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Changing Nordic model? A policy analysis

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Changing Nordic model? A policy analysis*

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Abstract

Based on simulated counterfactual analyses, this paper studies the long-term evolution of key policy outcomes associated with the Nordic model. The results show that Finland had the most redistributive policy changes in the studied time periods. The Danish flexicurity model involves high benefit levels, and the participation tax rates were the highest. The Swedish work-line policy increased the risk of poverty by 1.0 percentage point and the Gini coefficient by 0.4. In Sweden, the behavioural effects did not fully offset the negative static effects on the risk-of-poverty rate and inequality. From a policy perspective, the results indicate that the Nordic model is resilient. In Sweden, a significant increase in the risk of poverty implies that there are other factors, such as immigration, that challenge the Nordic model.

JEL: H23, I32, I38

Keywords: welfare states, Nordic countries, social protection, poverty, microsimulation

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1 Introduction

Although we are inclined to think that the Nordic model is a single model, Nordic countries have adopted very different policies as a response to the global economy and ageing population. Based on simulated counterfactuals, this paper studies the long-term evolution of key policy outcomes associated with the Nordic model. In the Nordic model, social protection is based on extensive social transfers and services that require high employment rates. The aim of this paper is to isolate the active policy changes in tax-benefit systems and to study how they have affected the risk of poverty, inequality and employment.

This paper is motivated by several factors. First, the economics and social policy literature often presents welfare regimes as typologies. For example, in his seminal study, Gøsta Esping-Andersen (1990) divides regimes into liberal, conservative and social democratic. Others simply refer to the Nordic welfare model as opposed to the Anglo-Saxon or Central European models. However, the benefit levels and labour market policies differ strikingly between the Nordic countries. For example, in Sweden, the central-right government (2006–2014) introduced an 'arbetslinjen' (*the work-line*) policy aimed at increasing labour supply and reducing unemployment. The Danish flexicurity (flexibility + security) model combines a flexible labour market and a generous social security system that has a strong emphasis on active labour market policies. Comparative policy evaluation forms the second motivational factor. From a policy perspective, Nordic countries form natural comparison groups for each other. They share similar institutions, cultural values and population sizes.

EU-wide data (EU-SILC) and the EUROMOD model allow for meaningful country comparisons. The EUROMOD microsimulation model addresses what is known as the 'dependent variable problem'. That is, how to conceptualise, operationalise and measure changes across welfare states (Clasen & Siegel, 2007, p. 4). Macro-level country comparisons suffer from a selection bias caused by varying historical, institutional and political contexts. Thus, many authors have argued for a policy-level approach to studying changes in welfare states (Kasza, 2002). Because the EUROMOD model is harmonised across countries, it ideally fits for studying policy-level changes in welfare states. Because EUROMOD is an EU-wide model, Denmark, Finland and Sweden are included in the analyses. The longest studied time period covers the years 2006–2017.

The results show that Finland had the most redistributive policy changes in the studied time periods. In Finland, policy changes decreased the risk of poverty by 1.4 percentage points and the Gini coefficient by 0.9. The Danish flexicurity model involves high benefit levels, and the participation tax rates were the highest. In Denmark, policy changes decreased the risk of poverty by 0.4 percentage point and increased the Gini coefficient by 0.8 point between 2007 and 2017. The Swedish work-line policy forms an interesting case because it was based to a large extent on monetary incentives, allowing for its extensive evaluation using the EUROMOD model. Some researchers have argued that the work-line policy significantly increased poverty and inequality in Sweden. For example, Dal Bó, Finan, Folke, Persson and Rickne (2019) argued that the reforms increased the income gap between the labour market insiders and outsiders, which has increased the

popularity of right-wing populism. The results show that the work-line policy explains only a small proportion of the increased risk-of-poverty rate that occured in the same time period. According to the results, the work-line model increased the risk-of-poverty rate by 1.0 percentage point and the Gini coefficient by 0.4. The employment effect was approximately 159 000 employees if a 0.25 participation elasticity parameter is assumed. In Sweden, the behavioural effects did not fully off-set the negative static effects on the risk-of-poverty rate and inequality.

The results indicate that the Nordic model has been resilient in the sense that active policy choices have had little effect on key policy outcomes, such as the risk of poverty or inequality. However, the Swedish example shows that there can be factors other than policy that pose threats to the Nordic model. In the studied time period, there has been a significant increase in the risk of poverty linked to factors other than policy, such as a structural population change. In Sweden, one possible reason for the increased risk of poverty is a strong increase in immigration.

The current paper is organised in the following way. The next section introduces related literature and contributions. The third section explores the institutional settings in the three Nordic countries. The fourth section presents the data and methodology. The fifth section presents the static and dynamic simulation results, and the last section concludes the paper.

