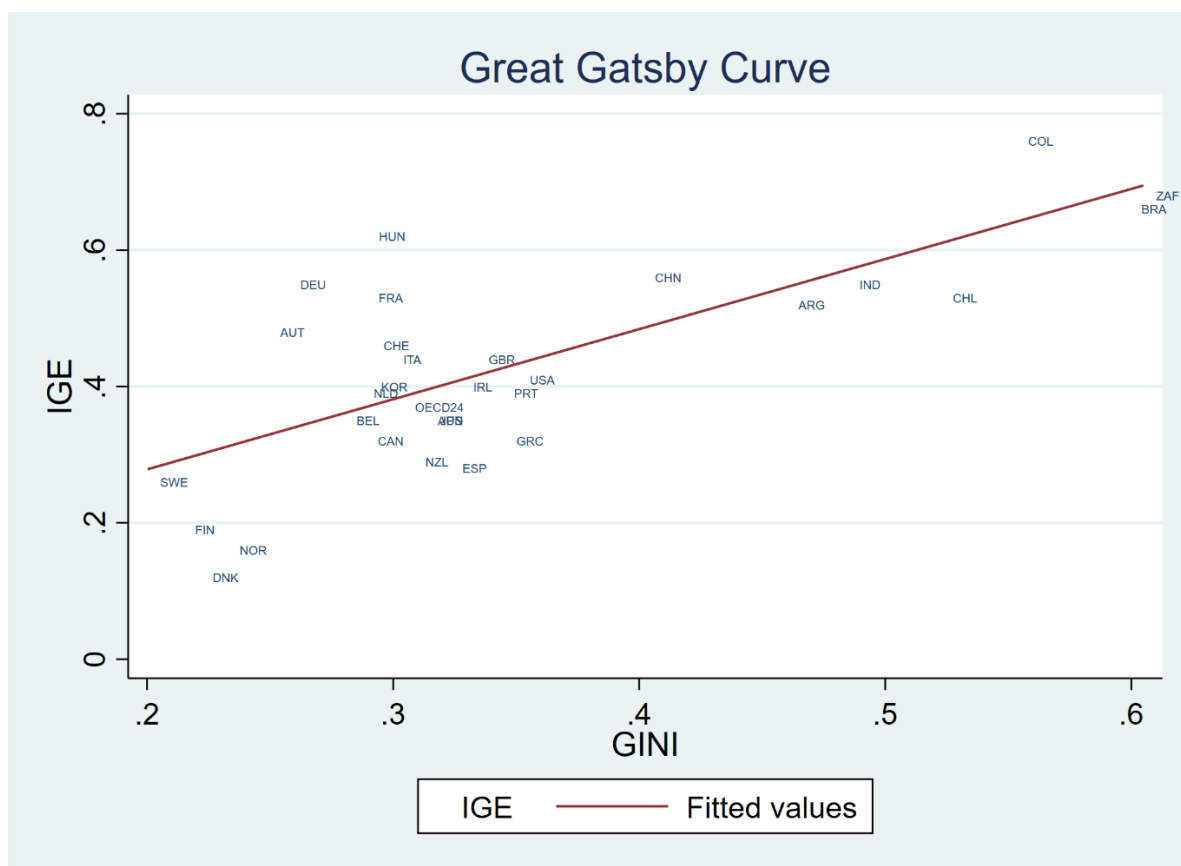
Source: Heckman Equation, online access: <https://heckmanequation.org/resource/the-heckman-curve/>

2.2 Previous Research

2.2.1 Intergenerational Mobility & Transmission

Individuals from disadvantaged backgrounds typically face lower prospects of ascending the social ladder, as evidenced by numerous studies (Clarke et al., 2022; Corak, 2013). The relationship between higher inequality and reduced social mobility is depicted by the 'Great Gatsby curve' (Blanden, 2013; Corak, 2013). This curve measures intergenerational mobility through intergenerational income elasticity, calculated by correlating fathers' income with their sons' income at a prime age, usually between 35-40 years old, by which the occupational path is already established. A higher correlation signifies greater income transmission from parents to children, indicating lower intergenerational mobility. The figure illustrates that countries with high inequality tend to exhibit lower intergenerational mobility.

Figure 2 The Great Gatsby Curve



Source: Data obtained from OECD (2018), reconstructed the figure by the author

Nevertheless, the rate of intergenerational mobility is not uniform across all social classes or income quintiles. Mobility rates vary significantly among different income groups, being higher in the middle-income bracket while lower in the bottom and top quintiles. Notably, the transmission of status is most pronounced in the top quintile, where upward mobility is limited, and individuals are more likely to maintain their status quo. For instance, while 25% of Danish and Swedish sons from the lowest income group remain in the same quintile as their fathers, in the US, this figure stands at 42% ending up in the bottom quintile. Conversely, in the top quintiles, around 42% of sons in both Denmark and the US remain in the top bracket. Despite significantly different bottom rates, the mobility rates in the top quintile are roughly similar, showcasing distinct mechanisms governing social mobility and transmission among different income groups (Esping-Andersen, 2015). In the upper echelons, wealth transmission primarily occurs through investments rather than employment. Notably, in Sweden's top percentile, intergenerational transmission remains robust irrespective of the child's IQ, non-cognitive skills, and education (Roine & Waldenström, 2012).

As inequality varies across regions, a similar pattern emerges in intergenerational mobility rates, even within the same country where social and education policies remain largely consistent. In areas characterized by the highest upward social mobility, individuals from disadvantaged backgrounds earn roughly double the income of those in the lowest mobility areas. Conversely, in areas marked by the lowest social mobility, the earning gaps between advantaged and disadvantaged sons are about 2.5 times wider, surpassing the former figure. Moreover, in regions with high social mobility, educational attainment predominantly contributes to the income differences between advantaged and disadvantaged families, accounting for only 33% attributed to non-educational factors (Carneiro et al., 2020). In the US, children whose families relocate to more favorable neighborhoods witness positive impacts on outcomes due to childhood exposure effects. Thus, in regions characterized by lower social mobility, it becomes increasingly challenging for children from disadvantaged backgrounds to improve their social standing (Chetty & Hendren, 2018, p.1110).

An extensive study by Bhalotra & Rawlings (2013) examined 2.24 million children and 600,000 mothers across 34 countries, revealing the significant transmission of a mother's health to her children, with lasting effects on their health and socioeconomic outcomes. The mother's height is correlated with children having low birth weight, higher mortality rates, and stunting. A mother's good health can mitigate the impact of external environmental shocks. Hertz et al. (2008) studied the intergenerational correlations of education between parents' and children's

schooling, finding an average global correlation of 0.4. The highest correlation is observed in Latin America, while the lowest is in Nordic countries. Consequently, the intergenerational transmission of health and education stands as additional channels of intergenerational persistence.

Parents influence their children's life chances through three primary avenues. Firstly, parents can provide advantages by fostering social connections that facilitate access to employment opportunities or exclusive educational institutions. Secondly, they shape their children's prospects by nurturing a family culture and making various financial and non-financial investments that mold skills, attitudes, beliefs, and motivations. Lastly, parents impact their children's life chances through the genetic transmission of abilities, preferences, and attitudes, such as a strong work ethic (Roemer, 2004). Moreover, Heckman & Landerso (2021, p.2) argue that parental interactions with children stimulate their learning, personality, and behaviors.

There are three main ways in which families influence their children's outcomes: (1) Parental engagement, wherein parental interactions with children affect early childhood development by stimulating personality and behaviors. (2) Purposeful sorting that creates neighborhood effects: the neighborhood's environment determines the quality of peers in and out of school, as well as the quality of public institutions like schools and preschools. A good neighborhood attracts affluent families, creating a rich network. (3) Guidance in important life decisions: wealthier and well-educated families possess larger information networks to aid children in deciding their paths. Nevertheless, all these factors converge to the same conclusion that children from more privileged backgrounds tend to achieve higher status.

Particularly for this study, gender attitudes stand as a pivotal transmission mechanism for intergenerational mobility, transcending economic factors. Luke's (2021) research on social mobility typically examines intergenerational mobility between fathers and sons, often due to women traditionally being absent from formal work, making it challenging to obtain economic indicators from women. However, these studies only capture half the picture since the socioeconomic statuses of both parents influence children through different channels. This socioeconomic status directly links to the mobility patterns of children.

A new wave of research indicates that parents can transmit gender attitudes and norms to their children, significantly impacting them by shaping economic decision-making. Mothers with egalitarian views and less-restrictive gender norms promote the labour force participation

of their daughters and daughters-in-law (Luke, 2021, p.374). Furthermore, despite educational advancements, female labour force participation hasn't significantly increased, particularly in developing countries due to social and cultural factors, as well as occupation sex segregation, restricting women's economic activity (Luke, 2021, p.387).

Empirical evidence from Nordic countries, the USA, and the UK has revealed that daughters often experience higher mobility than sons (Jantti, 2006). However, results contrast in developing countries where sons generally exhibit higher mobility than daughters, as seen in China, Chile, and India (Heath & Zhao, 2021).

In summary, the main theory proposed by Becker & Tomes (1979) emphasizes intergenerational persistence through parental investments. Advantaged parents have greater opportunities to invest in their children's human capital, including not just financial resources but also health, education, and gender attitudes, all contributing to their future earnings as adults. Additionally, advantaged parents transmit income-generated traits like social connections and family culture, shaping their children's skills, beliefs, and motivations (Roemer, 2004). Ultimately, this highlights the interconnectedness of intergenerational mobility and inequality, with higher inequality often leading to intergenerational immobility.

2.2.2 Gender Equality Policies

Numerous gender equality policies exist, yet a comprehensive review of all these policies exceeds the scope of this study. Instead, I have selected primary gender equality policies implemented in the Nordic countries and some OECD nations. The Nordic countries consistently rank high in gender equality indices such as the UNDP Gender Equality Index (2021), EIGE Gender Equality Index (2022), and the World Economic Forum (2023).

Based on the Nordic Gender Effects study, these countries have implemented four core gender equality policies, proven successful in both economic and moral dimensions. These policies encompass subsidized childcare, paid parental leave, child allowances (Esping-Andersen, 2015, p.126), and flexible work arrangements (NIKK, 2018). This subsection offers a description of the theory and empirical evidence behind each policy, crucial for the regression analysis. However, I've chosen not to delve into the details of flexible work arrangements for parents, as these tend to be outcomes resulting from other policies rather than primary causal factors.

