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Abstract

The vulnerable status of young people and their inadequate integration during entry into the labor market has been shown to increase the risk of several unfavorable outcomes in adulthood. In this study, we provide a longitudinal perspective to the labor market integration of young people by analyzing the dynamics of being a young Not in Employment, Education or Training (NEET).

We focus on entry to and persistence of the NEET situation across time, namely genuine state dependence, by using correlated dynamic random-effects logit models to study the effect of the past on the current NEET situation. We analyze longitudinal individual-level data covering the full population living in Finland with a follow-up from age 18 till age 29 from 1995 till 2020.

Our findings suggest clear state dependence in the NEET situation: being NEET in the previous year is associated with almost a 3-percentage-point increase in the probability of being NEET in the current year. We find that the state dependence of the NEET situation is moderately elevated for males and for those with lower parental educational attainment and considerably elevated for those with foreign origin or history of mental health issues or with child protection services.

Introduction

The vulnerable status of young adults has been studied extensively as inadequate integration during entry into the labor market has been shown to increase the risk of several unfavorable outcomes in adulthood. In addition to adverse effects on an individual's quality of life, well-being, and socioeconomic opportunities, inadequate integration and school-to-work transition have significant social and economic costs at the societal level (Mascherini et al., 2012). As an indicator for insufficient integration into the labor market and increased risk of vulnerable social position, marginalization, and social exclusion, NEET status, referring to those youth Not in Education, Employment, or Training, has been most commonly used. The association between NEET situation and adverse outcomes has been well established in previous research (Bäckman & Nilsson, 2016; Gariépy et al., 2022; Jongbloed & Giret, 2022; Manhica et al., 2022; Ralston et al., 2022), but fewer studies have accounted for the heterogeneity and dynamic nature of being in the NEET situation.

In this study, we provide a longitudinal perspective to the labor market integration of young people by analyzing the individual dynamics of being in the NEET situation. The first aim of [2] this study is to assess whether persistence in the NEET situation is characterized by state dependence in Finland. Namely, we estimate to what extent the NEET situation is a self-reinforcing situation that increases the likelihood of remaining in the NEET situation in the future independent of personal characteristics, reflecting a cumulative disadvantage process (DiPrete & Eirich 2006). Further, the mechanisms driving state dependence may vary across individuals and introduce meaningful heterogeneity in the state dependence of the NEET situation. Accordingly, our second aim is to analyze whether the state dependence of the NEET situation varies across gender, origin, parental education, and history of mental health issues or child protection services.

Our paper makes several contributions to the literature on the state dependence of the NEET situation. First, current research has mainly focused on NEET youth in Southern Europe and the UK. However, the situation of young people may notably vary according to the institutional differences in each country's context. A study from Finland provides new insights into young people's labor market integration within the Nordic welfare context often characterized by an extensive social security system with a high coverage of social protection and universally accessible public services. Second – and as the main contribution of our paper – our rich set of moderating variables enables us to study extensively the heterogeneity in the state dependence of the NEET situation. Understanding how the state dependence of the NEET situation varies across groups allows for targeted and informed policy-design that support youth in integrating to the labor market and to the society in broad. Third, our rich set of data allows us to control for a large set of confounding variables and a follow-up of over ten years enabling us to follow the youth all through their youth to adulthood.

Understanding the underlying individual-level and structural determinants of young people being at risk of marginalization and disengagement in a Nordic context provides implications for future policy programs aiming at supporting the youth. If the NEET situation is explained significantly by state dependence, preventative policies and early support to youth may introduce significant welfare improvements on a societal level. If on the other hand persistence in the NEET situation is more driven by characteristics of the youth, policy measures could be more effective when targeted to the characteristics that keep the young people at high risk of becoming and staying NEET.

This study focuses on entry to and persistence of the NEET situation across time, namely the state dependence of the NEET situation, by using correlated dynamic random-effects logit models. We analyze longitudinal individual-level data covering the full population living in Finland with a follow-up from age 18 till age 29 covering the years from1995 till 2020. including annual information on NEET status based on main activity during each calendar year. Further, by analyzing the heterogeneity in the state dependence of the NEET situation, we provide information on how the strength of state dependence of the NEET situation varies across groups and of the underlying mechanisms explaining the persistence of the NEET situation. The results will provide new insights into the underlying individual-level

determinants of young people being at risk of marginalization and disengagement in a Nordic context, offering implications for future policy programs aiming at supporting the youth.