2 Related Literature

This study is linked to two strands of literature. The first strand involves studies that simulate the effects of tax-benefit systems on income distribution, and the second involves Nordic labour supply literature. Several studies have used decomposition methods to identify the policy effects on income distribution using the EUROMOD model. Bussolo et al. (2019) studied vertical and horizontal inequality in 28 EU countries between 2007 and 2014. Several papers have studied the distributive effect of changes in European tax-benefit systems after the 2008 financial crisis (Bargain, Callan, Doorley, & Keane, 2017; De Agostini, Paulus, & Tasseva, 2016). De Agostini et al. (2016) included Nordic countries and compared several time periods between 2008 and 2015 after the financial crisis. Paulus and Tasseva (2018) decomposed changes in income distribution into policy changes and changes in the market and population characteristics in 27 EU countries between 2007 and 2011. They found that Sweden had one of the largest poverty increasing policies during this period. Other papers have focused on a specific policy domain, such as the role of automatic stabilisers (Callan, Doorley, & Savage, 2018; Dolls, Fuest, & Peichl, 2012) or fiscal consolidation (Paulus, Figari, & Sutherland, 2017), and some papers have focused on a specific geographic area (Navicke, 2017). In comparison to this study, the above-mentioned studies do not take into account the behavioural labour supply effects of the changes in the tax-benefit systems.

A substantial body of literature has studied the labour supply effects of in-work benefits and various active labour market policies (ALMPs). Evaluation strategies typically follow a quasi-experimental design or structural discrete choice models. The latter strategy

involves more stringent assumptions but allows for *ex-ante* reform evaluations. Related to this study, the Swedish earned income tax credit (EITC) has drawn a considerable amount of research attention. The Swedish EITC was implemented in five stages between the years of 2007 and 2014, and it substantially reduced income taxes for low-income individuals. Given the difficulties of evaluating the EITC using a quasi-experimental design (Edmark, Liang, Mörk & Selin, 2016), structural models have been used. Using the SWEtaxben model, Ryner (2014) found that the EITC increased employment by 90 000 persons and hours worked by 2.4 percent. Flood (2010) estimated that the first four stages improved employment by 72 000 persons. Instead of using a structural discrete choice model, Lundberg's (2017) simulation model uses exogenous elasticities and taxable income rather than hours worked. He estimated that the employment effect was 128 000 individuals or 2.3 percent larger than without the EITC. The estimated degree of self-financing was 21 percent.

In the Danish case, interest lies more in active labour market policies. The Danish flexicurity model provides high-income security for the unemployed, with high marginal tax rates for low-income individuals. The high tax rates are compensated with ALMPs and investments in job search services for the unemployed. The Danish government initiated randomised experiments to evaluate the employment effects of activation policies. The first experiment, called Quick Back to Work (QBW), was conducted in two counties in 2005 and 2006. The participants were members of unemployment insurance funds, implying that they had a rather strong attachment to the labour market. The experiment consisted of job search programs, intensive counselling and a mandatory training programme. Graversen and van Ours (2008) found a substantial 30% increase in the re-employment rate. Graversen and van Ours also found that the threat effect and job-search assistance were the most important factors in explaining the success of the experiment. There is further evidence that it was not the activation *per se* that was effective, but rather the threat of activation (Rosholm, 2008; Vikström, Rosholm & Svarer, 2013). A follow-up experiment (QBW2) confirmed that meetings with case workers and early activation were particularly efficient (Maibom, Rosholm & Svarer, 2017). A general conclusion from these experiments is that ALMPs – a key part of the Danish flexicurity model – can reduce unemployment duration significantly.

This study contributes to the existing literature as follows. The EUROMOD model has not been used with a specific focus on Nordic countries and their distinctive policies. Unlike most of the earlier studies, the paper also examines the behavioural labour supply responses of the reforms. From the perspective of comparative welfare state literature, the EUROMOD model is a proper tool to compare policy-level changes between welfare states.

3 Institutional Setting

The Nordic model can be characterised with universalism, big governments in terms of public spending and a strong aim towards equality. However, there is no consensus in the literature on the exact limits of the welfare model. As small open economies, Nordic

Table 1: Last-resort social assistance monthly amounts for different household types (2015).

	Single person	Single parent	Couple with children
Spot exchange rates 31.12.2015 (€)			
Denmark	790	1932	1292
Finland	486	1180	1058
Sweden	423	1007	1430
PPP corrected (€)			
Denmark	631	1541	1030
Finland	437	1062	953
Sweden	343	817	1160

Note:
1) Purchasing power parities (EU15=1) are based on actual individual consumption.
2) The calculations are based on two-children households. In Finland, the calculations are based on children aged 0–9 and 10–17. In Sweden, the amounts are based on children aged between 4–6 and 15–18.
Sources: Social assistance amounts are calculated from EUROMOD country reports 2015, and the PPPs are based on Eurostat's database (2019a).