2.2.2.1 Childcare

Childcare offers significant benefits to parents, primarily by providing a place for the care of young children. One direct advantage of childcare centers is their capacity to alleviate the burden of unpaid childcare, predominantly shouldered by mothers, enabling them to enter the formal labour market. This transition from parental leave to the workforce enhances female labour market participation rates, directly impacting the economic well-being of families (Esping-Andersen, 2015). Additionally, childcare centers offer equal learning opportunities for children, fostering early human capital development, a crucial factor influencing intergenerational mobility.

Publicly subsidized childcare ensures parents can fully leverage these benefits. For instance, in Sweden, parents allocate 4.4% of their net income to childcare, while in the US and the UK, this percentage rises to 26% and 34%, respectively. The high cost of childcare poses a significant trade-off, often prompting one parent, typically the mother, to stay at home and care for the children instead of seeking formal employment (NIKK, 2018, p.17).

Empirical evidence indicates that childcare subsidies notably increase female labour force participation. These subsidies reduce the effective tax burden on mothers and decrease the relative cost of formal childcare, thereby increasing the relative value of market work. They prove particularly beneficial in scenarios where tax discrepancies between secondary earners and single individuals distort female labour supply or where wage structure compression limits affordable childcare access. When linked to female labour force participation, childcare subsidies can be more efficient and less costly (Jaumotte, 2003, p.60-64).

The impact of childcare on early childhood human capital development is particularly profound. Esping-Andersen (2012) conducted a comparison between childcare performance in Denmark and the US, revealing that Danish children enrolled in childcare at age 3 demonstrated better cognitive scores at age 11, especially pronounced among low-income children. In contrast, children in the US who attended daycare showed improved cognitive scores at school entry but experienced a diminishing effect by age 11, possibly due to transitioning to lower-quality public schools from private daycare. This underscores the essential role of center-based formal childcare, alongside high-quality public education. Moreover, children engaged in childcare display higher cognitive development compared to their non-participating counterparts, a factor that profoundly influences their long-term skills development. This explains why other European nations, despite having access to free public education, do not

achieve upward social mobility rates as high as those seen in Nordic countries (Esping-Andersen, 2015).

Nordic countries, known for their high rates of women participating in the labour force, have implemented subsidized childcare universally, aiming to bolster labour supply in the face of worker shortages. An exclusive aspect of Nordic childcare is its availability to all children, irrespective of family status. These nations allocate a higher percentage of their GDP to childcare services compared to the global average. In 2017, the Nordic region dedicated 3.1% of its GDP to family benefits and childcare, exceeding the European Union average of 2.4% (NIKK, p.19). Notably, when children from low-income and high-income families attend the same childcare center within a municipality, they have the potential to absorb income-generated traits from their peers during childhood.

Moreover, maternal employment directly correlates with reducing child poverty rates. When mothers enter the labour market, the risk of child poverty diminishes by a factor of 3-4. Child allowances hold greater value for poor families compared to affluent ones, as they contribute a higher proportion to total family income, thus equalizing opportunities for children. Since poverty significantly impacts schooling, even in countries offering equitable public education, disadvantaged children face challenges in maximizing their learning outcomes (Esping-Andersen, 2015).

2.2.2.2 Parental Leave

Parental leave allows mothers and fathers to take time off work to care for their young children while still receiving income. Traditionally, it was the mother who stayed home to manage household responsibilities while the father worked outside. Without this leave, parents face challenges in balancing external work and caregiving responsibilities, often resulting in reduced working hours (Arkundez, 2013, p.856).

Payment rates during parental leave vary among countries, ranging from as high as 70-100% in Nordic countries. Higher payment rates encourage more parents to take leave, ensuring families have adequate income while caring for their children. In contrast, fewer fathers take leave in countries where payment rates are less than half, such as Australia, France, and South Korea (NIKK, p.29).

Moreover, offering universal parental leave to all genders helps reduce workplace discrimination. This policy reduces the likelihood of employers favoring men over women in

hiring practices or dismissing women when they become pregnant, as everyone has equal opportunities to take parental leave. Additionally, in Nordic countries, men who take long-term parental leave display increased involvement in their children's lives, fostering better communication and understanding of their children's needs (NIKK, 2018).

The substantial impact of parental leave lies in its ability to facilitate women's reentry into the labour market after childbirth. Multiple studies investigating parental leave's effects on maternity employment have found positive impacts, contributing to reducing gender pay gaps (Thévenon & Solaz, 2013, p.40; Ruhms, 1998, p.311; Jaumotte, 2003, p.65). Evidence from 16 European countries between 1970 and 2010 reveals that a 30-week paid leave period increases women's working hours by approximately 6%. Expanding paid leave from 13 to 30 weeks results in a 3% increase in weekly working hours (Arkundez, 2013, p.856).

Additionally, parental leave significantly benefits child outcomes. Every additional week of leave translates to a 0.007-year increase in educational attainment and a 0.056 cm increase in adult height. Paid maternity leave extends the time mothers spend caring for their children, potentially promoting increased breastfeeding, immunization, and fewer behavioral problems. Furthermore, it provides financial resources for mothers while they are not employed (Le & Nguyen, 2022, p.6-7).

A study on Denmark's extension of paid parental leave from 22 to 46 weeks revealed that parents increased their time spent with their children instead of using out-of-home childcare. An extra month of leave taken by mothers resulted in a 4.7% improvement in children's well-being, 2.8% better emotional stability, and 2.7% fewer school absence days. The extension's greatest beneficiaries were children from disadvantaged backgrounds who tended to perform poorly on these measures (Houmark et al., 2022). This aligns with Garcia & Heckman (2023), emphasizing how parenting influences children's home life through the quantity of parenting time and the quality of parental interactions, fostering behavioral development. Therefore, parental leave reduces socioeconomic inequality in early childhood development. Additionally, parenting time spent with children during early childhood is highly productive.

In summary, paid parental leave supports female participation by enabling women to balance work and family life, contributing to job security and reinforcing their continued attachment to the labour market (Jaumotte, 2003, p.65).

2.2.2.3 Child Poverty & Child Allowances

Children growing up in poverty often experience adverse outcomes in adulthood, spanning health (Case et al., 2005; Bhalotra & Rawlings, 2013), education (Hertz et al., 2008), income (Clarke et al., 2022), and an increased likelihood of being in poverty themselves (Wagmiller, 2009). This correlation is predominantly tied to parental income, which stands as the most precise predictor of future earnings for children (D'Addio, 2007, p.25).

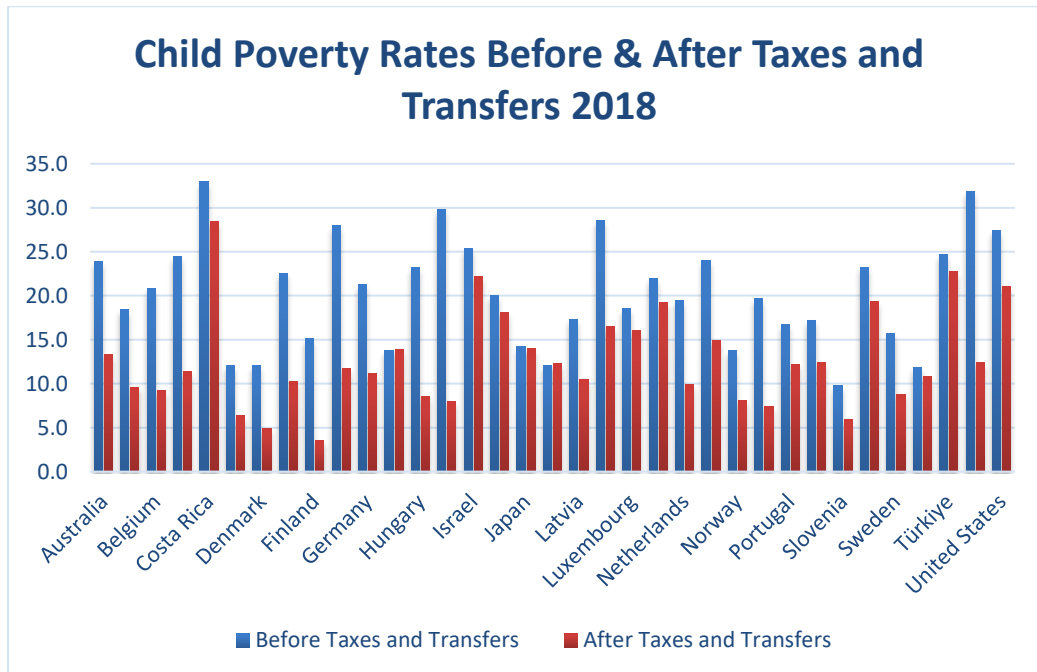
Three primary models can elucidate how poverty impacts intergenerational transmission across various aspects (D'Addio, 2007, p.21): (1) The Investment Model posits that additional income enables parents to purchase beneficial 'inputs' for their children's development, such as conducive housing, resources supporting learning environments like books or computers, and enriching experiences like museum visits. High-income parents have an advantage in procuring these inputs, whereas poor parents face difficulties, resulting in their children receiving fewer cognitively-stimulating materials (Wagmiller et al., 2009). Policies may aim to address this disparity through financial transfers and in-kind services. (2) The Stress Model suggests that high-income parents, experiencing lower stress levels and fewer working hours, can dedicate quality time to parenting and adopt more effective parenting styles, positively influencing children's behavioral development. (3) The Role Model Theory emphasizes that parental interactions and behaviors set examples for children, shaping their values, aspirations, and ultimately, their earning capabilities in adulthood.

Public transfer programs play a pivotal role in mitigating the impacts of poverty. Figure 3 illustrates the child poverty rates in OECD countries aged 0-17. The disparity in poverty rates before and after taxes and transfers is substantial. For instance, Ireland's child poverty rate decreases from a staggering 31% before taxes and transfers to a much lower 8% after accounting for them. This indicates the significant impact, reducing poverty by 21.9% through taxes and transfers. Moreover, studies reveal that cash transfer programs and food stamps for impoverished families effectively alleviate the effects of poverty and enhance children's outcomes (Aizer, 2016).

