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Income distribution in family networks by gender and proximity

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Abstract

Whereas the significance of family networks for support and well-being has been shown in previous research, few studies have analysed the income distribution within family networks. The aim of this study is to examine income distribution within family networks and how they have changed over time for women and men in different parts of the income distribution and if the incomes are more similar in the geographically proximate family network. The analysis is based on register data and by use of ordinary least squares (OLS) and quantile regressions. The results indicate that men in the lowest income group tend to have become more similar to their family network over time. Gender differences have decreased, possibly as an effect of women's higher labour market participation rate leading to decreased income disparity. This paper contributes by highlighting how the uneven distribution of economic resources in family networks adds to individual's own resources.

KEYWORDS

family networks, income distribution, proximity, gender, Sweden

1 | INTRODUCTION

Previous research has recognised the significance of both proximate and distant family networks for the support provided to and the well-being of relatives in both young and old generations, even in countries with a strong welfare state (Bonvalet, 2003; Bordone, 2009; Fokkema, Ter Bekke, & Dykstra, 2008; Fors & Lennartsson, 2008; Goodsell, James, Yorgason, & Call, 2013; Hjälm, 2011; Kalmijn & De Vries, 2009; Mulder & van der Meer, 2009). Not least for the poor, economic and social capital in the family network could be vital assets and offer compensation for the lack of individual resources (Kim, Choi, Chatterjee, & Kim, 2012). Incomes of and nearness to family members—parents, siblings, and adult children—can be a key resource throughout one's life course, adding to the individual's own resources.

Hence, patterns of income heterogeneity/homogeneity as well as geographical nearness in the family network may substantially influence access to economic and social capital for men and women in the old and young generations. A number of studies have examined the importance of intergenerational support and filial responsibility in different welfare regimes (Silverstein, Gans, & Yang, 2006; Hank, 2007; Fokkema et al., 2008; Dykstra, 2009; Evandrou, Falkingham, Gomez-Leon, & Vlachantoni, 2018) and how the presence of and proximity to family members have changed over time in different national contexts (e.g., Kolk, 2017; Malmberg & Pettersson, 2007; Mulder & Michelin, 2007) and influenced family-based support and care (Dykstra & Fokkema, 2011; Fokkema et al., 2008; Fors & Lennartsson, 2008). Moreover, previous research has examined how the genders and economic positions of potential providers and receivers have affected intergenerational support (Fokkema et al., 2008; Kim et al., 2012). However, in the literature, we find few attempts to explore the distribution of income within family networks and the correlation between one's own and one's family's income, that

is, the extent to which poor and rich people have more or less prosperous family members, whether these patterns have changed over time, and to what extent there are differences between the proximate and the whole network. Therefore, we present a study on intrafamily income distribution, based on national microdata from Sweden.

The aim is to examine income distribution within family networks and how this has changed over time for women and men in different parts of the income distribution (e.g., the 0.25, 0.50, and 0.75 quantiles) and whether the incomes are more similar in the geographically proximate family network. The analyses are based on register data, and using ordinary least squares (OLS) and quantile regression, we explore gender and intergenerational patterns and examine the association between the income of 35-year-old men and women and their (i) whole family network (parents and siblings), (ii) fathers and mothers of pre-retirement age separately, and (iii) siblings. We compare income for the year 1991 with the situation almost two decades later, in 2009. For our analyses, we have chosen the younger generation as the index person in the analyses as previous research indicates that intergenerational support is more important for adult children than for the parental generation in Northern European countries (Deindl & Brandt, 2011). However, our analysis will indirectly inform us about the economic resources embedded in the networks of the parental generation.

2 | BACKGROUND AND THEORETICAL FRAMEWORK

Despite trends of individualisation, several authors claim that few signs of less intense family contacts in Western countries can be found, even in countries with a strong welfare states (Bengtson, 2001; Dykstra, 2009; Fokkema et al., 2008; Kalmijn & De Vries, 2009). Moreover, family networks may become more important when it comes to support for the elderly in times when public welfare institutions are facing economic shortages (Szebehely & Trydegård, 2012). Also, after nest-leaving, a large portion of young adults rely on economic and social support from their parents. In the phase of family formation and childrearing, many still depend on various kinds of economic support and assistance from their parents or other relatives. Concurrently, parents in midlife often have economic commitments to their adult children. In later life, care and support from adult children, not least daughters, are often crucial for the well-being of the parental generation (Chiatti et al., 2013). Kim et al. (2012) maintained that the help between generations is generally altruistic, in the sense that disadvantaged family members (parents or children) receive help from family members with more resources. These results indicate that the economic resources available on both sides are decisive for the intergenerational support and that intrafamily income disparities may influence the economic support between family members over the life course.

