Graduating in a recession, education and family formation*

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Abstract

We study the consequences of graduating during the early 1990s Finnish deep recession on labor income, further enrollment, family formation, and fertility in the 20 years following graduation. By exploiting variation in the local unemployment rate faced upon labor market entry, we find that the cohorts of men who obtain secondary education in unfavorable times postpone labor market entry and enroll into further education. This leads to initial earnings losses which fade away in about 4 years and are compensated by improved labor income and family formation in the medium run. Tertiary education graduates also exhibit a short-run increase in enrollment corresponding to a large income reduction. However, while women's earnings recover within 4 year since graduation, men suffer large and persistent losses with no long-run recovery. All tertiary education graduates show no changes in long-run family formation and fertility. The number of children increases for both male and female secondary education students graduating in bad times, but we find no evidence of this pattern or on family formation on tertiary education graduates.

JEL codes: E32, I26, J12, J13, J22, J31

Keywords: Costs of recession, family formation, labor supply, business cycle

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1 Introduction

Prospective labor market entrants face consequential choices concerning family formation and whether to postpone labor market entry and fertility to enroll into further education. The resulting decisions permanently shape workers' lifetime income trajectories and are highly interrelated with each other, as it is reflected by the gender convergence in schooling and labor market participation and the corresponding decline in family formation and fertility (Albanesi et al., 2022).[1]

Among the several determinants of family formation, education, and labor market participation, the constraints imposed by the labor markets are bound to play a major role (Adsera, 2005). Indeed, from the perspective of a labor market entrant, the initial business cycle conditions have far-reaching socioeconomic consequences (von Wachter, 2020). However, while a large literature has documented that graduating during a recession has large and lasting scarring effects on the earnings and employment trajectories of labor market entrants,[2] the evidence on how business cycle conditions faced at graduation relate to family formation, enrollment, and labor market participation is still scarce (one exception is Engdahl et al., 2022, for Sweden).

Motivated by this gap in the literature, we use rich population-wide administrative registers to study the consequences of graduating during the deep recession that hit Finland in the early 1990's. We study responses on income, family formation, fertility, and enrollment, which provides novel evidence on the channels through which labor market outcomes effects come about and persist above and beyond the initial losses caused by a transitory economic shock. The focus on a broad set of socioeconomic outcomes also lends itself to analyze the disparate effect of graduating in recession times along the gender and education dimensions. Gender heterogeneities might play a relevant role, since prospective entrants are in their peak reproductive age in the case of women whereas men have the option of postponing fertility almost indefinitely. In addition, both the education level (secondary vs. tertiary) and track (vocational vs. academic) can explain the differential consequences of graduating in bad business cycle conditions, which is something that has been largely overlooked in the literature.

Following the fall of the Soviet Union in 1991, during the early 1990s the Finnish unemployment rate saw a sharp fourfold increase, from about 5% pre-crisis to more than 20% nationally. The crisis hit the economy suddenly and with various degrees of severity across local labor markets, with the resulting unemployment rate ranging between about 15% in some regions to 35% in others during the peak years of the crisis. We thus exploit exogenous regional

[1] See also Doepke et al. (2023) for a survey of the models explaining fertility behavior in high-income economies.

[2] For instance, Kahn (2010), Oreopoulos et al. (2012), Altonji et al. (2016), Schwandt and von Wachter (2019) show that poor business cycle conditions faced at graduation have substantial long-term consequences on labor market outcomes of Northern American graduates. Cockx and Ghirelli (2016), Liu et al. (2016), and Päällysaho (2017) present evidence for the Belgian, Norwegian, and Finnish cases, respectively.

variation in the local unemployment rate faced at graduation for cohorts graduating in different years. In the absence of anticipation of the level of local unemployment rate faced upon graduating, the research design allows us to identify the long-run (up to 20 years later) socioeconomic losses following labor market entry in recession times, compared to being exposed to relatively lower local unemployment rates at graduation.

We find that both male and female secondary education graduates increase their propensity to enroll into further education when facing adverse entry conditions. The fact that they postpone labor marker entry is reflected by an initial sudden drop in labor income. While this occurs for both groups, male graduates see a faster recovery and even a positive effect on their earning trajectories in the medium run, between 4 and 9 years since graduation. Both groups see a similar sudden drop in cohabitation which reverses back about 5 years after graduation, while marriage is negatively impacted in the short run only for women (up to 4 years since graduation). For both groups, the number of children tends to increase over time when graduating in bad times.