The types of transfer programs also dramatically contribute to the efficiency of the programs in poverty reduction. Single mothers are disproportionately more likely to be poor. Universalism in social policy is more effective in reducing single-mother poverty by ensuring that economic resources are delivered to all single mothers, regardless of their specific circumstances or needs. While, targeted social policy measures may not effectively reach all single mothers in poverty, by creating administrative complexities and eligibility criteria that

may exclude some single mothers who are in need of support, leading to a limited impact on reducing single-mother poverty rates. The more universal of the program, the lower poverty rate of single-mothers (Brady & Burroway, 2012).

Figure 3 Child Poverty Rates before & After Taxes and Transfers



Source: OECD Secretariat calculations based on the OECD Income Distribution Database (IDD), constructed figure by the author

2.3 Theoretical discussion

From the literature review, this subsection will discuss and summarize how gender equality policies contribute to intergenerational mobility. The main hypotheses will be formulated throughout this subsection.

Parents can pass on their socioeconomic status to children through intergenerational transmission. Disadvantaged children are usually born from disadvantaged parents, and in their generation, they lack resources to invest in their children's early childhood human capital formation, which tremendously contributes to earnings in adulthood. Additionally, rich parents can also transmit other income-generated traits to children (Becker & Tomes, 1979; Solon, 2002). Gender attitudes can also be passed down and encourage mothers to work outside the home (Luke, 2021).

Moreover, disadvantaged children often live in unfavorable living conditions, which hugely affect children's outcomes in the future. Since early childhood living conditions are the most important period for cognitive and behavioral development and cannot be compensated in later-life remedial programs. Investment in early childhood from 0-5 years generates the highest return (Heckman & Masterov, 2007).

Gender equality policies can have pivotal roles in increasing intergenerational mobility by addressing the challenges faced by families, especially those from disadvantaged backgrounds.

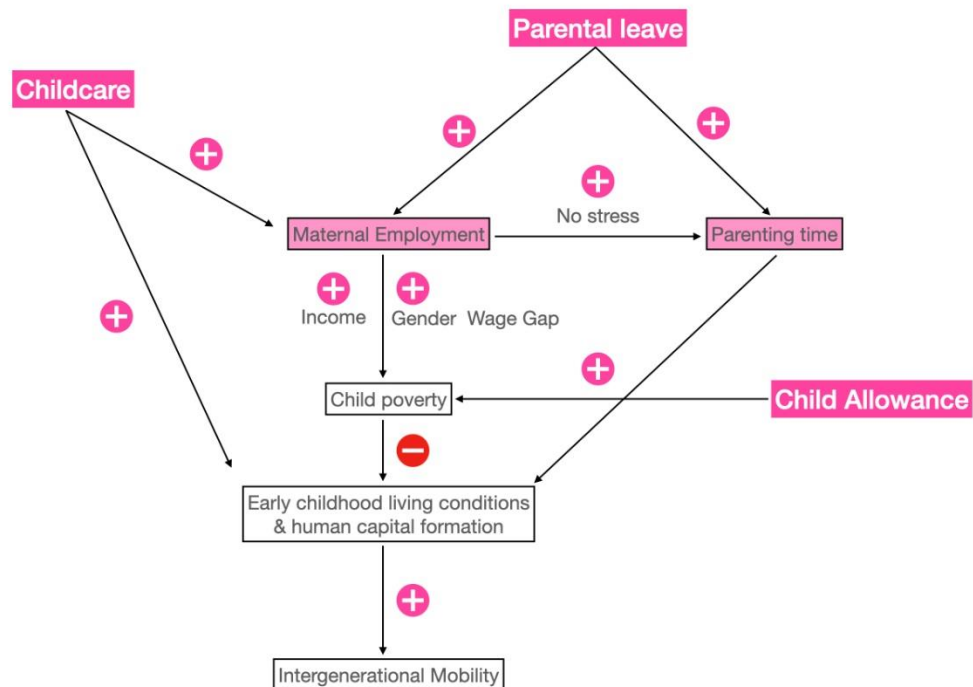
First, attending childcare provides huge benefits. The direct effect of childcare is it equalizes opportunities for children in cognitive development and behavioral stimulus (Esping-Andersen, 2012). While the indirect effect is that childcare enables mothers to have a higher rate of formal employment (Jaumotte, 2003, p.60-64). The economic status of the mother directly transmits to children's well-being, alleviating unfavorable childhood living conditions (Esping-Andersen, 2015).

Second, parental leave also contributes to maternity employment and reduces gender pay gaps (Thévenon & Solaz, 2013, p.40; Ruhms, 1998, p.311; Jaumotte, 2003, p.65). Without the leave, parents must face a trade-off between work and care, resulting in lower working hours (Arkundez, 2013, p.856). It also increases the amount of parenting time with children, leading to better children's outcomes (Le & Nguyen, 2022, p.6-7; Houmark et al., 2022; Heckman & Garcia, 2023). Maternity employment also strengthens the quality of parenting time by reducing parental stress (D'Addio, 2007, p. 21).

Finally, child allowances directly alleviate unfavorable early childhood living conditions caused by poverty. Public transfer programs, especially universal transfers, and taxes can significantly reduce the poverty rate of children (Aizer, 2016; OECD, 2018). The universality of the programs increases the efficiency of reducing poverty (Brady & Burroway, 2012).

I have summarized the theoretical framework in figure 4 below.

Figure 4 Theoretical Framework of Gender Equality Policies and Intergenerational Mobility



Source: The author

3 Methodology & Data

This section will introduce the main methodology and sensitivity analysis used in this study, discussing the motivations behind using proxy variables to represent each gender equality policy. Finally, the limitations of this study will be presented.

3.1 Methodology

The aim of the study is to investigate the relationship of gender equality policies with intergenerational mobility. I employ multiple regression statistical method to answer the research question. Since, social mobility is a complex concept that various independent variables can influence the outcomes of social mobility. Multiple regression can include the gender equality variables in the model to examine how much those variables can explain the variations of social mobility rates among different countries. Multiple regression can also add the potential explanatory variables in the model to control for its effects, which is called *control variables*. It can also help determining the relative importance among different independent variables, whether which factors have a stronger or weaker influence on the social mobility outcomes. However, it is important to note that regression identifies whether changes in one variable are associated with changes in another variable. It shows the correlation of variables, but it does not establish a causal relationship. Moreover, outlier data can dramatically affect the results.

The multiple regression model is in the following equation:

$$y = \beta_0 + \beta_1 X_1 + \dots + \beta_n X_n + \epsilon$$

From the equation, y = dependent variable, X_n = independent variable, $\beta_1 X_1$ = coefficient of X_1 , and ϵ = error term.

For sensitivity analysis, I will intergenerational persistence in education (IPE), as an alternative proxy for measuring intergenerational mobility.

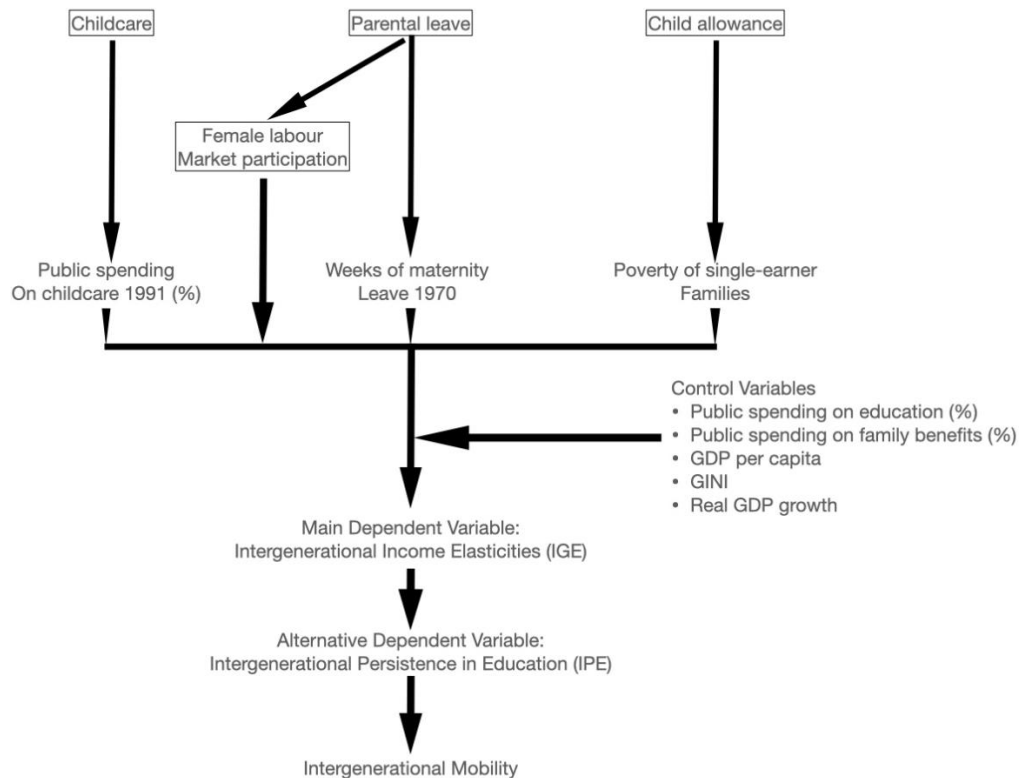
3.2 Motivations of Data Variables

As stated in the introduction, education is often regarded as the primary driver of social mobility. The literature review indicates that alongside education, gender equality stands out as a significant factor influencing social mobility. For this study, I chose OECD countries. The main reason is that OECD countries have relatively developed public education systems, but the development of gender equality policies varies among these countries. The source of data is the OECD Social Expenditure Database (SOCX) and OECD STAT. These data sources are suitable for multiple regression because they offer internationally comparable statistics, collected and computed by a uniform methodology on various key areas of social indicators, gender indicators, and family indicators dating back to 1980 for some indicators. I supplemented this data with additional information from the IMF and the World Bank.

Since several data variables from different years and countries are missing, I have to use different years of data variables in one multiple regression. I assume that the data changes slowly over time, and social-related data generally does not decrease over time, as societies tend to progress. For instance, when a country grants parents the rights of parental leave, it is rare for the duration of the leave to decrease in the future; rather, it typically increases.

I have summarized the data variables, and their proxies that will be used in multiple regression analyses in figure 5. The following subsections will discuss the motivations behind each proxy.