The extent to which a family's economic position is transmitted from one generation to another is commonly seen as an indicator of equality of opportunities, and previous studies have analysed the trends in intergenerational mobility (e.g., Björklund & Jäntti, 2020; Corak, 2013). Research on intrafamily income distribution is related to such social mobility research; however, the processes in focus are only partly the same. Although increasing social mobility, for example, is likely to result in less homogeneous family networks and decreasing intrafamily income disparities, this may not always be the case. If whole families, rather than individuals, move up the social ladder, the family networks may remain rather homogeneous, which may add to processes of cumulative inequality. Therefore, we stress the importance of examining the outcome of these processes if the trends result in more homogeneous intrafamily income distributions.

Moreover, research has shown that intergenerational earnings mobility varies across income distributions. Using a quantile regression approach, in a study from the United States, Eide and Showalter (1999) found that parents' income is more important in explaining a son's income at the bottom of the income distribution compared with the top. Similar results were also found in other studies (Dearden, Machin, & Reed, 1997; Hirvonen, 2008; Jäntti et al., 2006). A key question is to what extent we see the same trends of intrafamily income distribution across different parts of the income distribution.

Previous studies have focused on estimating intergenerational earnings elasticities or intergenerational earnings correlations of sons' earnings with respect to their fathers' earnings at the same age (Schnitzlein, 2015). Contemporary studies on intergenerational earnings mobility usually include both parents, as well as daughters, in the analysis as both parents' socio-economic resources influence those of their children (Beller, 2009; Hirvonen, 2008). In dual-earner households, for instance, both parents' occupations independently (Kalmijn, 1994) influence the child's educational attainment, as do their respective educational levels (Korupp, Sanders, & Ganzeboom, 2002). In addition, it has been revealed that the incomes of daughters, compared with those of sons, are less correlated with the incomes of their parents and that the incomes of adult children are more strongly correlated with those of their fathers compared with their mothers (e.g., Hirvonen, 2008). Moreover, previous research (Chiatti et al., 2013; Silverstein et al., 2006) shows that patterns of intergenerational support are strongly gendered: Daughters are more likely to care for their parents than sons are, and sons are more often net receivers of economic support. It is therefore crucial to include a gender perspective in the analyses. In a study based on Swedish register data, Heidrich (2017) reveals that patterns of intergenerational mobility vary across regions. This indicates that a regional perspective in income distribution within family networks would be fruitful to apply; however, this is beyond the scope of this study.

While the parent–child relationship is obviously the most important family relationship, siblings may also play a key role in care and support throughout the life course as sibling bonds are potentially the longest relationships an individual will have (Voorpostel, van der Lippe, Dykstra, & Flap, 2007). Hence, the socio-economic position of one's siblings can be crucial to an individual's well-being over the whole life course, for instance by sharing the responsibility for the support and care of parents or opening doors for younger siblings' careers. In these ways, family networks can be unique spheres for

interaction and support across socio-economic groups throughout the life course. We therefore maintain that it is also important to include siblings in the research on income distribution in family networks.

Previous research has indicated that frequency of contact is closely related to the amount of exchange within the networks in terms of financial and time transfers (e.g., Bonvalet, 2003; Bordone, 2009; Dykstra, 2009; Fors & Lennartsson, 2008; Kalmijn & De Vries, 2009). It could be hypothesised that increasing intrafamily income differentials would disrupt family relationships. Fors and Lennartsson (2008), however, found that families with mixed socio-economic statuses did not have less frequent contact when distance was controlled for. Similar results were found by Assirelli and Tosi (2013) and Kalmijn (2006) when comparing contact between parents, children, and siblings with different education levels. Thus, Kalmijn (2006) claimed, family ties are strong enough to overcome such dissimilarities. It has also been revealed that geographically proximate family networks often have more frequent contact and more exchange compared with more distant ones (Fors & Lennartsson, 2008; Kalmijn, 2006) and that intergenerational distances are greater in Sweden than in most other European countries (Hank, 2007). In addition, previous studies have also shown that higher migration rates among women result in greater geographical distances between parents and daughters compared with sons and that adult children from a high-income and high-education background are more likely to move further from their parents and to live more distant at the time they are becoming established in the labour market (e.g., Kolk, 2017; Lundholm, 2007; Malmberg & Pettersson, 2007). A key question is whether the income homogeneity is increasingly more pronounced in the proximate than the whole family network.

Using Sweden as our case, we investigate a country with strong welfare institutions. Although Sweden is still one of the most equal countries in the Organisation for Economic Co-operation and Development (OECD), in recent years, the growth in income inequality there has been one of the greatest among all OECD countries (OECD, 2016). Income growth has been slower at the lower end of the income distribution than at the top and has mainly been driven by growing capital incomes at the higher end of the income distribution, in contrast to the United States and the United Kingdom, where salaries are the main drivers of increasing income inequalities. The slower income growth at the bottom of the income distribution is due more to the slower growth of social benefits than to changes in wages (OECD, 2017). However, it is unclear how the general rising income disparity is reflected within families—that is, whether growing income disparity is occurring within or between families and to what extent the proximate network is more similar in terms of incomes.