Background

The concept of NEET

The acronym NEET refers to young people who are Not in Employment, Education, or Training. Originally introduced as a concept to enhanced definition of youth unemployment in the UK in the 1990s (Furlong, 2006), the NEET situation has ever since been increasingly used in population statistics to describe rates of young individuals' labor market integration. In public policy, young people not in education, employment or training have been considered to be in a particularly vulnerable position, the underlying assumption being that longer-term NEET situation may in the course of time lead to marginalization and social exclusion. Accordingly, identifying young people in the NEET situation has improved targeting policies and resources to those in need. (Eurofound 2012, OECD 2010)

Previous research has typically focused on the questions disentangling the factors that drive youth to become NEET and the consequences of being NEET. In studies on the antecedents of NEET situation, attention is often drawn to individual-level socioeconomic and demographic risk factors, health, and behavior-related determinants, or on the other hand macro-level predictors of NEET. Previous studies have shown that low parental education, unemployment, and economic adversities in childhood are associated with higher risk of NEET situation (Duckworth & Schoon, 2012; Schoon, 2014). Early school leavers and young people with childcare responsibilities or migrant background are more likely to end up being NEET (De Luca et al., 2020; Tamesberger & Bacher, 2014; Zudina, 2022). Also, early onset of mental health and behavioral problems along with adverse experiences and life events during the early life course are known to be linked with an elevated risk of NEET (Gladwell et al., 2022; Pitkänen et al., 2021; Rodwell et al., 2018). Along with the individual level determinants, also the macro-level factors play a role in leading to NEET status. Clearly, NEET rates can be influenced by welfare context and unfavorable country level conditions. Furthermore, factors such as social spending, social inequality, and poverty rates are associated with NEET rates. (Amendola 2022.)

Studies on the consequences, in turn, have tried to shed light on the short- and long-term effects of being NEET. Literature has concluded that being out of education and the labor market have adverse effects on an individual's well-being and later socio-economic opportunities. For instance, latest longitudinal studies have linked NEET status with future economic inactivity, weaker labor market attachment, and unemployment (Bäckman & Nilsson, 2016; Ralston et al., 2022), substance use disorders (Manhica et al., 2022), and mental health illness (Gutiérrez-García et al., 2017; Power et al., 2015).

Despite being used widely, the NEET concept has also been widely criticized in the scientific community. The concept has been argued to be problematic as it consists of heterogeneous

groups with different characteristics, experiences, and needs, and criticized for being too individually focused and being dependent on the cultural context (Furlong, 2006; Holte, 2018; Yates & Payne, 2006). Furthermore, long-term or persistent NEET youth differ notably from short-term or transient NEET, the latter being related to transitioning between different life domains, such as education, employment, or having children, while the former are more disengaged and vulnerable to become marginalized (e.g., Contini et al., 2019).

Although the aforementioned critique has substance, there are several advantages to using the NEET concept. Particularly in light of international comparisons and policy making, the concept provides information on inequality and policy effectiveness. As per the original usage of the concept, NEET helps identify at-risk groups that might otherwise be overlooked if a narrower measurement, such as youth unemployment, would be used, accordingly providing a holistic understanding of youth marginalization and social exclusion. It captures the presence of multiple overlapping vulnerabilities, such as labor market disengagement and dropping out of education and can be interpreted as a form of social exclusion reflecting youth vulnerability and potential long-term disadvantage.

NEET persistence and state dependence

A spurious relationship between current and future NEET situations arises if young people who are in the NEET situation in a given period are so because they have characteristics that make them particularly NEET-prone. Under such circumstances, the association between current and future NEET situation stems from selection owing to (un)observed individual heterogeneity: ending up being NEET is not random, and those who persist as NEET become more and more select group over time, implying that current NEET situation does not structurally affect the future tendency to stay in the NEET situation. Such characteristics creating selection into NEET situation include for example gender, health issues, skills, attitudes, or motivation. As these characteristics prevail in the course of time, they also drive the risk of being NEET in the future.