Figure 5 Summary of proxies for gender equality policies



Source: Author

3.2.1 Intergenerational Mobility

Intergenerational mobility stands as a pivotal variable in regression analyses. The choice of proxy significantly influences the outcomes. Intergenerational mobility, typically assessed through income, education, and occupation, demands diverse, complex measurement techniques.

In this study, income is selected as the proxy for intergenerational mobility. Compared to other mobility indicators such as occupational and educational, income offers a more direct and comparable measure across countries. Education's role as a proxy presents limited variations compared to income and doesn't definitively correlate with social mobility, as higher educational attainment doesn't necessarily ensure higher income, especially in terms of positioning within income distributions. Occupational mobility, albeit crucial, faces complexity in cross-country comparisons due to diverse methodologies and institutional settings (Breen, 2004, p.17-35).

The widely adopted method to gauge intergenerational income mobility is through Intergenerational Income Elasticities (IGE) (OECD, 2018, p.193). IGE quantifies the intergenerational link by assessing the income transmission from parents to children via the beta-coefficient. This coefficient, calculated using Ordinary Least Squares (OLS) between parental and children's income, typically father-son pairs, illustrates the percentage of income transmitted. For instance, a beta-coefficient of 0.4 signifies that 40% of parental income is passed to offspring, indicating a stronger transmission and lower intergenerational mobility (Corak, 2013; Solon, 2002). Although this study aims to measure gender equality, limitations in data compel the use of father-son pairs as proxies.

The IGE data, drawn from OECD (2018, p.195) computations based on surveys spanning 1984-2013, covers 27 of the total 38 OECD countries. Despite the absence of some variables in certain countries, this subset suffices for multiple regression. Furthermore, using uniform data sources ensures consistent calculation methods for the IGE variable.

3.2.2 Childcare

Utilizing children's attendance rates at childcare centers might serve as the most direct proxy for childcare in regression analysis. Unfortunately, the availability of childcare attendance data is limited to post-2018, with previous years missing from the OECD database. Other potential proxies accessible in the OECD database include Net Childcare Cost (NCC) from 2004, Public Spending on Childcare as a percentage of GDP from 1991, and public spending on childcare per child in 2019.

NCC indicates the net impact on family budgets resulting from full-time center-based childcare utilization. Higher NCC implies increased costs for parents, potentially reducing the incentive to purchase childcare services and consequently lowering childcare attendance rates. This suggests a likely positive relationship between higher NCC and Intergenerational Income Elasticities (IGE). However, NCC may not decisively reflect the number of attending children. Its impact might vary across income distributions and countries. As observed in the literature review, intergenerational mobility isn't equally distributed across earning quintiles; Scandinavian countries, for instance, exhibit higher mobility rates primarily due to social democratic welfare policies that uplift individuals from the bottom quintiles (Esping-Andersen, 2015; Roine & Waldenström, 2012). Thus, NCC might not effectively proxy childcare participation for children from lower-income households.

Despite its imperfections, I opt to use Public Spending on Childcare in 1991 as a proxy. Higher spending could mirror both the quantity of attending children and the quality of childcare facilities. While 1991 data may not align perfectly with the maturity age used in intergenerational elasticity calculations, it remains the closest available. Assumptions that public spending on childcare evolves gradually year by year guide this choice. Adding Total Public Spending on Social Expenditure as a control variable could help isolate the specific impact of childcare spending. However, this proxy doesn't distinguish when children attend childcare. Longer parental leave durations might delay childcare initiation and potentially affect the impact of parenting time on children's future outcomes (Hallberg & Klevmarken, 2003). Evidence from Denmark's parental leave expansion in 2002, where childcare is relatively affordable and accessible, suggests an increase in children's well-being and other outcomes (Houmark et al., 2022).

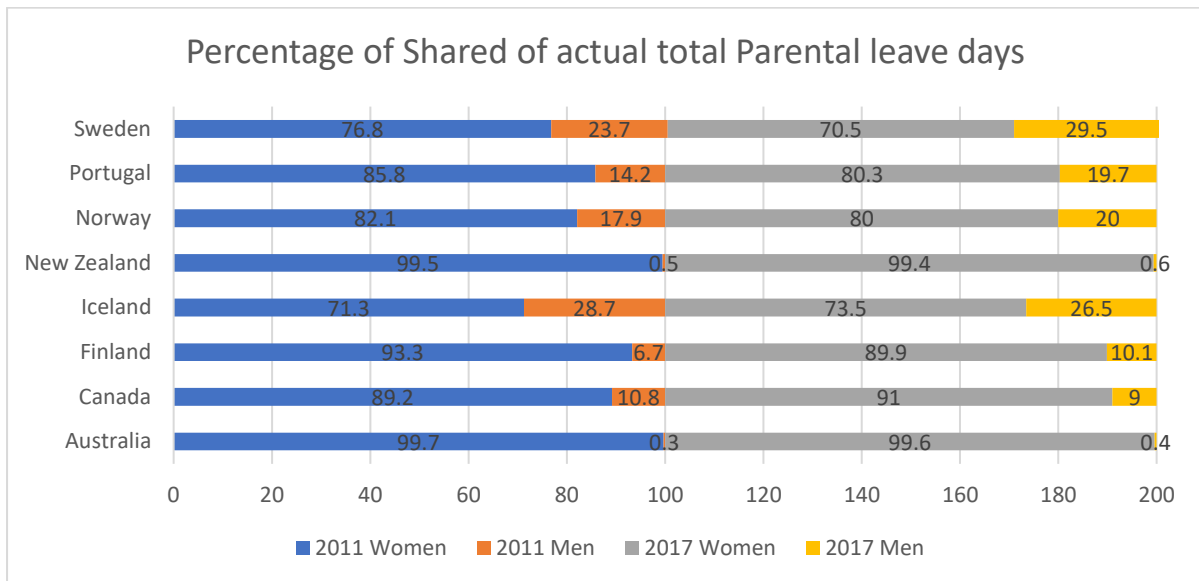
3.2.3 Parental Leave

I choose weeks of maternity leave in 1970 as a proxy for parental leave in regression analysis. While other variables in the OECD SOCX database could serve as proxies—such as income replacement rates during leave or the number of parental leave users by gender—they might not distinctly indicate the duration of leave, which directly influences the time children spend with their parents. It is established that parenting time significantly influences child development (Houmark, 2022; Garcia & Heckman, 2023; Hallberg & Klevmarken, 2003; Jaumotte, 2003). For instance, in countries like South Korea, generous statutory parental leave duration exists, but low income replacement rates result in fewer individuals taking the leave (NIKK, p.29). Similarly, considering the number of users might not truly represent the entire duration of entitlement, as individuals might not utilize the full amount of leave. Research indicates that longer leave durations associate with increased leave-taking by both mothers and fathers (Han et al., 2009, p.29). Hence, employing weeks of maternity leave as a proxy offers the most straightforward approach.

Distinguishing between the effects of maternity and paternity leave is prudent, as while their impacts are similar, they are not identical. Studies (Hallberg & Klevmarken, 2003) suggest that changes in a father's working hours can exert a stronger influence on children than changes in a mother's working hours. This could stem from behavioral mimicry observed by children, wherein higher paternal involvement yields greater benefits. Given that children

already spend more time with their mothers, increased fathering time could generate higher marginal benefits. Moreover, fathers might possess income-generated traits different from those of mothers, as they are traditionally the family's breadwinners. However, historically, the number of fathers taking parental leave was low, and during the 1970s, many countries did not offer parental leave entitlements to fathers.

Figure 6 Percentage of Shared of actual total Parental Leave days



Source: OECD SOCX

3.2.4 Female labour market participation rate

I decide to include the female labour market participation rate as an additional variable based on evidence suggesting that childcare and parental leave positively impact maternity employment (Akgundez & Plantenge, 2013; Ruhm, 1998). Maternity employment elevates the economic status of mothers, a factor directly impacting the well-being of children (Esping-Andersen, 2015). Additionally, female labour market participation serves as a comprehensive indicator reflecting societal gender norms, an essential but overlooked factor in multiple regression analyses.

One of the main explanations that Scandinavia has the highest social mobility rate is the single-mother employment rate is very high (Esping-Andersen, 2015). This directly contributes to child poverty. Including this variable would enable the capture of the combined effects of both parental leave and childcare.

3.2.5 Child Poverty & Child Allowances

As mentioned in the literature review section, the decisive factor of intergenerational mobility is child poverty. Employing value of child allowance each family receive, nor impact of (cash) family benefits to child would not be able to capture the effects, for example, children poverty rate of one country before benefits is 40%, after include child allowance it is 20%, compared with one country where child poverty before benefits 15%, after receiving child allowance the latter country child poverty rate is 10%. The impact of child allowance in the first country is indeed significantly larger, but child poverty rate is still higher than the latter country, where the impact of benefit is lower.