3 | METHODS AND DATA

In this study, we analysed the income distribution in family networks for two cohorts of 35-year-old men and women born in Sweden and living there in 1991 and 2009. We examined the extent to which their siblings, mothers, and fathers have similar income levels. In addition, we examined income disparities within family networks across different parts of the income distribution and for geographically proximate networks, as compared with the whole family network of parents and siblings. We also compared the income distribution within their family networks in 1991 and 2009 to assess whether income differentials within family networks differ between these two points in time.1

For our purposes, we have had access to microdata for the years investigated from various administrative registers provided by Statistics Sweden. The data contain pseudonymised information on all registered residents in Sweden, with linked individual data. The data also include attributes on demographic and socio-economic characteristics, links to family members (parents and siblings), and detailed information on place of residence.

The data used in this study include individual records on two cohorts of all Swedish-born 35-year-old residents of Sweden in 1991 and 2009, born in 1956 and 1974, totalling 101,308 in 1991 and 101,666 in 2009. The study is limited to Swedish-born residents, as the information on family connections for the group of non-Swedish-born is incomplete. For these individuals, we have linked information on their parents and siblings. Included in the dataset is information on disposable income, age, gender, and place of residence for all individuals. We have chosen the age of 35 as our point of departure as this is the age at which most people are established in the labour market, and their income reflects their long-term income.2

Previous studies have shown that the top incomes have grown strongly since the 1990s and particularly that the income development of the richest 1% has had a strong influence on income disparities over time, mainly due to income from capital (Björklund, Roine, & Waldenström, 2012; OECD, 2017). Because we are interested in the income development among the population majority, we have therefore excluded the 1% with the highest disposable incomes. Another reason for this exclusion is the rather large annual variation in income in this group, which was not found in other parts of the income distribution. All incomes with a value of zero and the 1% with the lowest incomes are also excluded, as this group is presumably diverse and consists of persons with neither taxable income in Sweden nor transfer payments. This leaves us with a population of 97,946 35-year-olds in 1991 and 97,571 in 2009 (see Table 1 for sample description).

To capture contemporary economic resources within the family network, we use the disposable income of both the parents and the adult child when the child is established in the labour market. However, as we wanted to observe the income of the parents when most of them were still in the labour market, we observed their income 5 years earlier, that is, in 1986 and 2004, which allowed us to better capture the socio-economic position of the parental generation. At age 65, many would be retired and others not. Thus, the extent to which the disposable income would reflect their economic position would vary considerably. The average age of the parents in the study is now about 60 years, and the included siblings are 25–45 years old. See Table A1 for descriptive statistics on income and age.

The analyses in the models are based on the logarithm of annual individual disposable income (see Table A1). The definition of

TABLE 1 Sample

	1991	2009
Total population of all 35-year-olds	118,234	127,168
All Swedish born 35-year-olds that:	101,308	101,666
Have an income >0 SEK, excluding the 1% at the top and the bottom of the income distribution	97,946	97,571
Have a mother[a]	85,662	88,951
Have a father[a]	76,413	83,389
Have a mother or father[a]	93,339	94,520
Have sibling(s)[a]	84,471	84,856

[a]With income >0 SEK, excluding the 1% at the top and the bottom of the income distribution.

disposable income in the Statistics Sweden data is the sum of all incomes (wages and capital) and taxable and nontaxable transfers (such as parental and sickness benefits and housing allowances) minus tax and other negative transfer payments.

In order to get a general picture of the extent to which men and women 1991 and 2009 have more or less homogenous family networks in terms of income similarity, we used OLS to measure the association of the family network's income, the siblings' income, and the parents' income with the conditional mean of the income of the 35-year-old in focus. The dependent variable in each model is the 35-year-old men's and women's individual log income. The family network's average log of income is used as an independent variable when estimating the association of the 35-year-old's income with that of the family network (in social mobility studies, this measure is commonly referred to as income elasticities). When estimating how the 35-year-old's income is correlated with that of their siblings and each of their parents, we use the siblings' average log of income and the parents' individual log of income as independent variables. Cases in which the 35-year-old has no parents and/or siblings with registered income over zero SEK, as well as those at the 1% top and bottom of their income distribution, are dropped from the analysis. We control for the parents' age and having a parent in the models, as well as the number of siblings in the models for the family networks and siblings' income. We compare the outcomes for 1991 and 2009 to determine whether the intrafamily income disparities differ between the two points in time. As we believe the outcomes are highly gendered, we carry out separate analyses by gender when examining the income disparities within the 35-year-olds' family networks and compare the 35-year-old daughters' and sons' incomes with those of their fathers and mothers independently. In addition, we test the interaction effect between the family networks'/siblings'/parents' income and gender and between the family networks'/siblings'/parents' income and year, in integrated models. The results of the interaction analyses are included in the text but not in the tables (available from the authors upon request). However, as the size of the OLS coefficient depends on the income dispersion in the two generations, we have also reported the intergenerational correlation coefficient (Björklund & Jäntti, 2020; Lefranc, 2018). By multiplying the coefficient from the OLS with the ratio between the standard deviations of the incomes of parents, children, and siblings, any differences in income disparity between generations are taken into account.