True state dependence in the NEET situation, namely a genuine causal effect of the current NEET situation on a future NEET situation, emerges when being NEET in one period impacts a young person's risk of recurrent NEET situation. While identifying a true causal effect in this context remains a challenge, for example Aradhya et al. (2023) have analyzed state dependence with respect to poverty and unemployment with a design that can be applied also to being NEET. According to the true state dependence mechanism in terms of persistence of the NEET situation, being NEET at one point in time *per se* generates a scarring effect, causing the NEET situation to accumulate over a young person's life course. Further, disentangling the factors that drive state dependence in the NEET situation is not straightforward, but may be similar to those suggested as reasons for state dependence in poverty or unemployment: loss of motivation and human capital, habituation and discouragement, stigmatization, accumulation of problems in other life domains (such as health), or loss of social networks, among others.

Understanding the role of state dependence in the persistence of the NEET situation offers two advantages. First, it is an effective manner to better understand the distinction between a transient, less vulnerable NEET situation and a more permanent and vulnerable long-term NEET situation. Accordingly, identifying how the NEET situations may accumulate over time enhances understanding of the processes of social marginalization and disintegration from both educational domain and labor market. Second, identifying state dependence is highly policy relevant. If the NEET situation reproduces itself independently of other causes, policies preventing ending up being NEET will have a better impact as not only current but also future NEET situation will be avoided. On the other hand, if evidence for state dependence is found, existing policies need to be reviewed to make sure that they are not a part of the mechanism explaining why the current NEET situation predicts future NEET situation.

Based on the previous findings on the determinants of NEET, it is likely that the NEET situation does not persist similarly across population groups. Further, in their recent study on heterogeneous persistence in unemployment, Aradhya and colleagues (2023) argue that persistence occurs via two pathways which produce variation across groups: mechanisms that explain the association between current and future situation may vary across groups, and/or the same mechanisms are in play but affect groups differently (see also Cutuli & Grotti, 2020). Since exiting the NEET situation typically requires resources (psychological, cultural and material resources), it is plausible that exiting is more difficult for those in a more disadvantaged position. For example, the NEET situation may potentially influence motivation, habituation, and discouragement differently depending on an individual's other available resources (such as psychological resources), making those in an already more vulnerable position to become more affected by being NEET. Also, the extent to which the NEET status is stigmatizing may vary across population groups, making being NEET more harmful in social environments that disapprove the situation.

Only a few previous studies have addressed the dynamics of the NEET situation and its state dependence. Many of the longitudinal studies analyze aggregated NEET rates (Contini et al., 2019; Mussida & Sciulli, 2018). Out of studies using individual-level longitudinal data, Contini and colleagues (2019) use descriptive methods[1] to identify types of NEET histories and heterogeneity in persistence of the NEET situation in terms of gender and educational background. To our knowledge, only two prior studies have concentrated on state dependence with individual-level follow-up. Malo and colleagues (2020) analyze persistence in the NEET situation in four Southern European countries before and after the Great Recession, and Mussida and Sciulli (2023) have implemented a comparative study of 21 European countries in 2016–2019. Both studies found that persistence in the NEET situation is characterized by state dependence. The former also showed that the state dependency of the NEET situation was particularly strong in men. As far as we know, no other study has extensively examined the heterogeneity in the state dependence of the NEET situation.

[1] In particular, the authors do not account for the problem of initial conditions and unobserved heterogeneity in time-varying explanatory variables recognised in the literature of estimation of state dependence.

Study context: NEET youth in Finland

While the majority of the previous literature on NEET is focused on Southern Europe and the United Kingdom, we focus on Finland in our empirical analysis. Finland is often described as having a universal and generous welfare state, offering comprehensive social security, a wide range of targeted social services, and various forms of financial support. Education is publicly funded at all levels, and young people entering secondary or tertiary education are eligible for state-provided financial aid. In addition to student financial aid, young people can apply for housing allowances to cover their housing costs. For those not in education, the state provides a labor market subsidy to meet the minimum economic needs of individuals. Furthermore, individuals and families whose income and assets do not cover their daily expenses may be eligible for means-tested social assistance to support their essential living costs. In addition to financial aid, there are targeted work services available, both public services and services provided by the third sector, to support young people in finding positions in the educational system or in training programs or securing employment in the labor market. In Finland 10.3 percent of men and 8.8 percent of women between the ages 15 to 29 were classified as NEET, in 2022 compared to EU averages of 10.5 % for men and 13.1 % for women (Eurostat 2023).