Students obtaining tertiary education in bad labor market conditions also increase their enrollment rates. This pattern is more pronounced for male graduates, who also experience large and permanent earnings losses, whereas women's earnings recover after 5 years since graduation. Women also experience a large decrease in cohabitation that sluggishly recovers in the follow up period. Although the results on family formation lack precision, the point estimates for marriage rate suggest a sustained drop following graduating in bad times, whereas we find no significant results for the number of children.[3]

When breaking down the group of secondary graduates by academic vs. vocational track, we find results that roughly in line with the pooled results discussed above. Academic track males appear to enrol more often than women, with a corresponding larger medium-run increase in their earnings. At the same time, males experience slightly worse effects on cohabitation but a long-run increase in number of children that does not occur for women. When instead splitting by track type the tertiary education graduates, we find that the earnings losses are driven by the academic track graduates. A similar pattern, although more noisy, is present for the family formation and fertility outcomes.

To put our results in perspective, the 1990s Finnish deep recession was the most serious economic crisis among any OECD economy (Honkapohja and Koskela, 1999). Finland has a generous welfare state and is a relatively gender-equal country (WEF, 2020), and therefore any observed gender imbalances can be seen as a lower bound to what can be expected in alternative institutional settings. Key to our analysis, the Finnish context offers rich individual-level information from population-wide registers on educational achievement, graduation year and

[3]We repeated the analyses by modal age at secondary and tertiary education and including all students (including those that do not obtain a degree). Reassuringly, all patters stay qualitatively similar.

municipality, birthplace, and links to family members. This allows us to study the interplay between earnings, family formation and education dynamics over the business cycle in such a way that has largely been impossible in the past.[4]

Our results offer three main insights and contributions to the literature. First, the average effects from graduating during a recession might mask important heterogeneities. While the literature has highlighted heterogeneities in job loss effects across labor markets and workers (Bertheau et al., 2023; Athey et al., 2024; Gulyas and Pytka, 2024), much less is known in the context of graduating during recessions. To the best of our knowledge, we are the first analyzing the effect of entry conditions by gender and education by using population-level microdata. The paper closest to ours is by Engdahl et al. (2022), who focus on vocational high-school women. Complementary to our analysis, Kaila et al. (2024) study differential effects by socioeconomic status while analyzing results by education level and track as we also do.

Second, our understanding of the relationship between unemployment and long-run earnings trajectories passes through the analysis education enrollment and family formation decisions, which is something that has been largely overseen in the literature. Specifically, facing a temporary disadvantage at labor market entry can result in responses on education and family formation decisions that ultimately shape earnings trajectories in the long run, even in the presence of initial earnings recovery homogeneous across groups of labor market entrants. Engdahl et al. (2022) also find short-lived drops in employment and earnings following graduation in recession times, and document a persistent increase in welfare benefit take up and a deterioration of family formation in the long run. While they focus on vocational high-school women, we study the family formation patterns of both high school and tertiary education men and women graduates, alongside with their enrollment rates.

Lastly, it is key to have a sufficiently long time horizon to assess the relevance of business cycle conditions on labor market entrants' socioeconomic trajectories. This is consistent with Schwandt and von Wachter (2020), who study the US labor market entrants during the 1980s recession and find that their higher mortality, worsening of family formation, and lower measures of socioeconomic status only appear in middle age.[5] Compared to Schwandt and von Wachter (2020), who use cross-sectional state-level data to analyze effects by gender and a broad set of socioeconomic outcomes, the use of detailed individual-level population records allows us to get a better understanding of family formation patterns, how they relate to income and enrollment trajectories, and the mechanisms explaining gender-specific earnings dynamics over the business cycle.

Our work focuses on the business cycle conditions faced by labor market entrants, but it also relates to a growing literature on the importance of initial labor market conditions (e.g.,

[4]For instance, the prominent literature that focuses on studying the effect of entry conditions on labor market outcomes in the US relies on information aggregated at the State level.

[5]See also Currie and Schwandt (2014) for the relationship between unemployment and fertility.