While estimations from OLS regressions and intergenerational correlations are useful for understanding how family networks', siblings', and parents' contemporary incomes on average are correlated with the income of the 35-year-olds, there is reason to believe that the correlations vary across the income distribution. It is possible that the strength of the correlation between, for example, a father's income and that of his adult children at the top of the income distribution is different than for adult children at the bottom. Quantile regression offers an alternative for uncovering asymmetric patterns in the family's income distribution that OLS would conceal, as OLS estimates the association between the family network income and the conditional mean of income in the younger generation. With quantile regression, estimations can be made at an arbitrary point in the conditional distribution of the dependent variable. In this paper, we have made estimations for three quantiles: the 0.25, 0.50, and 0.75 quantiles. Using quantile regression (Koenker & Bassett, 1978), it is possible to examine differences in the strength of the intrafamily income correlations. As described by Koenker and Hallock (2001), a simple OLS assumes a constant marginal impact across the entire distribution of the dependent variable and only estimates how the predictor variables are related to the mean value of the dependent variable. Quantile regression, however, allows researchers to model the predictors against different quantiles of the distribution for the dependent variable. More specifically, quantile regression allows us to evaluate the correlations between the income in the whole family network (as well as that of parents and siblings) and adult children's income on different segments of the conditional income distribution. Given a set of explanatory variables, we use quantile regression to estimate adult children's income conditional on selected quantile functions (e.g., the 0.25, 0.50, and 0.75 quantiles). In text, we refer to the 0.25 quantile as the lower end of the income distribution and the 0.75 quantile as the upper end. We also perform tests of the null hypothesis of equality on the family network's income (as well as that of the parents and siblings) across quantiles. This is done through standard Wald tests using bootstrapped estimates of the covariance matrix. Thus, by also using quantile regression, we can more completely depict how the associations vary throughout the income distribution and compare the results for two points in time.

To examine the intrafamily income distribution in the geographically proximate family network as compared with the whole family network, we have also run separate analyses on the geographically proximate and the whole family networks. The geographically proximate family network is defined here as only the family members living within the same local labour market (LLM) region. The geographical proximity of siblings and parents has also been tested in separate models (see Table 2 for statistics on geographically proximate and distant family networks).

TABLE 2 Regression results for family network, sibling network and distance to family network, and sibling network and parents

		OLS			
Model	**Dep. variable: log income of 35-year-old**	**Men 1991**	**Men 2009**	**Women 1991**	**Women 2009**
Family network	Average income family network (log)	0.276 (0.008)	0.297 (0.008)	0.170 (0.007)	0.226 (0.007)
	Sample size	47,580	48,555	45,407	46,466
	Adjusted R^2	0.033	0.039	0.014	0.023
Near family network	Average income near family network (log)	0.254 (0.008)	0.259 (0.008)	0.148 (0.007)	0.204 (0.007)
	Sample size	39,537	38,593	35,893	36,183
	Adjusted R^2	0.032	0.035	0.015	0.025
Sibling network	Average income sibling(s) log	0.157 (0.006)	0.151 (0.006)	0.089 (0.005)	0.103 (0.005)
	Sample size	43,335	43,338	41,136	41,518
	Adjusted R^2	0.021	0.022	0.006	0.012
Near sibling network	Average income siblings living near (log)	0.169 (0.007)	0.162 (0.006)	0.088 (0.006)	0.114 (0.006)
	Sample size	32,091	29,926	29,174	28,177
	Adjusted R^2	0.023	0.024	0.007	0.015
Living near father	Father's income (log)	0.194 (0.007)	0.158 (0.006)	0.076 (0.007)	0.112 (0.006)
	Sample size	29,298	29,567	26,062	27,177
	Adjusted R^2	0.027	0.022	0.007	0.013
Living distant from father	Father's income (log)	0.150 (0.012)	0.143 (0.010)	0.063 (0.010)	0.090 (0.009)
	Sample size	9,802	13,035	11,251	13,610
	Adjusted R^2	0.018	0.021	0.004	0.009
Living near mother	Mother's income (log)	0.040 (0.004)	0.103 (0.007)	0.059 (0.004)	0.119 (0.006)
	Sample size	33,733	32,606	30,235	30,368
	Adjusted R^2	0.004	0.010	0.009	0.011
Living distant from mother	Mother's income (log)	0.002 (0.008)	0.110 (0.012)	0.036 (0.006)	0.101 (0.011)
	Sample size	10,129	12,786	11,565	13,191
	Adjusted R^2	0.006	0.014	0.003	0.009

Note: Heteroskedasticity-robust standard errors in parentheses. In all cases, the estimated coefficients are statistically different from zero at the 1% level. Other regressors in the network models include dummy variables for having a mother, having a father, age category of father, age category of mother, and number of siblings. Another regressor included in the models controlling for distance to parent is the age category of the parent.
Abbreviation: OLS, ordinary least squares.