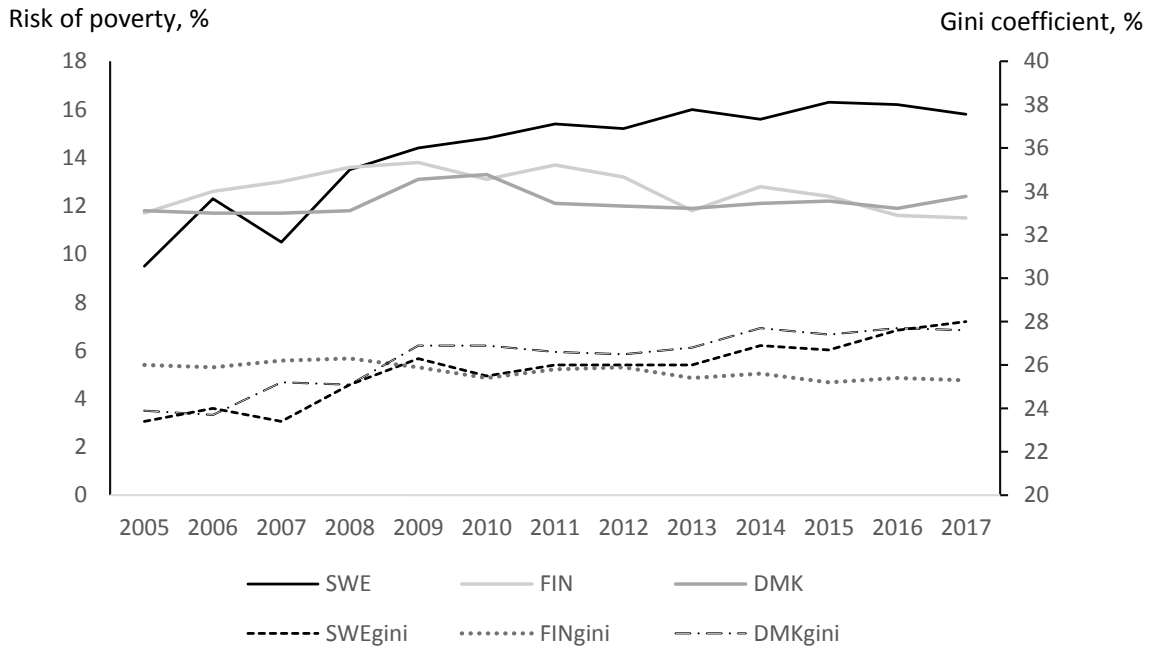
countries have responded differently to the pressures of the global economy.

Last-resort social assistance provides a good starting point for studying benefit levels in Nordic countries. Last-resort social assistance indicates the minimum level of income that a society finds acceptable. Table 1 shows the last-resort social assistance levels for different household types in 2015. The amounts are not fully comparable because the eligibility conditions vary, and the amounts depend on the ages of the household's children. Nevertheless, it is clear that there are significant differences in the social assistance levels. The Swedish social assistance is only 54% of the Danish amount for single persons (PPP corrected). Sweden has the lowest and Denmark the largest social assistance amounts, and Finland is in the middle. The differences in social assistance amounts decrease for single parents and couples with children.

Figure 1 shows the risk-of-poverty rates and Gini coefficients between the years 2005 and 2017. There is a significant increase in the risk-of-poverty rate in Sweden. Most of this increase has happened when the Swedish work-line policy was implemented between 2007 and 2014. During this time period, the risk-of-poverty rate increased by 5.1 percentage points. One of the questions this paper aims to answer is whether this increase was caused by active policy changes. At the same time, Sweden has experienced a large increase in immigration, which may have increased the risk of poverty. Not only the risk-of-poverty, but also the Gini coefficient, has increased in Sweden. The Gini coefficient has been increasing in a very similar way in Denmark. Unlike in Sweden, there is no growing trend in the risk-of-poverty rates in Denmark or Finland. In Finland, there has

been a small decrease in both the risk-of-poverty and the Gini coefficients.

Figure 1: The risk-of-poverty rates and Gini coefficients between 2005 and 2017. The risk-of-poverty thresholds are calculated as 60% of the median equivalised disposable income.



Source: Eurostat (2019b).

Denmark, Finland and Sweden experienced a hike in unemployment rates in the beginning of the 1990s. From there, the three countries took different routes. Reforms towards the Danish flexicurity model were initiated from the mid-1990s as a response to high unemployment. The Danish model combines flexible hiring and firing rules with a generous social safety net and active labour market policies. The central-right government in Sweden (2006–2014) introduced an 'arbetslinjen' (*the work–line*) policy aimed at increasing labour supply and reducing unemployment. Several supply-side reforms were introduced starting in 2007. These included sizeable in-work tax credits (EITC), tightening of sickness insurance, household service deductions, a lower amount of unemployment insurance benefits and new active labour market programmes. Several social insurance benefits were indexed to nominal prices while real wages were rising, or kept constant. For example, the unemployment benefit remained constant in nominal terms, which effectively eroded its level. Finland has not had a clearly stated model, but during the deep recession in the 1990s, fiscal pressures and persistently high unemployment rates were the factors behind retrenchment policies. After the recession, making work pay and

activation policies emphasising individual responsibility became the guiding policies.