Arellano-Bover, 2024) and to the literature that analyzes the consequences of job loss on households' family formation (Huttunen and Kellokumpu, 2016), on gender-specific earnings losses (Illing et al., 2024), and over the business cycle (Schmieder et al., 2023).

The paper is structured as follows. Section 2 describes data and analysis sample. Section 3 outlines our empirical strategy and the results are included in Section 4. Section 5 concludes.

2 Data and sample

2.1 Data sources and sample selection

We use rich information from population–wide administrative registers (FOLK and FLEED). In addition, we use information from the Medical Birth Registry to measure the number of children outcome. We sample people with either a secondary or a tertiary degree obtained in years 1989-1999 by age 30. All outcomes are measured in 1989-2019, between 0 and 20 years after the year of graduation. In the analysis we also include cohorts graduating in the late 1990s, when the economic conditions in Finland were less dramatic; this allows to exploit local unemployment variation both in severe recession times and during ordinary times. The sample is re-balanced by including 0 income entries in case a person exists in the registers but her income is missing.

We define local labor market at the regional level.[6] The region where the person graduate is measured at the end of the year, and the regional unemployment rate refers to people aged 16 to 64. Figure 1 shows the unemployment rate in Finland in years 1987-2019 and the area bounded by dotted lines marks the specific graduation years that we consider in the analysis. Figure 2 further shows large variation in the regional unemployment rates over time. At the peak of the crisis in 1993, some local labor markets experienced unemployment rate levels higher than 30%, whereas during the same year the unemployment rate in other regions was about half as much. Such a high variability in the local labor market conditions persisted also in later years, even when the global labor market conditions became generally more favorable for labor market entrants.

In terms of outcomes, labor income is deflated in 2010 EUR and is the primary labor market outcome; marriage and cohabitation are defined through indicator variables for being married or in cohabitation during the current year; the number of children, also used to define whether a person had any children, is measured as a cumulative variable whose value is updated each year; student status (enrollment) reports whether in the current year the main activity of the person is being a student.

[6] For ease of exposition, we use the term "region", although we use sub-regional level jurisdictions. Sub-regions comprise one or more municipalities that are linked to each other through cooperation, employment and public transport communication. The number of sub-regions varies between 70 and 88 during the observation period.

2.2 Finnish education system

The education system in Finland consists of three main levels; the primary education, the secondary education and the tertiary education, as illustrated in Figure 4. Primary education is compulsory for everyone and last for 9 years. After primary education, students continue to secondary education and choose between a vocational secondary education and an academic secondary education. During the period that we study, secondary education was voluntary in Finland and a relatively limited fraction of students do not obtain any post-compulsory education. The vocational secondary education lasts for 2 to 3 years and prepares students for a specific occupation. Typically, students enter the workforce after graduation.[7]

The academic secondary education is a general form of education and it prepares students for tertiary education. The great majority of academic secondary graduates continue to academic tertiary education or to vocational secondary education. The vocational tertiary education is more practically oriented compared to the academic tertiary education and the typical duration of programs is 3 to 4 years. The academic tertiary education consists of a 3-year bachelor's program followed by a 2-year master's program provided by universities. After a completed master's degree it is possible to continue to a doctoral program.

2.3 Sample description

In the analysis, we focus on two groups of students. The first group consists of people graduating with a vocational secondary or academic secondary degree by age 30. For them, time 0 is the year of graduation with secondary education. Since we are interested in studying further enrollment and family formation outcomes that are potentially correlated with further education, we do not condition on future education achievement, meaning that some of the individuals will continue into tertiary education while others will not. Among the secondary education graduates, about 40% graduate with a vocational degree and 60% with an academic degree. The average age at graduation is 19.4 years.

The second group of students consists of tertiary education graduates with either a vocational or an academic degree obtained by age 30. For these students, time 0 corresponds to the year when the student obtains the tertiary degree (Master of science of equivalent). We exclude graduates with only a lower academic tertiary degree from the sample (Bachelor of science degree or equivalent), as the share of these graduates is rather small, and we allow the tertiary graduates to obtain a PhD or an additional degree in the future. 67.5% of the individuals in our sample receive a vocational tertiary degree and 32.5% receive an academic tertiary degree. The average age of graduation is 23.5 years for vocational tertiary graduates and 26.5 years for

[7] In principle, it is possible to continue to vocational tertiary education and within some fields also to academic tertiary education. However, the second alternative is very rare and might require some further qualifications.

academic tertiary graduates. On average, women graduate at a lower age compared to men who typically do their military service at age 19. The average age of graduation for vocational tertiary graduates is 23.3 for women and 23.9 for men and for academic tertiary graduates 26.4 for women and 26.7 for men.