4 | RESULTS

First, we analysed the association between the income of the 35-year-old men and women and the average income in their whole family network, including siblings and parents, using OLS regressions for the two points in time. As can be seen in Table 2, men's incomes are more associated with their family network's average income compared with women's income. The income for both men and women aged 35 years was more associated with that of their parents and siblings in 2009 compared with 1991. In addition, models with time-interaction effects show that the correlation between the 35-year-olds' income and the average income in their family network had increased over time, when analysing both the total network (p = .000) and the geographically proximate family network (p = .000). These results indicate that the increasing individual income disparities are accompanied by a tendency towards more homogeneous family networks, whereby the high-income earners are becoming more likely to have high-income family members and the low-income earners to have low-income family members.

As the size of the OLS coefficient depends on the income dispersion in the two generations, it is also useful to look at the intergenerational correlation coefficient (Table 3). The pattern remains that men's income overall is more correlated with that of their family members and network (except for their mothers) compared with women. However, there is no general tendency of an increase between the 2 years among men when looking at the correlation with the whole or geographically proximate family network. Part of the reason why men have become more similar to their networks can hence be attributed to changed income dispersion. Daughters seem to have become slightly more similar to their family network regarding income but still less so than men. This is likely an outcome of women's increasingly stronger position in the labour market.

To assess intrafamily income distribution, we ran quantile regressions. The specifications used are the same as in the OLS regressions

TABLE 3 Intergenerational income correlations and ratio of standard deviation (SD)

	Sons				Daughters			
	1991		2009		1991		2009	
	Intergenerational income correlations[a]	Ratio of SD	Intergenerational income correlations[a]	Ratio of SD	Intergenerational income correlations[a]	Ratio of SD	Intergenerational income correlations[a]	Ratio of SD
Family network	0.18	0.65	0.17	0.58	0.13	0.74	0.15	0.66
Near family network	0.18	0.73	0.17	0.66	0.12	0.83	0.15	0.75
Sibling network	0.13	0.80	0.13	0.84	0.08	0.91	0.10	0.95
Near sibling network	0.14	0.83	0.14	0.86	0.08	0.94	0.11	0.98
Father	0.16	0.88	0.14	0.88	0.07	1.00	0.11	1.00
Father living near	0.17	0.88	0.14	0.88	0.08	1.00	0.11	1.00
Father living distant	0.14	0.90	0.13	0.90	0.06	1.03	0.09	1.02
Mother	0.04	1.38	0.08	0.78	0.08	1.57	0.10	0.89
Mother living near	0.05	1.35	0.08	0.78	0.09	1.54	0.11	0.89
Mother living distant	0.00	1.38	0.09	0.78	0.06	1.57	0.09	0.89

[a]The correlation is equal to the income elasticity multiplied by the ratio between the variances for the income variables.

above, that is, regressing the log of the 35-year-old's income on that of the average family network income and controlling for number of siblings and having a mother or father. The results from the quantile regressions, shown in Table 4, provide a picture of intrafamily income disparities in different income quantiles. Tests of equality of the family network's average income coefficients show that in 2009, the income correlation between the family network and the 35-year-old men was significantly greater at the bottom of the men's income distribution than at the top (p = .000 in 2009), whereas in 1991, the intrafamily income disparities did not vary over their income distribution (p = .097 in 1991). This reflects that, over time, men at the lowest end of the income distribution have incomes more similar to the network average, whereas this trend is not found for the 35-year-old men in the highest quantile. For women, the intrafamily income disparities did not vary over their income distribution in 1991, whereas in 2009, it is the 35-year-old women in the 0.75 quantile whose incomes are more strongly correlated with those of their family networks (p = .004 in 2009). The decreased intrafamily income disparities between the two analysed time points thus seem to differ for men and women aged 35 years. For men, it was among the low-income earners that we found decreasing intrafamily income disparities when comparing 1991 with 2009; that is, for male low-income earners, it has become less likely to have family members with higher incomes. Meanwhile, we do not see this pattern for women; instead, we find that over the period investigated, female high-income earners have become less likely to have family members with low incomes.