4 Data and Methodology

4.1 Data and the EUROMOD Microsimulation Model

EUROMOD is an EU-wide microsimulation model. It applies coded tax and benefit policy rules to micro-level data on individuals and households. The detailed tax-benefit simulations allow for an examination of how social contributions, taxes and benefits affect disposable income. The EUROMOD model is unique in the sense that it is harmonised across countries, allowing for meaningful policy comparisons. The simulations are based on EUROMOD version H1.0+. The input data are based on the European Union Statistics on Income and Living Conditions (EU-SILC). They are collected by individual countries and combine surveys and registers in Nordic countries. For more details on the EUROMOD model, see Sutherland and Figari (2013). EUROMOD is static, but behavioural effects are taken into account by employing various labour supply elasticities to predict employment changes and then reweighting the sample weights. Osei, Pirttilä and Rattenhuber (2019) used a similar approach to study behavioural effects using a microsimulation model based on EUROMOD.

The EUROMOD simulation model allows for creating counterfactual scenarios. It is crucial for isolating changes in a tax-benefit system from changes in the underlying economy and population structure. For example, over time, a tax-benefit system may appear more equal in terms of income distribution even though the real driver is an increase in the number of pensioners. To isolate other time-varying effects from policy changes, the following counterfactual exercise is simulated:

$$\Delta_{policy} = \underbrace{D(y_t^{market}, S_t, X_t)}_{Base} - \underbrace{D^*(y_t^{market}, \rho S_{t-j}, X_t)}_{Counterfactual}, \tag{1}$$

where the baseline disposable income D is presented as a function of the market income y_t, tax-benefit system S_t and demographic characteristics X_t. The counterfactual disposable income D^* is a function of the tax-benefit system at time $t-j$, holding constant the market income and population characteristics. The monetary values (benefits and tax thresholds) of the counterfactual tax-benefit system are uprated with a factor ρ to bring them to the baseline level. Depending on the country, the uprated counterfactual years are 2006 or 2007 and the baseline years 2014 or 2017. The uprating is based on consumer price indices (CPI). Thus, the counterfactual is based on an alternative state of the world in which governments would not have made any reforms.

In Nordic countries, social protection is based on extensive social transfers and services that require high employment rates. Thus, participation in the labour market is a key policy question in Nordic countries. The focus is on the extensive margin. The participation tax rate (PTR) is defined as follows:

$$\tau = 1 - \frac{D(z) - D(u)}{z}, \tag{2}$$

where D denotes disposable income and z gross earnings. $D(u)$ denotes disposable income when unemployed. PTR measures the financial gain from working versus not working. It is assumed that the transition happens from unemployment to employment. Thus, the participation wage needs to be defined. That is the wage that an unemployed person receives when he or she becomes employed. Because the focus is on the evolution of long-term employment and because earnings likely approach averages over a long period of time, the participation wage is calculated as an average wage. The PTRs are calculated at an individual level, and the unemployment benefits are set to zero when an individual becomes employed. Because part-time work is common in countries such as Sweden, the PTRs are also calculated for part-time workers. The PTRs can be transferred into relative employment changes as follows:

$$E = \mathcal{E} \frac{\overline{\tau}^{Base} - \overline{\tau}^{Counterfactual}}{1 - \overline{\tau}^{Base}}, \tag{3}$$

where $\mathcal{E}$ is the labour supply elasticity on the extensive margin, and $\overline{\tau}$ is the average participation tax rate. The reweighting of the sample weights to calculate the dynamic and employment distributional effects is based on formula 3[1]. The simulated tax/benefit systems begin from the year 2006 for Sweden and 2007 for Denmark and Finland. The first examined time period covers the years 2006–2014 (*the work-line policy)* for Sweden and 2007–2014 for Denmark and Finland. To exploit full coverage of the EUROMOD policy years, the additional years 2006-2017 for Sweden and 2007–2017 for Denmark and Finland are examined. The input data are based on EU-SILC 2015. This means that the income reference year is 2014. All the risk-of-poverty thresholds are calculated as 60% of the median equivalised disposable income. The equivalence scale is based on the modified OECD scale.

4.2 Labour Supply Elasticity Literature

The following section reviews the relevant literature on the labour supply elasticities at the extensive margin. In Nordic countries, only a few studies have estimated participation elasticities using a quasi-experimental design. Selin (2016) utilised the 1971 change in joint taxation of Swedish married couples and found estimates between 0.5–1 for married women. Kosonen (2014) exploited exogenous municipal variations in the Finnish child-care benefits and estimated a participation elasticity 0.8 for mothers. Palviainen (2018) estimated labour supply elasticities for Finnish social assistance clients using an earnings disregard reform, but he found no behavioural response on the extensive margin. Chetty, Guren, Manoli and Weber (2013) reviewed quasi-experimental extensive margin literature and found an average elasticity of 0.25. However, the reviewed literature was mostly based on U.S. and U.K. studies, expect for one Danish study. Thus, there is heterogeneity in the results, and the results depend on the subgroup. A further complication is that in

[1]The same weights are used to calculate the dynamic employment and distributional effects because the new weights represent changes in probabilities to be employed and unemployed, which allows for calculating the dynamic distributional effects using expected income.

quasi-experimental settings, tax changes are often small, and there can be behavioural optimisation frictions.