The prevalence of NEET is closely linked to institutional settings that regulate young people's educational and labor market transitions and integration to the labor market. In general, NEET rates are higher in Southern European countries, which are often characterized by dualistic labor markets, low levels of vocational and training programs, fragile link between education and labor market, and limited public support, and in the UK where youth employment often includes higher levels of young females facing multiple risk factors while engaged with unpaid care work. (Caroleo et al. 2020; Jongbloet & Giret 2022.). By delivering results from Finland, this study provides new insights into young people's labor market integration within the Nordic welfare system characterized by an comprehensive social security system with a high coverage of social protection and universally accessible public services, including an inclusive educational system and typically low NEET-rates. Social insurance may mitigate individual differences and protect from the state dependence of the NEET situation. If the state dependence of the NEET situation and the related heterogeneity is observed in Finland, it may be that they would be even more pronounced in less generous welfare contexts, particularly in areas where social security systems are weaker, benefits to young people are less generous, and education entails financial costs.

Data and methods

Data and variables

We utilize a large longitudinal annually updated individual-level register-based data (permission numbers TK/2182/07.03.00/2024 and THL/3141/6.02.00/2022) in which population registers of Statistics Finland are linked with the Care Register for Health Care and

Register of Child Welfare administered by the Finnish Institute for Health and Welfare. These data cover the full population residing in Finland, include a rich set of socioeconomic, demographic, and health-related variables, and allow linking together family and household members.

Sample. We restrict our analysis to the years from 1995 to 2020 and follow individuals from age 18 till age 29. We include only those individuals who have at least three consecutive observations in order to analyze state dependence. For the descriptive characteristics reported in Table 1 and the estimate of the overall state dependence of the NEET situation reported in Panel A of Table 2, we use the full sample. For the heterogeneous effects in the state dependence of the NEET situation, we draw a 10 percent random sample of our main sample due to the considerable computational capacity requirements of the empirical specification described by Equation (3).

Outcome. Our outcome variable is a dummy variable describing whether the individual is in the NEET situation during the given calendar year. We require the person to not be employed, in education, or in military service. To ensure that the main activity of the person is not employment or education, we also require that the person does not have annual earnings exceeding the cut-off of 60% of median earnings of the age group and has not received student benefits on the NEET-year. We further restrict that the person has not received parental or child care benefits during the NEET-year to exclude people who are on parental leave. Altogether 9.5 percent of the observed person-years were categorized as NEET years.

Moderators. To analyze the extent to which the NEET dependence varies across groups, we study differences according to gender, origin, history of mental health issues, maternal education, and history in child protection services. We include being a first or a second-generation immigrant to Finland in our definition of having a foreign origin. Mental health issues are defined as having a mental health related diagnosis before the age of 18. Mother's education is categorized into basic level (no educational degree beyond compulsory level), secondary level (an upper secondary-level degree), and tertiary level (a lower or higher tertiary-level degree). The indicator for history in child protection refers to having been placed in out-of-home-care by the child protection services at least once before the age of 18.

Covariates. In addition to the variables mentioned above, we control for time-varying variables that are likely linked to dynamics in the NEET situation: age, whether the person lives in the capital area[2] or not, relationship status (living in a cohabiting or married relationship versus living without a partner), number of children and calendar year.

We report the descriptive characteristics - means and standard deviations - of our sample in Table 1. The youth currently in the NEET situation are on average slightly older, more often men and of foreign origin compared to youth that are not NEET (Columns (1) and (3)). Those

[2] The capital area of Finland consists of the municipalities of Helsinki, Espoo, Vantaa and Kauniainen.

currently NEET more often have a history of mental health issues and less often live in the capital area. Their mother and father have less often higher education (at the youth's age of 15) compared to counterparts who are not NEET currently. Notably, those that are NEET currently, have substantially more often been NEET in the previous year ($NEET_{t-1}$).

Table 1. Descriptive Statistics

	NEET		*Non-NEET*	
	Mean (1)	SD (2)	Mean (3)	SD (4)
Age	23.22	3.14	23.81	3.09
Male	0.62	0.48	0.51	0.50
Mother's Education:				
Primary	0.38	0.48	0.22	0.42
Secondary	0.42	0.49	0.42	0.49
Tertiary	0.21	0.40	0.35	0.48
Father's Education:				
Primary	0.40	0.49	0.27	0.45
Secondary	0.39	0.49	0.41	0.49
Tertiary	0.21	0.41	0.31	0.46
Foreign Origin	0.01	0.12	0.02	0.14
Capital Area	0.15	0.36	0.23	0.42
Lives Alone	0.40	0.49	0.36	0.48
No of. Children	0.11	0.43	0.23	0.64
Mental Health Diagnosis (Bef. Age 18)	0.08	0.27	0.07	0.26
Out-of-Home-Care (Bef. Age 18)	0.05	0.23	0.03	0.16
$NEET_{t-1}$	0.46	0.50	0.02	0.15
N (persons)	283,935	283,935	1,525,753	1,525,753
N (person-years)	2,878,426	2,878,426	13,241,211	13,241,211

Notes: The descriptive characteristics (means and standard deviations) of the full sample for those in the NEET situation (Columns (1) and (2)) and those not in the NEET situation (Columns (3) and (4)).