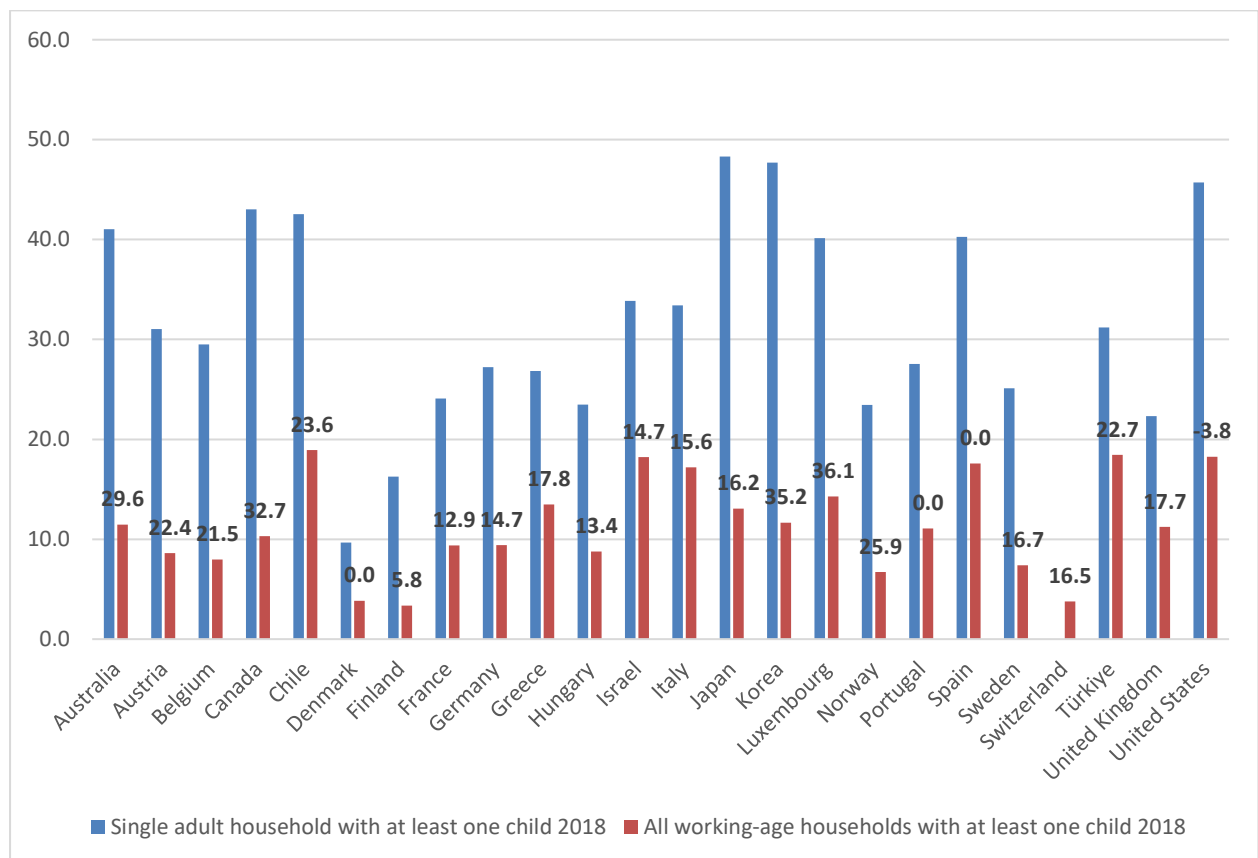
Another proxy can be considered is public spending in family cash benefits in 1980. However, family cash benefits not only consist of child allowances, unlike public spending in childcare in the last section which is a direct indicator. There are many family cash programs with different targets and aims. Those programs do not only aim to mediate negative effects from early childhood, unlike child allowances. Moreover, the type of cash transfer is also important, since they generate different effects. For example, conditional cash transfer programs usually trigger inclusion & exclusion error, results in some not poor families receive the cash transfer, widen the inequality gap, and poor families do not receive the cash transfer. Without mean-tested, unconditional cash transfers can reach higher numbers of families. However, unconditional regime cannot incentivize families to attain other beneficial programs, such as, receive vaccination, enrolling in school, and etc.

Using child poverty rate, age 0-17 as a proxy is viable. Child poverty rate is a summary indicator of children well-being after other negative variables influence childhood living conditions, such as, food deprivation, overcrowded accommodation, lack of basic facilities in households, and etc. Nevertheless, various studies have already investigated the relationships between child poverty and child development, or even with social mobility is relatively richer than the other proxies. Therefore, using this proxy would not contribute to the knowledge frontier.

To contribute more to knowledge frontier, I choose poverty rates of single-adult household 2018, since poverty rates of single-adults are largely reflected different in institutional settings of welfare state in each country, which affects how gender equality policies are designed. The differences determine how single-adults in each country are alleviated by social programs, whether the social assistance programs to single-adults are more

generous than the programs to general households. We know that most of the single adult earner families is mother, and we know that single-mothers are disproportionately poorer (Brady & Burroway, 2012). But more importantly, mother economic status transcends to children well-being (Esping-Andersen, 2015). Therefore, increasing economic status of mother, would affect social mobility. The poverty rate is measured in relative poverty, or the percentage of families who earn lower than 50% of median national disposable income. Figure 7: compare relative poverty rates of all working-age households with at least one child with single adult household with at least one child. We can see that poverty rates are significantly diverse among different household types. The number label in the figure indicates the difference between all households poverty and single adult household poverty.

Figure 7 Child Poverty Rates before and after taxes and transfers 2018, the data label indicates the impact of taxes and transfers.



Source: Data obtained from OECD Income Distribution Database, constructed by the author. Chile, Denmark, Hungary, Switzerland, United States data is from 2017.

3.2.6 Control Variables

Control variables serve to enhance the accuracy and precision of the multiple regression model by mitigating the impact of confounding variables that may affect both the dependent and independent variables, albeit unobservable in the model. They aid in isolating the relationship between predictors and the outcome variable. The control variables utilized in this study encompass:

- **Public spending on education:** This variable aims to control for the effects of education, a significant predictor of social mobility according to various studies. It includes public expenditures in primary, secondary, post-secondary but non-tertiary, and tertiary education.
- **Public spending on family benefits:** These programs, existing outside the model, may exert an influence on social mobility or introduce omitted variable bias.
- **GDP per capita:** This control variable aims to minimize the impact arising from differing economic sizes and income levels across countries.
- **GINI coefficient:** It serves as a control measure for inequality within each country, as inequality has correlations with intergenerational mobility.
- **Real GDP Growth:** The inclusion of this variable helps account for the impact of higher rates of economic development, potentially influencing intergenerational mobility through increased income available for investment in children and the creation of more high-quality job opportunities.

Table 1 Summary of Statistics

Variable	Year	Observation	Mean	S.D.	Source
Intergenerational Income Elasticities (IGE)	Various	27	0.398	0.148	OECD 2018
Intergenerational persistence in education (IPE)	Various	25	0.366	0.131	GDIM World Bank
Public Spending on Childcare	1991	20	0.3595	0.531	OECD SOCX
Weeks of maternity leave	1970	26	10	6.4	OECD SOCX
Child Poverty Rates	2018	27	0.131	0.056	OECD SOCX

Female Labour Market Participation Rates	1990	22	0.5	0.112	OECD STATS
Public Spending of Education	2018	27	0.955	0.369	OECD STATS
Public Spending of Family Policies	1980	22	0.0096	0.003	OECD SOCX
GDP per capita (USD, nominal)	2018	27	46871	18610	OECD STATS
GINI coefficient	2018	26	.316	0.047	OECD STATS
Real GDP growth	2018	27	0.251	0.015	IMF

Source: author

3.3 Limitations

I have addressed the limitations of each proxy in section 3.2. Another primary limitation of this study lies in the imperfect nature of the data for exploring the causal relationship between intergenerational mobility and certain gender equality policy variables. The intergenerational income elasticity (IGE) is typically calculated when fathers and sons reach maturity, around 35-40 years old, a period where income tends to stabilize. However, the IGE data in this study dates back to the 2010s, reflecting children born approximately in the 1970s, products of gender equality policies that primarily impacted early childhood development during that era. For instance, the absence of childcare attendance rate data until the late 2000s necessitates the use of the 2018 variable, assuming that intergenerational mobility rates change gradually, mirroring the societal progress. Similarly, variable mixing among years and gradual changes over time are assumed in this study, yet this introduces certain uncertainties.

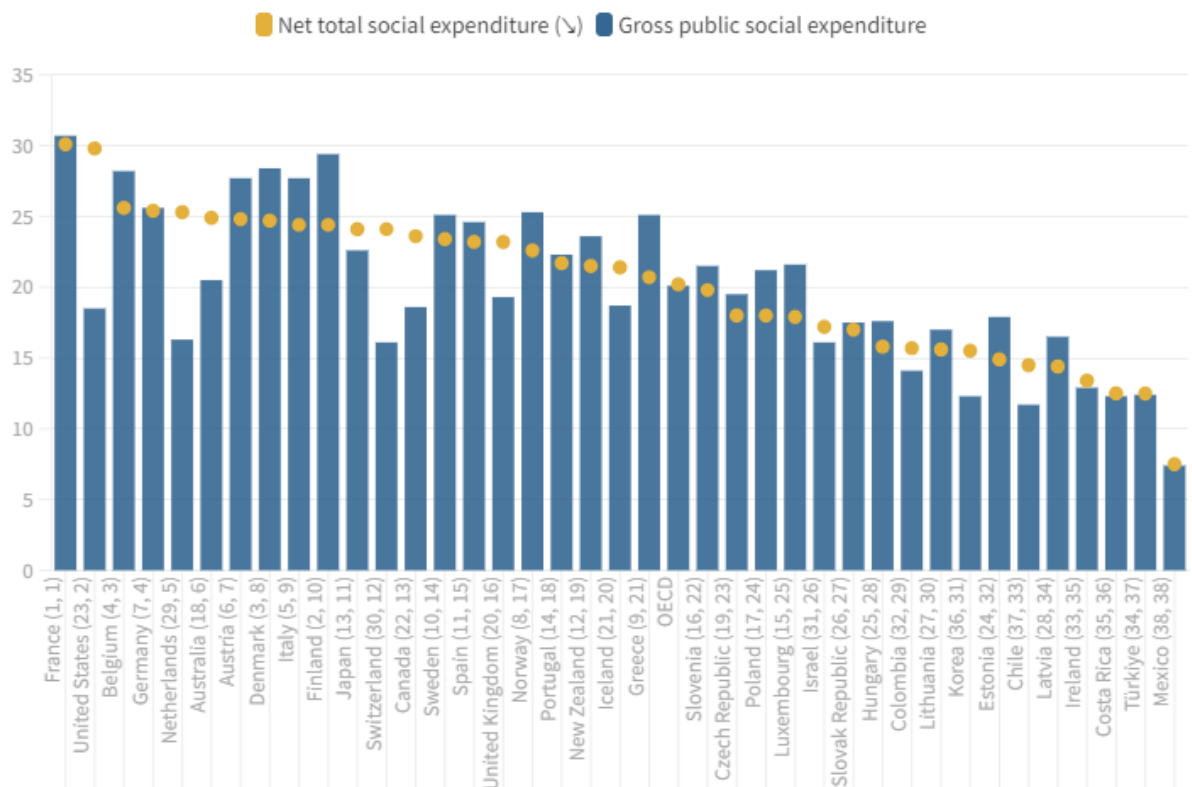
Additionally, the relatively low number of observations in each variable poses a significant limitation. A substantial portion of data is missing in the older years, misaligning with the cohort's birth and their early childhood experiences in the 1970s. This stands as the most significant limitation.

Furthermore, Becker & Tomes (1979) highlight how parents transmit income-generated traits to children, which could be an additional pathway influencing early childhood investment. This study focuses solely on gender equality policies, disregarding income-generated traits, although Luke (2021) suggests that gender attitudes are also transmitted across

generations, potentially affecting social mobility. This underscores the importance of parents passing down norms, such as mothers working outside the home, which could bolster both her and her children's economic status.