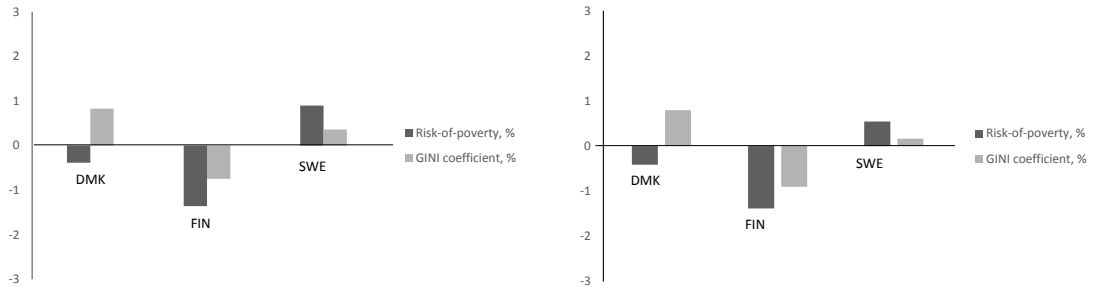
Elasticities may be downward biased because of optimisation frictions related to inattention or adjustment costs. Raj Chetty's (2012) theory derives the bounds on long-term structural elasticity by measuring the utility losses that agents are willing to tolerate from a frictionless optimum. Using elasticity estimates from quasi-experimental studies (U.S and U.K mainly), he estimated a 0.25 frictionless participation elasticity. Jäntti, Pirttilä and Selin (2015) estimated population-wide elasticities for Denmark, Finland and Sweden. They found participation elasticities of 0.21 and 0.17 for Denmark and Finland respectively, and a statistically insignificant estimate for Sweden. This study takes into account general equilibrium effects, but it is not based on a causal quasi-experimental research setting. Because the exact participation elasticities are not known, the employment effects are calculated using the elasticities of 0.1 and 0.25. Based on the reviewed literature, the former can be interpreted as a conservative estimate compared with the latter.

5 Results

5.1 Static Simulation Results

The following section presents static or immediate policy effects on income distribution. Figure 2 shows the policy effects on the risk of poverty and Gini-coefficient for various time periods. The graph on the left covers the years 2007–2014, while the graph on the right covers the years 2007–2017. For Sweden, the year 2006 is used as a comparison year for evaluating the Swedish *arbetslinjen* that was implemented between 2007 and 2014. The simulations cover all the policy changes in this time period. Although all the policy changes were not directly linked to the work-line policy, the simulations reflect the policy of the centre-right government and involve its major policy changes aimed at increasing labour supply.

Figure 2: Static policy effects on the risk of poverty and the Gini coefficient between 2007–2014 (left side) and 2007–2017 (right side).



Note: For Sweden, the years 2006–2014 and 2006–2017 are examined.
Source: Author's calculations based on Euromod version H1.0+.

Interestingly, the risk of poverty increased 1.0 percentage point and the Gini coefficient by 0.4 during the Swedish work-line policy. These increases are clearly less than what can be seen from Figure 1. Thus, compared with the policy effects, the risk of poverty has increased more because of changes in the distribution of market income or demographic structure. One likely reason is a strong increase in immigration during the same time-period in Sweden. The population proportion with a foreign background increased from 14.5 percent to 24.9 percent between 2000 and 2018 (SCB Population Statistics, 2019). In particular, individuals who have arrived as asylum seekers or refugees tend to be at a higher risk of poverty and social exclusion. If the whole time period (2006–2017) is examined, there is a small decrease in the risk of poverty (0.5 percentage point) and the Gini-coefficient (0.2 Gini point). The two time periods (2006–2014 and 2006–2017) are not fully comparable because the earlier period is presented in 2014 euros and the latter one in 2017 euros. However, it can be concluded that the policy changes were more redistributive after the work-line policy in Sweden.