Methods

Our aim is to estimate the state dependence of the NEET situation, specifically the degree of persistence in the previous status, measured as the $t-1$ lag in the outcome variable. In particular, we are interested in the heterogeneity in the state dependence of the NEET situation in terms of background characteristics.

Simply estimating the association between current and previous year's state[3] would be subject to bias due to the unobserved heterogeneity correlated with the outcome. In particular, literature has recognized the problem with endogeneity arising from the fact that the initial state of the outcome is plausibly not randomly assigned across individuals and if not taken into account, introduces bias in the coefficient of the lagged term of the outcome.[4] Wooldridge (2005)

[3] I.e. estimating the association between being in the NEET situation in the current year and being in the NEET situation in the previous year.

[4] The so-called initial conditions problem was first thoroughly discussed in Heckman (1981).

provided a solution to the initial conditions problem by explicitly modelling the individual-level unobserved heterogeneity as a function of observed individual specific factors at each period (including the initial period). Rabe-Hesketh & Skrondal (2013) raise the issue of the common approach to apply the solution in Wooldridge (2005) that simply uses within-means measures of the time-varying controls instead of allowing different effects on each period, and they provide several solutions.[5] Resting on Rabe-Hesketh & Skrondal (2013) Grotti and Gutuli (2018) develop an estimation strategy that allows for a more flexible relationship of the individual unobserved heterogeneity and time-varying individual factors in the spirit of the Wooldridge (2005). In practice, the individual-level unobserved heterogeneity is modelled as a function of the initial values of the outcome and of the time-varying explanatory variables along with the within-unit averages of the explanatory variables. In particular, they allow for the initial conditions of the outcome and of the time-varying explanatory variables to have more weight relative to other periods.

We follow the estimation strategy presented by Grotti and Cutuli (2018) based on Rabe-Hesketh and Skrondal (2013)[6] and run a dynamic random-effects logit model with unobserved heterogeneity. Our empirical specification for the overall state dependence of the NEET situation in our sample can be written as follows:

$$y_{it} = \gamma Z_{it} + \rho y_{it-1} + \delta X_i + c_i + u_{it}, \quad (1)$$

where the outcome y_{it} gets value 1 if individual *i* is in the NEET situation at time *t* and 0 otherwise and y_{it-1} is the lagged value of the outcome i.e. indicator for being in the NEET situation at time *t-1*. The vector X_i includes the indicators for gender, foreign background and having a history of mental health conditions and of child protection services (being placed in out-of-home-care) along with a 3-level measure for socioeconomic background (SES) according to the mother's education level. u_{it} is an idiosyncratic error term. To control for the unobserved heterogeneity, we include Z_{it} as the set of time-varying control variables, which includes age, number of children, an indicator whether they live alone or with a partner and whether they live in the capital area or not. Additionally, we control for the yearly trend in NEET-status. As demonstrated by Rabe-Hesketh and Skrondal (2013), the component $c_i$controls for the individual-specific unobserved effect and can be expressed as

$$c_i = \alpha_0 + \alpha_1 y_{i0} + \alpha_2 Z_{i0} + \alpha_3 \bar{Z}_\iota + v_i \quad (2)$$

where y_{i0} and Z_{i0} are the initial values of the outcome[7] and the time-varying control variables respectively. $\bar{Z}_i = 1/T \sum_{i=0}^{T} Z\_it$ are the within-individual averages of the time-varying control variables, and v_i is an individual-specific time-constant error term. Assuming that unobserved

[5] As noted by Rabe-Hesketh & Skrondal (2013), the commonly used approach departs from Wooldridge's original solution presented in Wooldridge (2005). See e.g. Malo and colleagues (2020) for a recent application of Wooldridge's original approach in the context of persistence of the NEET situation.

[6] See also e.g. Cutuli & Grotti (2020), Malo et al. (2020) and Aradhya et al. (2023).