Moreover, the use of public social expenditure overlooks the role of private social spending, which could also influence social mobility. For instance, France and the US, among OECD countries, are major private social spenders. However, this might not significantly impact the study since private spending generally remains lower than public spending, possibly clustering among top income quintiles rather than the middle or bottom quintiles, which display higher rates of mobility.

Figure 8 Gross public to total net social spending, as % GDP in 2019



Source: OECD SOCX

4 Results & Discussion

4.1 Results & Discussion

Firstly, I will examine the relationship of intergenerational mobility and each gender policy that I have reviewed. Starting with public spending on childcare, female labour market participation, and child poverty, I will discuss the results in this section, making it easier for the readers to follow the explanations of the results.

4.1.1 Childcare

Table 2 Multiple regression of Public Spending on Childcare (%) in 1991 and IGE

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	IGE	IGE	IGE	IGE	IGE	IGE
Public Spending on Childcare 1991	-0.125** (0.0522)	-0.0889 (0.0613)	-0.172** (0.0692)	-0.127** (0.0467)	-0.110 (0.0683)	-0.140** (0.0550)
Public Spending of Education 2018		-0.0917 (0.0825)				
Public Spending of Family Benefits 2018			0.0453 (0.0438)			
GDP per capita 2018				3.45e-06** (1.47e-06)		
GINI 2018					0.389 (1.062)	
Real GDP Growth 2018						-3.027 (3.395)
Constant	0.411*** (0.0329)	0.490*** (0.0780)	0.329*** (0.0861)	0.240*** (0.0783)	0.286 (0.343)	0.477*** (0.0812)
Observations	20	20	20	20	20	20

R-squared	0.242	0.293	0.287	0.428	0.248	0.276
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Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

From the theoretical discussion, I have formulated a hypothesis: 'Countries with higher childcare attendance rates will have higher intergenerational mobility rates, as childcare equalizes early childhood development and mitigates adverse effects from early childhood.' Childcare directly provides opportunities for mothers to enter the labour market by facilitating state-provided care work. According to Table 2, public spending on childcare in 1991 shows a negative correlation with IGE, which is significant at a 5% level. The regression's r-squared value of 0.242 is very strong for a single-variable regression. Even when control variables are added, the r-squared values remain robust. This implies that increasing public spending on childcare decreases intergenerational income elasticities. A lower IGE indicates lower income transmission from father to son, signifying higher social mobility. When controlling for other factors, public spending on childcare remains significant at a 5% level, except when controlling for public spending on education and inequality (GINI). Furthermore, the coefficient of public spending on childcare does not significantly change when control variables are added. This result confirms the hypothesis that childcare and intergenerational mobility are associated.

4.1.2 Weeks of Maternity Leave

Table 3 Multiple regression of Weeks of Maternity Leave in 1970 and IGE

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	IGE	IGE	IGE	IGE	IGE	IGE
Weeks of Maternity Leave 1970	0.000631	0.00270	0.00156	0.00114	0.00184	0.00305
	(0.00418)	(0.00382)	(0.00477)	(0.00421)	(0.00417)	(0.00468)
Public Spending of Education 2018		-0.176**				
		(0.0662)				
Public Spending of Family Benefits 2018			-0.0157			
			(0.0365)			
GDP per capita 2018				1.54e-06		
				(1.53e-06)		
GINI 2018					0.828	
					(0.566)	
Real GDP Growth 2018						2.099
						(1.856)
Constant	0.379***	0.528***	0.402***	0.299***	0.104	0.302***
	(0.0495)	(0.0715)	(0.0748)	(0.0932)	(0.194)	(0.0839)
Observations	26	26	26	26	26	26
R-squared	0.001	0.235	0.009	0.043	0.086	0.054

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Data from older years are usually scarce. I managed to retrieve data on weeks of maternity leave from those old years, which is difficult to access. Specifically, the year 1970 perfectly aligns with the cohort when IGE was calculated. However, the other control variables are from 2018. This is an important point to keep in mind. According to Table 3, weeks of maternity leave in 1970 are not statistically significant. Even when including control variables

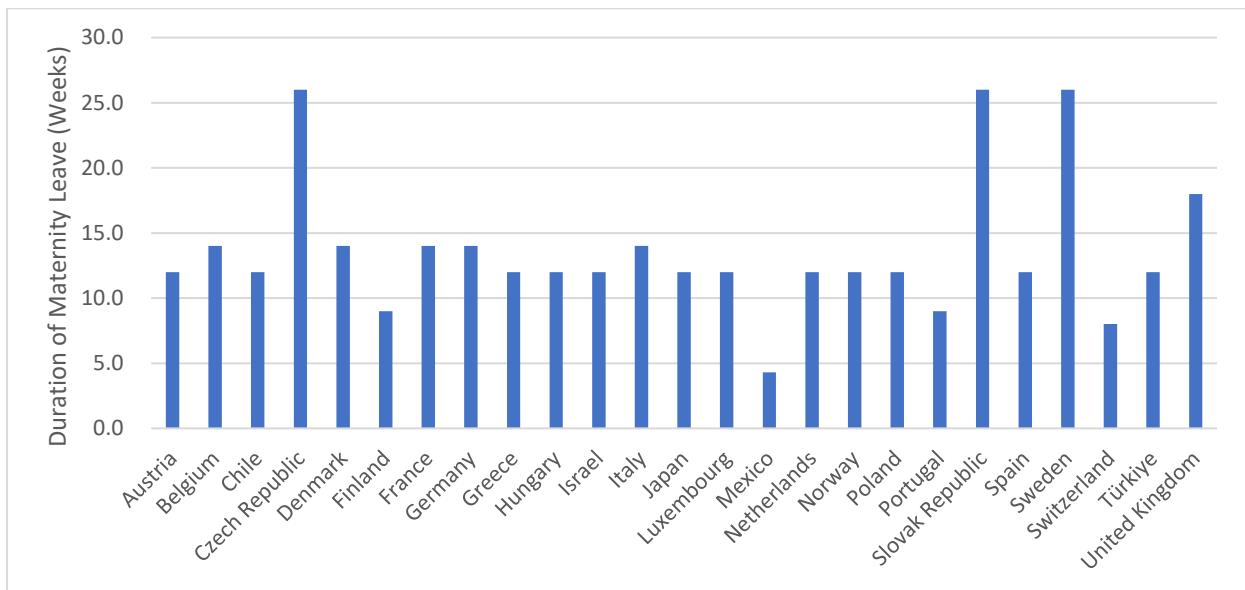
in the model, the results remain insignificant. One potential explanation is that although we know mothers tend to take the entire leave duration (Han et al., 2009, p.29), the actual average days taken as leave vary among countries due to different income replacement rates, gender norms, and eligibility conditions. Therefore, weeks of maternity leave might not be a suitable proxy. A more precise proxy is needed to examine the relationship, such as the actual average days of leave taken by mothers.

As I mentioned in section 3.2.3 regarding the motivations of the variable, paternity leave has a greater influence on children's development than maternity leave (Hallberg & Klevmarken, 2003). If only I had a proxy that could combine the effects of paternity leave and maternity leave, such as the separate average days of leave taken by mothers and fathers, it could serve as a better proxy.

Parental leave contributes to a mother's reemployment in the short run, but longer durations of leave are associated with negative employment outcomes for mothers after childbirth and wider gender pay gaps (Ruhm, 1998, p.315; Thévenon & Solaz, 2013, p.40). The optimal amount of maternity leave is 30 weeks, but beyond that duration, mothers might have lower rates of returning to work. However, this shouldn't be the case since the highest legal duration of leave in 1970 was 26 weeks in Sweden, Czech Republic, and Slovak Republic. In fact, the average weeks of leave in 1970 from the data are 10.5 weeks.

Nevertheless, maternity leave might have a minimal direct contribution to social mobility. The effects of parental leave mostly stem from parenting time (Garcia & Heckman, 2023; Houmark et al., 2022), children's development (Le & Nguyen, 2022, p.6-7), and parental employment after childbirth (Ruhm, 1998; Thévenon & Solaz, 2013, p.40). Particularly, the effects of parental leave on parent's employment are relatively small too (Thévenon & Solaz, 2013, p.40). Examining the relationship between the statutory duration of maternity leave directly with IGE might not capture these effects. Ultimately, maternity leave might not be related to social mobility at any level.

Figure 9 Weeks of Maternity Leave in 1970



Source: OECD SOCX

4.1.3 Female Labour Market Participation

Table 4 Multiple regression of Female Labour Market Participation Rate in 1990 and IGE

VARIABLES	(1) IGE	(2) IGE	(3) IGE	(4) IGE	(5) IGE	(6) IGE
Female Labour Market Participation 1990	-0.636*** (0.208)	-0.373 (0.222)	-0.838*** (0.244)	-0.653*** (0.185)	-0.587** (0.235)	-0.680*** (0.217)
Public Spending of Education 2018		-0.151** (0.0667)				
Public Spending of Family Benefits 2018			0.0445 (0.0303)			
GDP per capita 2018				2.94e-06** (1.18e-06)		
GINI 2018					0.322 (0.662)	
Real GDP Growth 2018						-1.198 (1.506)
Constant	0.682*** (0.107)	0.690*** (0.0979)	0.690*** (0.105)	0.546*** (0.110)	0.556* (0.282)	0.731*** (0.125)
Observations	22	22	22	22	22	22
R-squared	0.319	0.464	0.389	0.488	0.328	0.341

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

I measure female labour market participation rate, according to the literature that economic statuses of mother's directly transcend to children's well-being. Vice versa, poor children are often a product of poor mothers. The effect from mother's economic status is stronger than father (Esping-Andersen, 2015). Moreover, higher female labour market

participation rates are accounted from two other gender equality policies: high-quality and public-subsidized childcare directly facilitate mothers work in labour market by shifting the care burden, and generous parental leave policy that encourage mothers returning to work after childbirth. Female labour market participation can also act as a summary indicator of how one society is progressive towards gender norms, in which norms and attitudes are omitted from quantitative approach.