4.1 | Associations with siblings' income

Looking specifically at the association between siblings' income and that of men and women aged 35 years (see Table 2) implies that incomes in sibling networks were more homogeneous in 2009 than 1991, at least for women. OLS with time-interaction effects shows significant difference between years (p = .027). This implies that, for women, the incomes in sibling networks were more homogeneous in 2009 than 1991. The tendency is similar when we look at the correlation coefficient while taking into account the variance (Table 3). We see how women's stronger position in the labour market over time gives them a relatively high income in relation to men in their family network and thus better possibilities to provide economic support to their parents, for instance.

TABLE 4 Quantile regression results for family network

Year	Dep. variable: log income	Women			Men		
		Q25	Q50	Q75	Q25	Q50	Q75
1991	Average income family network (log)	0.167 (0.01)	0.167 (0.01)	0.171 (0.01)	0.273 (0.01)	0.248 (0.01)	0.255 (0.01)
	Sample size:	45,407			47,580		
	Pseudo R^2	0.008	0.009	0.012	0.016	0.022	0.028
2009	Average income family network (log)	0.223 (0.01)	0.215 (0.01)	0.254 (0.01)	0.330 (0.01)	0.295 (0.01)	0.278 (0.01)
	Sample size:	46,466			48,555		
	Pseudo R^2	0.011	0.016	0.027	0.027	0.031	0.037

Note: Bootstrapped standard errors for quantile regressions in parentheses. In all cases, the estimated coefficients are statistically different from zero at the 1% level. Another regressor included is the age category of the parent in each model.

When only including siblings living within the same LLM as the individual, we find similar results. Hence, the results were very similar to those found for the whole family network. Despite the fact that migration is often correlated with increased income, we find a similar income distribution in geographically proximate as compared with whole sibling networks. This means that siblings with a higher or lower income are equally likely to live close to as far from each other.

Analyses across income quantiles (not shown but available upon request) show a significantly stronger association between men's income and siblings' average income in the lowest as compared with the highest quantile, in both 1991 and 2009 (p = .000). Thus, 35-year-old men at the bottom of the income distribution are more similar to their siblings, in terms of income, than are those at the top of the distribution, similar to the findings from the analysis of the whole network. For the 35-year-old women, there are no significant differences based on position in the income distribution.

4.2 | Association with parents' income

As expected, the OLS model revealed a positive association (sig.) between the income of the parents and that of the adult child at age 35 (see Tables 5 and 6). Specifications with gender-interaction effects show that the 35-year-olds' incomes were more strongly associated with their father's income than with their mother's. Sons, compared with daughters, are also more likely to have an income similar to that of their father (p = .000) in both 1991 and 2009, as a consequence of gender differences in incomes.

The main difference when it comes to the ratio of standard deviations (Table 3) is that the variance for mothers was higher for the 1991 cohort compared with 2009, and for that generation, the ratio was above 1 in relation to sons and daughters. In 2009, the ratio was below 1 for both mothers and fathers in relation to their children. This indicates that the mothers' income dispersion has decreased, and they have thereby become more similar to their children. This explains to some extent why sons and daughters have become more similar to their mothers, but as revealed in Table 3, the mothers' income has become more similar to that of their sons and daughters, even when this reduction of income variation among mothers over time is taken into account.

For sons, we saw no clear general trend of increased similarity to their fathers. We did, however, find that differences between income quantiles emerged between the two time points (see Table 5). Tests of equality of the father's income coefficients show that in 1991, the income correlation between the fathers and their 35-year-old sons did not vary significantly between the top and the bottom of the men's income distribution, whereas in 2009, the income correlation is significantly greater at the bottom than at the top (p = .007). Thus, although the average income disparity between fathers and sons has increased, this is not the case at the lowest end of the income distribution (0.25 quantile), where it has become more likely for sons with a lower income to have fathers with an equally low income. These results seem to differ from findings by Björklund et al. (2012), indicating the strongest association in the top of the income distribution. However, because the top (and bottom) earners are excluded in our analysis, the two studies are not fully comparable.

The results from the OLS model and income correlation coefficient indicate a general tendency for daughters' incomes to be more similar to their parents' in 2009 than in 1991. The estimates from the quantile regressions show that for daughters, the decreased income disparities mainly occur in the top-end stratum (see Table 6). Thus, it has become more likely for daughters who are high-income earners to also have fathers who are at the top of the income distribution. Tests for equality of coefficients across quantiles show that the income correlation between the father's and the daughter's income is significantly higher at the top end of the income distribution than at the bottom (p = .000 in 2009).