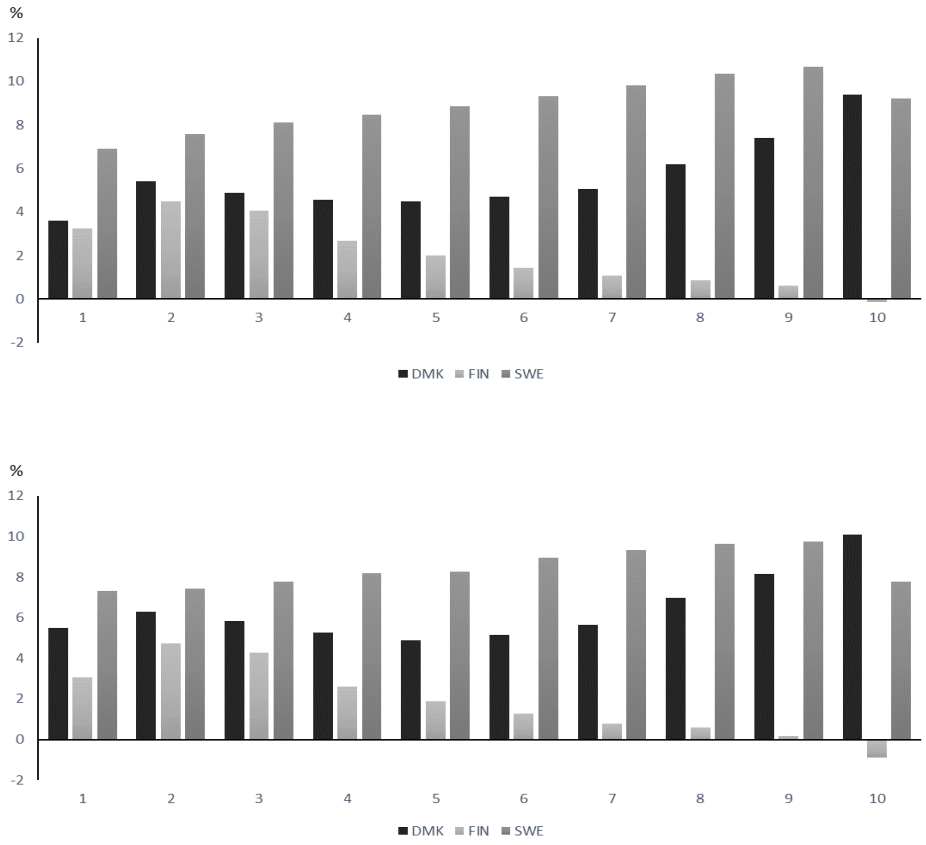
Finland has had the most redistributive policy changes among the examined countries. In Finland, the policy changes decreased the risk of poverty by 1.4 percentage points and the Gini coefficient by 0.9 between 2007 and 2017. In Denmark, the policy changes decreased the risk of poverty, but they increased the Gini coefficient by 0.8 Gini point between 2007 and 2017. In the same time period, the Gini coefficient increased by 2.4 Gini points (see Figure 1). Thus, the policy changes reinforced the observed increase in the Gini coefficient in Denmark.

Figure 3 shows the static policy effects on household equivalent disposable income. In every examined time-period, Sweden has had the largest increase in equivalent disposable income in all the deciles, expect for the highest. In the tenth decile, Denmark has the largest relative increase in equivalent disposable income. In Sweden, even in the lowest income decile, disposable equivalent income increased by 6.9 percentage points between 2006 and 2014. However, the risk of poverty for the unemployed increased by 1.6 percentage points. It should be noted that the EUROMOD simulation model does not fully simulate the tax-benefit systems, and the results depend on how the counterfactual is constructed[2].

These results also reflect the economic situation in each country. In Finland, the economy stagnated after the financial crisis. During this 'lost decade' , there were budgetary constraints to finance tax cuts or increase benefits. Thus, increments in disposable income tend to be lower in Finland. In Sweden, a stronger economy allowed for financing large tax credits on earned income.

[2]For example, the unemployment benefit is only partially simulated in Sweden.

Figure 3: Static policy effects on household equivalent disposable income by income decile groups. The upper graph covers the years 2007-2014 and the lower graph covers 2007-2017.



Note: (1) For Sweden, the years 2006–2014 and 2006–2017 are examined. (2) The results are shown as a percentage change of the counterfactual household income.
Source: Author's calculations based on Euromod version H1.0+.

5.2 Dynamic Simulation Results

This subsection presents the behavioural effects of the changes in tax-benefit systems. Table 2 shows the participation tax rates and dynamic effects on the number of employees. The results are calculated for all workers and separately for part-time workers. The sample that is used to calculate the dynamic effects of all workers includes the individuals whose employment status is either unemployed, employee or an entrepreneur without restrictions on the intensity of work. The sub-sample that is used to study part-time work includes all individuals whose employment status is either unemployed or employed with at least six months of part-time work history. Studying the dynamic effects of part-time work is particularly relevant in the Swedish case because working part-time is more

common there.

As expected, Sweden has the lowest participation tax rates and Denmark the highest tax rates. In Denmark, the participation tax rates exceed 90 percent for part-time workers. These very high participation tax rates are compensated with extensive active labour market policies and investments in work search services for the unemployed. In Finland, the government increased basic security for the unemployed by €100 and last-resort social assistance by a smaller amount in 2011. Among other policy reforms, these increments increased the participation tax rates in Finland, and there is a small negative effect on employment. Because of the work-line policy, the number of employed individuals increased the most in Sweden.