Therefore, I have formulated a hypothesis that higher rate of female labour market participation, results in higher early childhood development of children, and will eventually contribute to intergenerational mobility when growing up. According to table 4, female labour market participation rates in 1990 has negative relationship with IGE, with statistically significant at 1% level. In other words, the higher female working in the market, the higher social mobility. This table is one of the highlights of this study, since I have managed to retrieve the data of the variable in the early years, when the cohort who were used to calculate IGE was born, and the results are significant at 1% level. The relationships are still significant at 1% and 5% when controlling for other factors, except when controlling for public education spending in 2018.

4.1.4 Poverty of single-earner families

Table 5 Multiple regression of relative Poverty Rates of Single-earner Families (%) and IGE

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	IGE	IGE	IGE	IGE	IGE	IGE
Poverty Rate of Single-Earner Families 2018	0.00227 (0.00239)	-0.000357 (0.00247)	0.00253 (0.00274)	0.00238 (0.00239)	0.000866 (0.00271)	0.00209 (0.00240)
Public Spending of Education 2018		-0.174** (0.0763)				
Public Spending of Family Benefits 2018			0.00805 (0.0379)			
GDP per capita 2018				1.48e-06 (1.56e-06)		
GINI 2018					0.708 (0.656)	
Real GDP Growth 2018						1.602 (1.705)
Constant	0.320*** (0.0781)	0.568*** (0.130)	0.294* (0.142)	0.244** (0.111)	0.138 (0.185)	0.285*** (0.0863)
Observations	24	24	24	24	24	24

R-squared	0.039	0.231	0.041	0.079	0.090	0.078
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Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Continuing with the discussion on mothers' economic status, table 5 reveals that the relationship between the poverty rate of single-earner families and intergenerational mobility is not significant across all models. Again, economic status of mothers directly transcends to children's well-being, and most of the single-earner families is women. It is most likely that poor children resulted from poor lone-mother. Strengthening single-mother economic statuses by public policies can generate dramatical effects to children (Esping-Andersen, 2015). However, we do not know to what extent mother's earnings correlate with children well-being or investment in children. In other words, the amount of them transcend to children, even correlated, could be low.

Moreover, as previous studies that investigate the long-lasting negative effects of child poverty are already rich, I choose poverty of single-earner families due to the fact that the impacts of child allowances are complicated to examine. According to the literature review section, I conducted reviews of the reasons why poverty of both mother and children affects intergenerational mobility, and demonstrated that how child allowances reduce poverty after transfer in figure 3, the difference in poverty rate before and after taxes and transfers. In practice, the eligibility conditions of child allowances are difference among countries, and among types of receiving families. Some countries increase the amount of child allowances to single-earner families by significant amount, with or without mean-tested, and some countries do not (Brady & Burroway, 2012).

Nevertheless, the reason of why poverty of single-earner families is not significant could be explained by the fact that there are other factors influence the poverty rate of single mothers. Ultimately, there are other factors that influence child poverty rate as well, whereas child poverty rate is the decisive factor of intergenerational persistence, not single-earner families poverty rate. The result of this study is contradicted to the result by Esping-Andersen (2015) that lone-mother poverty plays decisive roles in children upward mobility.

4.1.5 Child Poverty Results

Table 6 Multiple regression of Relative Child Poverty in 2018 (%) and IGE

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	IGE	IGE	IGE	IGE	IGE	IGE
Child Poverty Rate 2018	1.250** (0.466)	0.901* (0.483)	1.639*** (0.568)	1.444*** (0.502)	0.532 (1.030)	1.249** (0.467)
Public Spending of Education 2018		-0.137* (0.0735)				
Public Spending of Family Benefits 2018			0.0453 (0.0383)			
GDP per capita 2018				1.57e-06 (1.52e-06)		
GINI 2018					0.316 (1.054)	
Real GDP Growth 2018						1.584 (1.642)
Constant	0.234*** (0.0666)	0.411*** (0.114)	0.0882 (0.140)	0.135 (0.117)	0.218 (0.235)	0.194** (0.0784)
Observations	27	27	27	27	26	27

R-squared	0.223	0.321	0.266	0.256	0.089	0.252
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Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

In section 3.2.5, I discuss the reasons of using poverty rates of single-earner families as a proxy of child poverty. Since the results of single-earner families are not statistically significant, I decided to analyze additional model by using child poverty rates in 2018 as a proxy directly. The result of bivariate regression is significant at 5% level, and remain significant when controlling for other factors, except when controlling for GINI.

Although, it does not measure the effects of child allowances directly, but at least it shows that child poverty related to intergenerational mobility. The reduction of child poverty through means like child allowances and increased family resources undoubtedly lowers child poverty rates and promotes upward mobility, as depicted in figure 7.

The important point is the result of regression of child poverty is statistically significant, but the results of single-earner poverty is not significant. Poor children are products of poor families, if their parent a better-off, why would their children be poor? At first glance, child poverty rate seems to be a subset of single-earner poverty rate, but it is not usually like that. This could potentially be explained by the reason that child poverty rate and single-earner family poverty rate is not highly correlated. A large number of poor children is not a product of single-earner families. Vice versa, not all children of single-earner families are poor. The first measured children level, and the latter measured parent level. Hence, child poverty rates and single-earner family poverty rates are distinct proxies. While past studies have focused on child poverty rates (Bhalotra & Rawlings, 2013; Case et al., 2005; Clarke et al., 2022; Hertz et al., 2008; Wagmiller, 2009), there has been limited emphasis on single-earner family poverty (Esping-Andersen, 2015; Brady & Burroway, 2012). Therefore, further investigation into the relationship between single-earner family poverty and intergenerational poverty warrants attention in future studies."

4.2 Sensitivity Analysis

I utilized intergenerational income elasticities (IGE) as a proxy to measure intergenerational mobility. However, not all results demonstrate statistical significance, and some do not align positively or negatively with established theories and empirical evidence. This inconsistency suggests that IGE might not be an ideal proxy for measuring intergenerational mobility. As social mobility is traditionally gauged across three key aspects— income, occupation, and education—I aim to conduct a sensitivity analysis by employing intergenerational persistence in education (IPE) as an alternative proxy.

The IPE measurement mirrors the methodology of IGE, entailing a regression of father's educational level against the son's educational level to derive the beta-coefficient, reflecting the relationship between the two (Narayan et al., 2018, p. 74). The data source is from the Global Database on Intergenerational Mobility (GDIM) provided by the World Bank.

However, the obtained results are not uniformly statistically significant. As indicated in the table, child poverty in 2018 demonstrates some significance, albeit only at a 10% level. Another noteworthy finding is the significance of the duration of maternity leave in 1970 at a 5% level, particularly when controlling for public spending in family benefits in 2018. The additional regression tables for IPE are available in the Appendix.

Table 7 Multiple regression of relative Child Poverty in 2018 (%) and IPE

VARIABLES	(1) IPE	(2) IPE	(3) IPE	(4) IPE	(5) IPE	(6) IPE
Child Poverty Rate 2018	0.847*	0.878*	0.820	0.226	1.442	0.847*
	(0.437)	(0.482)	(0.593)	(0.505)	(1.011)	(0.447)
Public Spending of Education 2018		0.0133				
		(0.0764)				
Public Spending of Family Benefits 2018			-0.00293			
			(0.0419)			
GDP per capita 2018				-4.23e-06**		

				(2.03e-06)		
GINI 2018					-1.008	
					(1.020)	
Real GDP Growth 2018						-0.0814
						(1.593)
Constant	0.256***	0.239*	0.266*	0.526***	0.497**	0.258***
	(0.0620)	(0.117)	(0.149)	(0.142)	(0.226)	(0.0747)
Observations	25	25	25	25	24	25
R-squared	0.140	0.142	0.141	0.282	0.096	0.140

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table 8 Multiple regression of weeks of maternity leave in 1970 and IPE

VARIABLES	(1)	(2)	(3)	(4)	(5)	(6)
	IPE	IPE	IPE	IPE	IPE	IPE
Weeks of Maternity Leave 1970	0.00508	0.00564	0.0105**	0.00294	0.00565	0.00621
	(0.00404)	(0.00422)	(0.00432)	(0.00395)	(0.00417)	(0.00458)
Public Spending of Education 2018		-0.0419				
		(0.0730)				
Public Spending of Family Benefits 2018			-0.0787**			
			(0.0330)			
GDP per capita 2018				-3.77e-06*		
				(1.90e-06)		
GINI 2018					0.379	
					(0.537)	
Real GDP Growth 2018						0.978
						(1.757)

Constant	0.305*** (0.0488)	0.340*** (0.0796)	0.409*** (0.0622)	0.500*** (0.109)	0.179 (0.185)	0.268*** (0.0819)
Observations	24	24	24	24	24	24
R-squared	0.067	0.081	0.266	0.214	0.089	0.081

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

The potential explanations are: Firstly, when regressing IGE with gender equality policies, and the results mostly are statistically significant according to hypotheses from literature review. Therefore, IGE is a good proxy for social mobility to some extent. Then, IPE is not a good proxy for social mobility, as almost all the models with IPE are non statistically significant.

Secondly, early childhood development and other gender equality policies might affect those age differently. For example, IGE is measured when the cohort ages are not generally changes at 35-40 years old, but IPE is measured when the cohort is approximately 25 years old. But this should not be true, since early childhood development have long-lasting positive effects to adulthood (Esping-Andersen, 2012; Bhalotra & Rawlings, 2013; Clarke et al., 2022). If the effects from early childhood disappear, it should be IPE that are highly statistically significant to the models, not IGE which measured later.

But thirdly, there is the consideration that negative effects might outweigh positive impacts. Growing up poorly surely have higher negative effects. If the negative effects are stronger than positive effects, IGE would be a better proxy because it is measured in later life when the negative effects have had already vanished.

Lastly, the ways that each gender equality policy operate are different. For instance, it is education that affects female labour market participation, not the other way around. Gender equality might affect education attainment and earnings in different ways. Schooling years are less gender-discriminated than entering labour market. Each gender is mostly entitled to the rights to education, but the labour market treat men and women differently in terms of pay gap, prospect to hire and promote, occupational segregation, and glass ceilings. These problems are not prevalent in school years.

4.3 General Discussion

In the theoretical discussion, I formulated hypotheses, followed by an exploration of variable motivations in the methodology section and detailed regression outcomes in the results section. This part, however, presents a general discussion of those results without diving deeply into the specifics outlined in the results section.