When analysing the income patterns of the geographically proximate family members, we find a stronger effect of geographical proximity to parents in 1991 but no such effect in 2009 (see Table 2). When distance to parents and time-interaction effects are controlled for, the results show that in 1991, sons' incomes were more similar to fathers' incomes (p = .000), and daughters' incomes were more correlated with mothers' incomes (p = .000) if they lived within the same

TABLE 5 Regression results for 35-year-old sons

Year	Dep. variable: log income of adult son	OLS	Quantile		
			0.25	0.50	0.75
1991	Father's income (log)	0.185 (0.006)	0.174 (0.01)	0.168 (0.01)	0.183 (0.01)
	Sample size	39,100			
	[Pseudo-]R^2	0.024			
2009	Father's income (log)	0.155 (0.005)	0.169 (0.01)	0.160 (0.00)	0.150 (0.01)
	Sample size	42,602			
	[Pseudo-]R^2	0.0213			
1991	Mother's income (log)	0.032 (0.004)	0.025 (0.00)	0.031 (0.00)	0.033 (0.00)
	Sample size	43,862			
	Adjusted R^2	0.003			
2009	Mother's income (log)	0.107 (0.006)	0.106 (0.01)	0.110 (0.01)	0.118 (0.01)
	Sample size	45,392			
	[Pseudo-]R^2	0.011			

Note: Bootstrapped standard errors for quantile regressions in parentheses. Heteroskedasticity-robust standard errors are used for the OLS regression. In all cases, the estimated coefficients are statistically different from zero at the 1% level. Other regressors include dummy variables for having a mother, having a father, age category of father, age category of mother, and number of siblings.
Abbreviation: OLS, ordinary least squares.

TABLE 6 Regression results for 35-year-old daughters

Year	Dep. variable: log income of adult daughter	OLS	Quantile		
			0.25	0.50	0.75
1991	Father's income (log)	0.073 (0.006)	0.070 (0.01)	0.078 (0.01)	0.085 (0.01)
	Sample size	37,313			
	[Pseudo-]R^2	0.006			
2009	Father's income (log)	0.105 (0.005)	0.093 (0.01)	0.096 (0.01)	0.119 (0.00)
	Sample size	40,787			
	[Pseudo-]R^2	0.011			
1991	Mother's income (log)	0.052 (0.003)	0.058 (0.01)	0.048 (0.00)	0.048 (0.00)
	Sample size	41,800			
	[Pseudo-]R^2	0.007			
2009	Mother's income (log)	0.114 (0.006)	0.113 (0.01)	0.111 (0.01)	0.125 (0.01)
	Sample size	43,559			
	[Pseudo-]R^2	0.011			

Note: Bootstrapped standard errors for quantile regressions in parentheses. Heteroskedasticity-robust standard errors are used for the OLS regression. In all cases, the estimated coefficients are statistically different from zero at the 1% level. Another regressor included is the age category of the parent in each model.
Abbreviation: OLS, ordinary least squares.

LLM as their parents, compared with those living further away. In 2009, these correlations did not significantly differ by distance to parents, and sons living close to their father had less similar incomes than in 1991 (p = .001). The tendency is the same when we look at the income correlations in Table 3. One explanation for this could be a higher prevalence of career-related migration to the cities in the earlier generation (born in 1956), whereas in the later generation (born in 1974), it is more common for the parents to already live in the cities.

5 | DISCUSSION

It has been argued that the presence of and nearness to a family network is increasingly important in times when public institutions for care and support are at stake. This is the case even in countries with a strong welfare state, like Sweden. However, possibilities for and the need of family support also depend on the economic resources in the family networks, and to date, few studies have empirically explored

the more general patterns and trends of economic resources available in family networks. This is partly because data that would allow for exploring patterns on the national level have not been available. Here, we have been able to examine some of the features of economic resources in family networks by using an extensive national dataset and analysing the income distribution in the family networks of two Swedish birth cohorts at age 35 across genders and income groups. We have explored the network of parents and siblings and also specifically examined the geographically proximate family network.

An implication of the results in this study is, for instance, that men and women with low incomes are less likely to have high-income parents who can provide economic support and are more likely to have parents who need economic assistance. In addition, we find that sibling groups also tend to be homogeneous in terms of income distribution, which means, for instance, that a person with low income is more likely to share the responsibility for the care and support of their parents with siblings of equally low income. This could be an additional disadvantage to members of low-income families and may contribute to processes of cumulative inequality in both the old and the young generations.

However, our analyses reveal that the patterns are more multifaceted when the results are analysed across genders and parts of the income distribution. Because we found that men in low-income groups, compared with middle- and high-income groups, over time become more likely to have the same income as their family members, low-income men are the most likely to be part of a homogenous family network in which parents and siblings share a situation of low income. They may be less able to provide economic support to relatives and are more likely to be in a situation in which the potential for intergenerational support from parents is limited due to a lack of economic resources in the parental generation as well.