Assuming a 0.25 labour supply elasticity parameter, the employment increased by 159 000 individuals, and part-time workers increased by 41 000 individuals during the Swedish work-line policy. These results are in line with the earlier literature on the employment effects of the Swedish EITC. For example, Lundberg (2017) estimated that the employment effect was 128 000 individuals. Using the same labour supply elasticity parameter (0.15) as Lundberg, the estimated employment increase would be by 96 000 individuals. Of course, this study does not focus only on the EITC, but the employment effects are similar to the estimates in earlier literature. After the centre-right government, some increases were made to benefits. These increases raised the participation tax rates in particular for the part-time workers, and the employment effect drops from 41 000 to 32 000 individuals if the whole time period (2006–2017) is examined.

Table 3 shows the dynamic effects all workers on the risk of poverty, risk-of-poverty gap and the Gini coefficient interest. The risk-of-poverty gap is calculated using a 60% threshold of the median equivalised disposable income. The static percentage point differences between the base and counterfactual are shown in parentheses.

The results indicate that the dynamic effects of the Swedish work-line model do not fully offset its static negative effects on the risk-of-poverty and the Gini coefficients. Assuming a 0.25 labour supply elasticity parameter, the dynamic effect on the risk of poverty is only -0.1 percentage point for the whole population and -0.5 for the working-age population. Taking into account the static differences, the total policy effect is 0.9 percent and 0.4 percent for the whole population and working age, respectively. For the working age, the dynamic effects would fully offset the static negative effects on the risk of poverty if the participation elasticity would be 0.4. The dynamic effect on the risk-of-poverty gap is -0.1 and the total policy effect 0.1. If the whole time period (2006–2017) is examined, the static effect on the risk of poverty is smaller, but the dynamic effects are very similar to the years 2006–2014. This is because in the Swedish case the dynamic effect is small compared the static effect if the whole population examined.

In Denmark, the static effect on the risk-of-poverty is negative for the whole population, but positive for the working age. For the working age, the dynamic effects offset the negative static effects on the risk of poverty and risk-of-poverty gap in both examined time periods if a 0.25 participation elasticity parameter is assumed. However, the total policy effect is smaller if the period between 2007 and 2017 is examined. In Finland, there is a small increase in the risk of poverty because of dynamic effects on both examined time periods. The static and dynamic effects on the Gini coefficients tend to be small in

Table 2: Average participation tax rates and dynamic effects on the number of employees.

	Denmark		Finland		Sweden	
	2007-2014	2007-2017	2007-2014	2007-2017	2006-2014	2006-2017
Participation tax rates						
All unemployed						
Base	67.0	67.1	60.8	61.2	52.8	53.5
Counterfactual	69.8	70.2	58.8	59.0	58.5	58.8
Unemployed transitioned to part-time work						
Base	92.7	93.0	73.5	73.2	68.0	68.8
Counterfactual	91.8	91.7	71.9	72.1	72.8	72.6
Change in employment						
All workers						
$\mathcal{E} = 0.1$	22 000	25 000	-11 000	-11 000	64 000	61 000
$\mathcal{E} = 0.25$	55 000	63 000	-26 000	-28 000	159 000	153 000
Part-time workers						
$\mathcal{E} = 0.1$	-3 000	-5 000	-1 000	-1 000	16 000	13 000
$\mathcal{E} = 0.25$	-8 000	-12 000	-3 000	-2 000	41 000	32 000

Source: Author's calculations based on Euromod version H1.0+.

all three countries.

Table 4 shows the dynamic effects of part-time workers on the risk of poverty and the Gini coefficient. As shown in Table 2, there is very little change in the Finnish employment and hence no behavioural effects for part-time workers. In the Danish case, there is a very small increase in the risk of poverty because of behavioural effects. In Sweden, the dynamic effect on the risk of poverty is -0.1 percentage point for the whole population and for the working age during the work-line policy if a 0.25 participation elasticity parameter is used. The behavioural effect disappears for the whole population if the whole time period (2006-2017) is examined.

Table 3: The dynamic effects of all workers on the risk of poverty, risk-of-poverty gap and Gini coefficient.

	Denmark		Finland		Sweden	
	2007-2014	2007-2017	2007-2014	2007-2017	2006-2014	2006-2017
Elasticity: $\mathcal{E} = 0.1$						
All workers						
Risk of poverty						
Whole population	0.0 (-0.4)	-0.1 (-0.4)	0.0 (-1.4)	0.0 (-1.4)	-0.1 (1.0)	0.0 (0.6)
Working age	-0.1 (0.3)	-0.2 (0.6)	0.1 (-1.0)	0.1 (-0.9)	-0.2 (0.9)	-0.1 (0.8)
Risk-of-poverty gap						
Whole population	0.0 (0.1)	0.0 (0.0)	0.0 (-0.2)	0.0 (-0.1)	0.0 (0.2)	0.0 (0.2)
Working age	-0.1 (0.1)	-0.1 (0.1)	0.0 (-0.2)	0.0 (-0.2)	0.0 (0.2)	0.0 (0.2)
Gini	0.0 (0.8)	0.0 (0.8)	0.0 (-0.7)	0.0 (-0.9)	0.0 (0.4)	0.0 (0.2)
Elasticity: $\mathcal{E} = 0.25$						
All workers						
Risk of poverty						
Whole population	-0.2 (-0.4)	-0.2 (-0.4)	0.1 (-1.4)	0.0 (-1.4)	-0.1 (1.0)	-0.1 (0.6)
Working age	-0.4 (0.3)	-0.5 (0.6)	0.2 (-1.0)	0.1 (-0.9)	-0.5 (0.9)	-0.5 (0.8)
Risk-of-poverty gap						
Whole population	-0.1 (0.1)	-0.1 (0.0)	0.0 (-0.2)	0.0 (-0.1)	0.0 (0.2)	0.0 (0.2)
Working age	-0.2 (0.1)	-0.2 (0.1)	0.0 (-0.2)	0.0 (-0.2)	-0.1 (0.2)	-0.1 (0.2)
Gini	-0.1 (0.8)	-0.1 (0.8)	0.0 (-0.7)	0.0 (-0.9)	-0.1 (0.4)	-0.1 (0.2)