[7] *i0* refers to the first observation of the individual *i*.

heterogeneity is captured by c_i, the coefficient ρ in Equation (1) measures true state dependence within groups conditional on the covariates.[8]

As a second part, and the main interest of this paper, we estimate the heterogeneity in the state dependence of the NEET situation. We augment Equation (1) with an interaction term of the lagged outcome of NEET situation and the vector of background characteristics such that

$$y_{it} = \gamma Z_{it} + \rho y_{it-1} + \delta X_i + \beta y_{it-1} \times X_i + c_i + u_{it}, \quad (3)$$

The coefficient β is the main parameter of interest and captures the interaction effects of the lagged outcome and our time-invariant background characteristics included in the vector X_i. Resting upon the above equations, we estimate models (1) and (3) as standard dynamic random effects logit models.

Results

We report our results in Table 2 and Figure 1. The overall state dependence is estimated to be 2.5 percentage points (p.p.) calculated using Equation (1) and shown in Column (5) of Panel A in Table 2. This estimate reflects the difference in the (adjusted) predicted probability of being in the NEET situation between individuals who were NEET in the previous year and those who were not. Compared to the estimate reported by Mussida and Sciulli (2023), using data from recent years from 21 European countries, the estimated state dependence of the NEET situation in the Finnish context is lower than the European comparison of 5 – 13.1 percentage points.[9]

Figure 1 displays the predicted probabilities of being in the NEET situation in the current period depending on being NEET in the previous period interacted with the different background characteristics included in the vector X_i in Equation (3). The estimates on the left (marked with triangle-symbols) show the predicted probabilities of being NEET currently for the individuals that *were not* in the NEET situation in the previous period ($NEET_{t-1} = 0$). These estimates represent the predicted probabilities of entering the NEET situation for different groups. The estimates on the right (marked with filled circles) show the predicted probabilities of being NEET currently for the individuals that *were* in the NEET situation in the previous period ($NEET_{t-1} = 1$). We label these estimates as the persistence of the NEET situation. Additionally, we mark the differences of the predicted entry and persistence for each group. These differences reflect the estimated state dependence of the NEET situation for each group. As visible in Figure 1, we identify an elevated risk of state dependence for males and those with lower SES, foreign background and history of mental health issues or child protection services. The elevated risk of state dependence is especially notable for the group with a history of mental health issues at 4 p.p. (0.06462 - 0.02422), for those with foreign background at 2.5 p.p. (0.05088 - 0.02581) and for those with a history with child protection services at 1.3 p.p. (0.039 - 0.02588). We also document a moderate protective role of parental education with a

[8] In practice, we cannot rule out bias stemming from violation of the strong assumptions of the model and interpret our results as causal.

[9] Depending on the exact definition of NEET.

difference of 0.7 p.p. of tertiary level education attainment of the mother compared to primary level (0.03091 - 0.02369). These results suggest that individuals in these groups may experience a higher risk of remaining NEET once they have entered NEET-status. We report the estimates, their confidence intervals and the related differences in Panel B of Table 2.

Table 2. The Predicted Probabilities of Entry, Persistence and State Dependence of the NEET Situation.

	Entry (1)	CI (2)	Persistence (3)	CI (4)	State Dependence (5)
Panel A. Overall SD					
	0.00547	[0.00542, 0.00552]	0.0306	[0.03015, 0.03105]	0.02513
N (persons)	1,809,688		1,809,688		1,809,688
N (person-years)	16,119,637		16,119,637		16,119,637
Panel B. Heterogeneity of SD					
Female	0.00439	[0.00423, 0.00455]	0.0292	[0.02754, 0.03086]	0.02481
Male	0.00663	[0.00641, 0.00685]	0.034	[0.03232, 0.03568]	0.02737
Native	0.00539	[0.00522, 0.00556]	0.0312	[0.02972, 0.03268]	0.02581
Foreign	0.00702	[0.00611, 0.00793]	0.0579	[0.04731, 0.06849]	0.05088
Mother's Education:					
Primary	0.00679	[0.00653, 0.00705]	0.0377	[0.0356, 0.0398]	0.03091
Secondary	0.00566	[0.00546, 0.00586]	0.0314	[0.0297, 0.0331]	0.02574
Tertiary	0.00441	[0.00423, 0.00459]	0.0281	[0.02626, 0.02994]	0.02369
No Mental Health Diag.	0.00518	[0.00501, 0.00535]	0.0294	[0.02797, 0.03083]	0.02422
Mental Health Diag.	0.00928	[0.00866, 0.0099]	0.0739	[0.06739, 0.08041]	0.06462
No Child Protection	0.00532	[0.00515, 0.00549]	0.0312	[0.02971, 0.03269]	0.02588
Child Protection	0.0104	[0.00948, 0.01132]	0.0494	[0.04383, 0.05497]	0.039
N (persons)	180,676		180,676		180,676
N (person-years)	1,609,368		1,609,368		1,609,368