From the literature review results, we know that several variables can explain social mobility. The question is “Do we sure that gender equality fosters social mobility?” In theory, yes, as I have reviewed in the literature review section. But to genuinely establish the relationships, quantitative approaches must be employed, and this is to signify important policy implications for policy makers. From the results, I have examined 5 proxies of gender equality policies: public spending on childcare in 1991, female labour market participation in 1990, child poverty rates in 2018 are statistically significant when perform multiple regression with IGE computed in 2010s. While, weeks of maternity leave, poverty rates of single-earner families are not statistically significant. Moreover, only some models of child poverty and maternity leave are significant in sensitivity analysis with educational mobility (IPE).

Hence, the answer to the main research question is complex, and cannot be simply yes or no. While some statistically significant models reflect gender equality, it is evident that not all policies were captured, as a few remain statistically significant. This highlights the need for future studies to further scrutinize these relationships.

Choosing proxies for gender equality policies encountered various limitations. For instance, the childcare proxy—public spending on early childhood education and care (ECEC)—only signifies governmental budget allocation and not the actual utilization or quality of childcare. Similarly, weeks of maternity leave lack precision in indicating user statistics or average duration. Assessing the impact of child allowance proved challenging, addressed only through child poverty measurements due to variations in program eligibility, transfer amounts, and recipient families across countries. However, female labour market participation rates serve as a reliable summary indicator of gender equality in each country, as does poverty among single-earner families, primarily mothers, as suggested by existing literature.

Choosing proxies for each gender equality policy faces various limitations. The proxy for childcare is public spending on early childhood education and care (ECEC). It only indicates the government budget spending on this aspect, but not the number of children attending childcare, nor quality of childcare. Using weeks of maternity leave is far from perfect

due to the fact that it does not indicate the actual number of mothers who take the leave, nor the average duration of maternity leave users. There is no proxy to measure the impact of child allowance, but child poverty. Measuring the impact of child allowance is difficult since the program varies among countries by eligibility conditions, amount of transfers, actual family who receive it. Nevertheless, female labour market participation rate serves as a good proxy of summary indicator of gender equality in one country. Poverty of single-earner families, usually mothers, is also a suitable proxy suggested by literature.

Notably, the general limitations of this study is due to imperfect data aligning with the specific periods of policy implementation, making it necessary to assume gradual changes over time. The data is rarely matched with the cohort born in 1970-1980 when measure IGE in 2010s. Additionally, low observation counts in variables from older years and countries pose a significant limitation. This study also ignores the income-generated traits, and the roles of private social spending.

I have summarized the main results and sensitivity check in the table 9.

Table 9 Summary of the Results and Sensitivity Analysis

	Intergenerational Earnings Persistence (IGE)		Intergenerational Educational Persistence (IPE)	
	Significant in at least four models	Not significant	Significant in at least three models	Not significant
Public Spending on Childcare	✓			✓
Weeks of Maternity Leave		✓		✓
Female Labour Market Participation	✓			✓
Poverty of Single-Earner Families		✓		✓
Child Poverty	✓		✓	

5 Conclusion

5.1 Conclusion

Numerous existing studies heavily emphasize the role of education in predicting social mobility. However, focusing solely on education cannot fully elucidate why intergenerational mobility occurs and persists, as inequality begins before formal education commences. After encountering research that underscores the importance of early childhood development in shaping intergenerational mobility and exploring studies delving into the relationships between gender equality policies and early childhood development, I sought to directly examine the link between these policies and intergenerational mobility. The aim of this study is to provide new policy insights for policymakers, since the two are rapidly becoming important nowadays, it would benefit debates in policymaking if gender equality policies can boost both social mobility and gender equality itself.

The main intergenerational mobility theory emphasizes the roles of parental investment in children's human capital (Becker & Tomes, 1979; Leibowitz, 1974; Solon, 2002). I have formulated hypotheses that gender equality—childcare, parental leave, and child allowances—significantly contribute to early childhood development due to the policies' effects in returning parents to the labour market and reducing the gender pay gap (Ruhm, 1998; Akgundez & Plantenga, 2013). The economic status of parents, especially mothers, has a tremendous impact on children's development, alleviating adverse effects of poverty in early childhood, as single-earner families are usually led by mothers (Esping-Andersen, 2015). Disadvantaged children have equal opportunities for development in early childhood when participating in childcare (Esping-Andersen et al., 2012). The policies also increase parenting time, thereby boosting social mobility (Garcia & Heckman, 2023; Houmark et al., 2022). After discussing motivations, I decided to use a proxy for each gender equality policy.

The results show that public spending on childcare, female labour market participation, and child poverty are statistically significantly related to intergenerational earning persistence (IGE), but weeks of maternity leave and poverty among single-earner families are not. The result regarding child poverty aligns with previous studies, as does the result concerning childcare. However, the proxy for childcare—public spending on childcare—is not perfect. Female labour market participation serves as a summary indicator of the effects of childcare, child poverty, parental leave, and omitted gender norms. Nevertheless, the result regarding

poverty rates among single-earner families contradicts Esping-Andersen's (2015) study. While weeks of maternity leave tend to lack a suitable proxy that could indicate the actual average maternity leave durations.

In performing sensitivity analysis with an alternative proxy of social mobility, intergenerational persistence in education (IPE), the only significant model is child poverty. This suggests that the effects of gender equality policies on school years and labour market years differ. Another factor is timing; IPE is computed much earlier than IGE, which occurs when individuals reach 35-40 years old. It remains uncertain which—IPE or IGE—is the more suitable proxy. However, researchers can potentially use them in complementarity, given that income mobility and educational mobility are influenced by different factors.

For the answers to the main research question “*Can gender equality policies explain the differences of intergenerational mobility across countries?*”, The results can confirm that some of the gender equality policies are associated with social mobility rates, but not all of them. Though, number of observations, years, and the proxies can be largely questioned the validity issue, and this is the biggest limitation of this study. Policymakers can use this study as fundamental evidence in policy-making decisions. Since multiple regression does not establish the causal relationship, only associations between variables. Policymakers need to further look into the formulation of hypothesis, and motivations of variables to cultivate more insights of the policies.

5.2 Future Research

The relationship of female labour market participation, public spending on childcare, child poverty, with IGE are statistically significant. This opens new opportunities for future research to further examine the effects of these policies. The possible research questions are, for example, how/why through what channels does female labour market participation influence social mobility? And since the regression results of intergenerational income elasticities (IGE) and intergenerational persistence in education (IPE) are largely differed. It is also beneficial to examine the relationship of these two with other gender equality policies. Moreover, it is also viable to reexamine the insignificant policies with new data and proxies.

The historical negative correlation between female participation and fertility has raised concerns that increasing female participation may reduce fertility. Demographic circumstances in one country dramatically affects economic growth, and gender equality due to a prospective chance of being formally employed of women. High fertility rate positively contributes to

economy by directly increase consumption, and feed new labour force into the economy. Therefore, incorporating fertility rate into an endogenous variable would provide a more comprehensive view of gender equality and intergenerational mobility.

This study heavily emphasizes early childhood theory and the standard intergenerational transmission theory by Becker & Tomes (1979). Future research could extend this by introducing alternative main theories that incorporate gender equality policies beyond those employed in this study.

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Appendix

Table A1: Multiple regression of Public Spending on Childcare (%) in 1991 and IPE

VARIABLES	(1) IPE	(2) IPE	(3) IPE	(4) IPE	(5) IPE	(6) IPE
Public Spending on Childcare 1991	-0.0311 (0.0594)	-0.0173 (0.0713)	0.00326 (0.0984)	-0.0142 (0.0596)	-0.0495 (0.0768)	-0.0454 (0.0633)
Public Spending of Education 2018		-0.0377 (0.101)				
Public Spending of Family Benefits 2018			-0.0287 (0.0646)			
GDP per capita 2018				-4.25e-06 (3.28e-06)		
GINI 2018					-0.469 (1.188)	
Real GDP Growth 2018						-3.182 (4.286)
Constant	0.362*** (0.0395)	0.396*** (0.0989)	0.409*** (0.113)	0.555*** (0.153)	0.513 (0.383)	0.431*** (0.100)
Observations	18	18	18	18	18	18
R-squared	0.017	0.026	0.030	0.116	0.027	0.052

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A2: Multiple regression of poverty rates of single-earner families in 2018 and IPE

	(1)	(2)	(3)	(4)	(5)	(6)
VARIABLES	IPE	IPE	IPE	IPE	IPE	IPE
Poverty Rate of Single-Earner Families 2018	-0.00132	-0.00194	-0.00384	-0.00260	-0.00233	-0.00132
	(0.00230)	(0.00260)	(0.00258)	(0.00212)	(0.00265)	(0.00237)
Public Spending of Education 2018		-0.0458				
		(0.0833)				
Public Spending of Family Benefits 2018			-0.0673*			
			(0.0368)			
GDP per capita 2018				-4.73e-06**		
				(1.90e-06)		
GINI 2018					0.502	
					(0.632)	
Real GDP Growth 2018						0.0232
						(1.681)
Constant	0.398***	0.462***	0.613***	0.653***	0.270	0.397***
	(0.0744)	(0.139)	(0.137)	(0.122)	(0.178)	(0.0837)
Observations	23	23	23	23	23	23
R-squared	0.015	0.030	0.156	0.248	0.045	0.015

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1

Table A3: Multiple regression of female labour market participation rate in 1990 and IPE

VARIABLES	(1) IPE	(2) IPE	(3) IPE	(4) IPE	(5) IPE	(6) IPE
Female Labour Market Participation 1990	-0.207 (0.263)	-0.299 (0.311)	-7.00e-05 (0.346)	-0.104 (0.263)	-0.205 (0.302)	-0.274 (0.278)
Public Spending of Education 2018		0.0564 (0.0973)				
Public Spending of Family Benefits 2018			-0.0413 (0.0447)			
GDP per capita 2018				-3.85e-06 (2.53e-06)		
GINI 2018					0.00999 (0.841)	
Real GDP Growth 2018						-1.592 (1.952)
Constant	0.459*** (0.137)	0.451*** (0.140)	0.437*** (0.139)	0.586*** (0.156)	0.455 (0.360)	0.529*** (0.163)
Observations	20	20	20	20	20	20
R-squared	0.033	0.052	0.080	0.149	0.033	0.070

Standard errors in parentheses

*** p<0.01, ** p<0.05, * p<0.1