Note: The table shows the percentage point differences in the base and counterfactual. Static differences are in parentheses.
Source: Author's calculations based on Euromod version H1.0+.

Table 4: The dynamic effects of part-time workers on the risk of poverty, risk-of-poverty gap and Gini coefficient.

	Denmark		Finland		Sweden	
	2007-2014	2007-2017	2007-2014	2007-2017	2006-2014	2006-2017
Elasticity: $\mathcal{E} = 0.1$						
Part-time workers						
Risk of poverty						
Whole population	0.0 (-0.4)	0.0 (-0.4)	0.0 (-1.4)	0.0 (-1.4)	0.0 (1.0)	0.0 (0.6)
Working age	0.0 (0.3)	0.0 (0.6)	0.0 (-1.0)	0.0 (-0.9)	-0.1 (0.9)	0.0 (0.8)
Risk-of-poverty gap						
Whole population	0.0 (0.1)	0.0 (0.0)	0.0 (-0.2)	0.0 (-0.1)	0.0 (0.2)	0.0 (0.2)
Working age	0.0 (0.1)	0.0 (0.1)	0.0 (-0.2)	0.0 (-0.2)	0.0 (0.2)	0.0 (0.2)
Gini	0.0 (0.8)	0.0 (0.8)	0.0 (-0.7)	0.0 (-0.9)	0.0 (0.4)	0.0 (0.2)
Elasticity: $\mathcal{E} = 0.25$						
Part-time workers						
Risk of poverty						
Whole population	0.0 (-0.4)	0.0 (-0.4)	0.0 (-1.4)	0.0 (-1.4)	-0.1 (1.0)	0.0 (0.6)
Working age	0.1 (0.3)	0.1 (0.6)	0.0 (-1.0)	0.0 (-0.9)	-0.1 (0.9)	-0.1 (0.8)
Risk-of-poverty gap						
Whole population	0.0 (0.1)	0.0 (0.0)	0.0 (-0.2)	0.0 (-0.1)	0.0 (0.2)	0.0 (0.2)
Working age	0.0 (0.1)	0.0 (0.1)	0.0 (-0.2)	0.0 (-0.2)	0.0 (0.2)	0.0 (0.2)
Gini	0.0 (0.8)	0.0 (0.8)	0.0 (-0.7)	0.0 (-0.9)	0.0 (0.4)	0.0 (0.2)

Note: The table shows the percentage point differences in the base and counterfactual. Static differences are in parentheses.
Source: Author's calculations based on Euromod version H1.0+.

6 Conclusions

Using the EUROMOD model and counterfactual analyses, this paper examined the long-term evolution of key policy outcomes associated with the Nordic model. The aim of the paper was to isolate the policy component and to study how policy changes affected the risk of poverty, inequality and employment. The trade-off between labour market efficiency and equality was studied using reweighting techniques.

Nordic countries have adopted different labour market and social policies. The results showed that Finland had the most redistributive policies in the studied time periods. In Finland, the policy changes decreased the risk of poverty by 1.4 percentage points and the Gini coefficient by 0.9. The Danish flexicurity model provides generous benefits, and Denmark had the highest participation tax rates. The Swedish *arbetslinjen* increased the risk-of-poverty rate by 1.0 percentage point and the Gini coefficient by 0.4. The employment effect was approximately 159 000 employees if a 0.25 participation elasticity parameter is used. In Sweden, the behavioural effects did not fully offset the negative static effects on the risk of poverty and inequality. These results indicate that the Nordic model has been resilient. Policy choices have had little effect on the key policy outcomes, such as the risk of poverty or inequality.

Still, the Swedish case indicates that there may be other factors that pose threats to the egalitarian Nordic model. At the same time that the work-line policy was implemented, the risk of poverty increased by 5.1 percentage points in Sweden. Together with the results obtained from the current study, this implies that the risk of poverty has increased because of changes in the market income distribution or population structure. In terms of market income distribution, differences in capital income, automation and rising education requirements in the labour market pose challenges to the Nordic model. In terms of population structure, the ageing population and social inclusion of the immigrant population challenge the Nordic model.

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