Notes: The table reports the predicted probabilities and confidence intervals of entering and staying in the NEET situation along with state dependence (SD) of NEET. We report the estimate for the overall state dependence in the full sample in Panel A. Column (1) reports the predicted probability of entering NEET ($P(NEET_{it} = 1|NEET_{it-1} = 0)$). Column (3) reports the predicted probability of staying as NEET if the individual was NEET in the previous period ($P(NEET_{it} = 1|NEET_{it-1} = 1)$). The estimated state dependence is reported as the difference of the two. In Panel B, we report the heterogeneity in state dependence of NEET. As in Panel A, we report the predicted probabilities of entering ($P(NEET_{it} = 1|NEET_{it-1} = 0 \,\&\, X_i = x)$) and staying ($P(NEET_{it} = 1|NEET_{it-1} = 1 \,\&\, X_i = x)$) as NEET along with the estimated state dependence for a given group, which is the difference of the two.

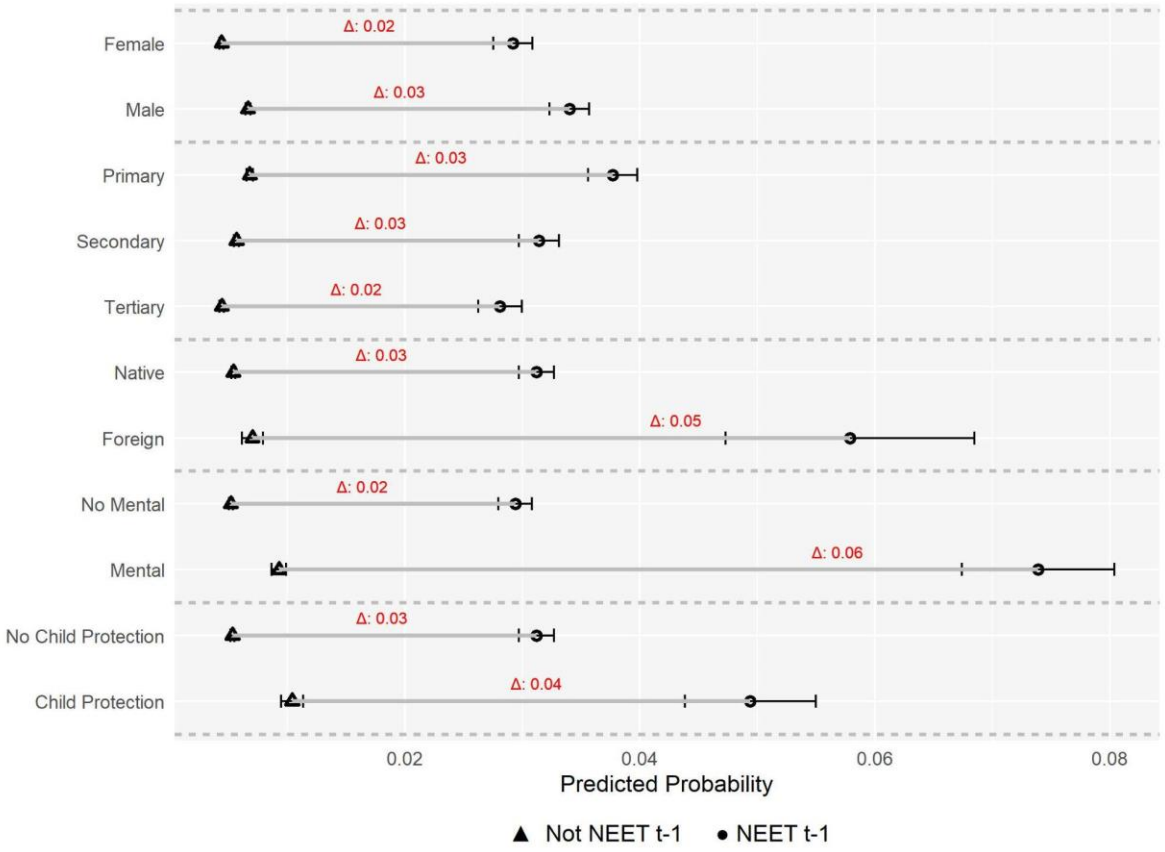

Figure 1.The Predicted Probabilities of Entry, Persistence and State Dependence of the NEET Situation.