In line with previous research, our study shows that men's incomes, compared with women's, are more strongly correlated with those of their family members. However, this difference has decreased over time, possibly as an effect of women's higher labour market participation rate. Increased homogeneity in family networks can be the result of a lack of social mobility but can also to some extent be explained by decreased income disparity, as the results for women and daughters in this study reveal. In 2009, adult daughters had incomes more similar to those of both their parents and siblings, compared with 1991. Moreover, we found that high-income women were the most likely to be surrounded by kin with similar incomes, compared with women with low incomes. As previous research indicates that daughters assume greater responsibility for supporting and caring for their parents (Chiatti et al., 2013; Haberkern, Schmid, & Szydlik, 2015; Silverstein et al., 2006), this intrafamily income distribution may influence the preconditions for intergenerational exchange.

As geographical proximity is known to influence the frequency and characteristics of support and care within families, we also analysed the intrafamily income disparities in the proximate family network. However, we did not find support for the assumption that geographically proximate family networks differ from more geographically spread. A regional perspective has been applied in studies on access to family network (Lundholm, 2015) and in research on intergenerational mobility in Sweden showing large regional differences (Heidrich, 2017). These findings show the importance of applying also a regional perspective in future research on economic resources in family networks.

As income is correlated with education level and socio-economic position in general, income and economic capital also serve as a proxy for other forms of resources, including social and cultural capital. Our finding that families tend to be homogenous in terms of income could be valid, at least to some extent, for other forms of capital as well. But to establish this, more research is needed. Hence, exploring intrafamily disparities in education level, and whether these have changed, is an important issue for further research. We also believe that future research would benefit from exploring not only disposable incomes but also different kinds of income; including an even wider social network, for instance grandchildren, partners, in-laws, and friends, not least for small family networks; looking beyond patterns of traditional families; and comparing rural and urban areas. Examining the income distribution in the family networks of these different groups is a major task for future research and may be somewhat difficult due to lack of data.

Another important topic for research is to further examine how the intrafamily income distribution influences the financial and caring support, research that must be based on surveys as register data do not include this kind of information. As Evandrou et al. (2018) claim, it is also important to explore the exchange between generations from a longitudinal perspective, and concurrently, and this is also the case when it comes to research on intrafamily income distribution. Hence, an important task for future research would be to include more years and longer time series to follow life course patterns.

We argue that the changing socio-economic composition within family networks form an important research field and that the observed patterns of increasingly homogeneous families among low-income earners should be an issue of major concern in times when public care and support for both the old and the young are at stake in many countries.

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NOTES

[1] These 2 years were chosen in order to extend the period between observations as much as the data allow (data for later years were not available to the members of the project). Despite macroeconomic events, the analysis of data from Statistics Sweden of the change in disposable income over time reveals no dramatic deviations in individual disposable incomes in the years before and after 1991 and 2009, respectively. The observations from the 2 years can therefore be

regarded as reliable measures of the income distribution in the early 1990s on the one hand and the situation almost two decades later on the other.

[2] While the correlation between current and lifetime income is sensitive to factors such as age, gender, and cohort, it has been shown that the annual income for men aged 35–40 is a good proxy for their lifetime income (Böhlmark & Lindqvist, 2006; Haider & Solon, 2006). At age 35, many women (and men) in Sweden are at home, taking care of their children, and receiving their income through transfers. Therefore, we have used disposable income in the analyses, as it is a better proxy for both women's and men's long-term income.

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APPENDIX A.

TABLE A1 Descriptive statistics for income and sample

	1991				2009			
Variable	Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Log of adult son's income	7.45	0.40	4.87	8.18	7.77	0.50	4.29	8.64
Log of adult daughter's income	7.30	0.35	5.37	8.05	7.56	0.44	4.61	8.46
Log of father's income	7.24	0.35	5.93	8.18	7.62	0.44	5.8	9.08
Log of father's income, living near	7.23	0.35	5.93	8.18	7.61	0.44	5.80	9.08
Log of father's income, living distant	7.27	0.36	5.93	8.18	7.63	0.45	5.80	9.08
Log of mother's income	6.81	0.55	3.76	7.68	7.37	0.39	5.48	8.51
Log of mother's income, living near	6.81	0.54	3.76	7.68	7.37	0.39	5.48	8.51
Log of mother's income, living distant	6.83	0.55	3.76	7.68	7.39	0.39	5.48	8.50
Log of sibling(s') income	7.39	0.32	5.19	8.48	7.68	0.42	4.74	9.04
Log of near sibling(s) network income	7.37	0.33	5.14	8.48	7.67	0.43	4.74	9.04
Log of family network income	7.24	0.26	3.8	8.43	7.61	0.29	4.85	9.06
Log of near family network income	7.22	0.29	3.80	8.45	7.60	0.33	4.80	9.06
Father's mean age	62				59			
Mother's mean age	58				57			
Sibling(s') mean age	35				35			
Mean no. of sibling(s)	1.68				1.36			
Sample size	97,946				97,571			