Note: The figure displays the predicted probabilities and confidence intervals of being in the NEET situation for those who *were not NEET in the previous year* and for those who *were NEET in the previous year*. The differences between the estimates of persistence (NEET ($P(NEET_{it} = 1|NEET_{it-1} = 1)$) and of entry ($P(NEET_{it} = 1|NEET_{it-1} = 0)$) of the NEET situation represent the estimates for state dependence of the NEET situation within each group (coefficient β in Equation 3).

Discussion

We analyzed the dynamics of being a young Not in Employment, Education or Training (NEET) in Finland, focusing on entry to and persistence of the NEET situation. Considering persistence, we aimed to distinguish between state dependence and spurious persistence due to unobserved heterogeneity among the NEET youth. The estimated state dependence reflects the difference in the (adjusted) predicted probability of being in the NEET situation between individuals who were NEET in the previous year and those who were not. Importantly, we aimed to adjust for the observed and unobserved heterogeneity by taking into account the initial conditions problem and individual-level random effects as suggested in the literature (Heckman, 1981; Wooldridge, 2005; Rabe-Hesketh & Skrondal, 2013; and Grotti and Gutuli, 2018).

We found indications of notable state dependence in the NEET situation: state dependence accounts for an estimated 2.5 percentage points, on average, in explaining the NEET situation. Comparing the estimates of state dependence and of total persistence in the NEET situation, we conclude that most of the observed persistence in the NEET situation may be related to state dependence of the NEET situation instead of factors affecting the initial selection to the NEET situation. Further, we documented that estimated state dependence of the NEET situation was slightly elevated for males and for those with low parental education, and notably elevated for those with foreign origin, history of mental health issues or history of being placed in out-of-home care. These results indicate notable heterogeneity in the state dependence of the NEET situation.

We contributed to the research on NEET youth in several ways. First, applying a dynamic rather than static approach to understanding the NEET situations allowed us to study state dependence better than most previous studies. We arrived at the same conclusion of observing state dependence as the two previous studies analyzing this question with individual-level follow-up designs (Malo et al. 2020; Mussida and Sciulli, 2023). Secondly, we were able to consider the diversity of youth in NEET situations when analyzing NEET persistence. Previously, Malo and colleagues (2020) found that in Southern European countries, the NEET persistence has been particularly strong among men. We made the same observation in a Nordic welfare state context, and we added to this observation by demonstrating a stronger state dependence among individuals of foreign origin, with history of mental health issues or child protection services. Further, we found that higher parental education is associated with a lower risk of state dependence in the NEET situation. Understanding how the state dependence varies across background characteristics may help to understand the processes of how the adverse effects of the NEET situation accumulate over time. We could not determine whether this heterogeneity is due to different mechanisms in different groups or to different outcomes of the mechanisms in the different groups (cf. Aradhya et al. 2023). However, stronger state dependence in more disadvantaged groups could be related for example to lack of such psychological, cultural and material resources that are needed to exit the NEET status or to lesser stigma attached to the NEET status in more disadvantaged social environments. Still, identifying the groups that are more prone to the state dependence of the NEET situation may allow for more targeted policy-design and shed light on the future research on the mechanisms driving state dependence and the heterogeneity among groups.

Another contribution was to demonstrate state dependence in the NEET situation - and heterogeneity in this state dependence - in Finland, a Nordic welfare state. Stronger state dependence might be found in contexts with less support for leaving the NEET status, with for example stronger financial barriers for education and lesser access to social services among young adults. On the other hand, the more generous welfare context for young people in Finland might make it easier to stay in the NEET situation due to unfavorable incentives. The role of public services in preventing the state dependence of the NEET situation marks an important area for future research.

Regarding the significance of our findings in terms of policies, the observation of state dependence of the NEET situation gives support to early intervention and policies that aim to prevent young people becoming NEET. Additionally, identifying heterogeneity in state dependence helps in recognizing vulnerable groups and designing targeted policy interventions.

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