3 Empirical approach

We compare the outcomes across cohorts of labor market entrants who are exposed to different initial levels of local unemployment rate. To this aim, we estimate the following model:

$$y_{irct} = \alpha_t + \beta_t U_{rc} + \delta_{rt} + \delta_{ct} + \varepsilon_{irct} \tag{1}$$

where individual i in region r graduates in calendar year c. We estimate regressions separately by time since graduation t, with $t \in [0,20]$. Note that U_{rc}, the area-specific unemployment rate faced at graduation year c, does not vary over time since graduation for a given individual. However, its coefficient is allowed to vary with the time since graduation. Finally, the model also includes the regional indicator variables δ_{rt} and the graduation year indicators δ_{ct}.[8] The main coefficient of interest β_t captures the change in the outcome variable due to a unit increase in the local unemployment rate. The model is estimated by using variation in the local unemployment rate across cohorts of labor market entrants and regions (see Figure 2).

Focusing on labor market entrants is of particular interest because young people bear a high risk of suffering permanent scars from adverse labor market conditions. Moreover, by definition, newly labor market entrants have no prior work experience, which allows to abstract from concerns related to selection based on past employment history. Although this last point facilitates the identification of the effect of business cycle shocks on career trajectories, the estimates for the coefficient β_t can be causally interpreted only if the economic conditions at time of graduation are uncorrelated with other determinants of the outcome. A potential threat to internal validity is that individuals may delay graduation or move to a different local labor market as a response to adverse labor market conditions. Furthermore, the composition of workers for which the regression is estimated, may change with business cycles if the labor supply decisions are affected.

[8] Results obtained when additionally including birth cohort fixed effects are qualitatively similar. We cannot include calendar year fixed effects since they are collinear with time since graduation and graduation year fixed effects. Results are robust when defining areas at the regional instead of sub-regional level.

4 Results

4.1 Impact on family formation and education

Figure 5 for female and 6 for male presents the impact on family formation and educational outcomes, based on Equation 1 when graduation year is defined as the year a person graduates with secondary education. More precisely, we present results for the four main outcomes: the number of children, cohabitation, enrollment and tertiary degree. Table 1 presents the precise estimates for all outcomes by gender.

Both male and female secondary graduates experience an initial drop in the probability of cohabitation, but there is a catch up in the five years following graduation. We find a statistically significant positive effect on fertility outcomes in the long run for both female and male secondary graduates and the effect is more sustained in the long run for male graduates. A unit increase in the local unemployment rate increases the number of children 15 years after graduation by 0.82 for male graduates and by 0.60 for female graduates.

Secondary graduates who face poor labor market conditions upon graduation are also more likely to be enrolled, i.e. categorized as a student, in the first years following graduation. The estimates are positive and statistically significant in the first 4 years following graduation for women. The initial effect on enrollment for men is similar, except for the year of graduation, which is the typical time for Finnish men to do their military service. The initial increase in the probability of being enrolled mirrors to the drop in earnings observed in the same time periods.

The outcome for tertiary degree is a dummy variable for the year when a person obtains any tertiary degree, defined as either a bachelor's degree, master's degree or a vocational tertiary degree.

Figure 8 presents the coefficients from a regression where the outcome variable is...

Our results indicate that graduating from secondary education in a recession makes individuals more likely to enroll into further education. This is true for both male and female graduates and it affects income negatively in the short run. We find that male secondary graduates recover faster compared to female graduates and that the impact on income is positive and statistically significant in the medium run for male graduates. While there is an initial drop in cohabitation for both male and female graduates, we find a short run negative effect on marriage only for women. Graduating in a recession increases the number of children for both male and female graduates over time. For tertiary graduates, we find a similar initial increase in enrollment rates that is more pronounced for male graduates. Male tertiary graduates experience large and permanent earnings losses, while female tertiary graduates recover in the short run. We find no significant results for the number of children for tertiary graduates, but the point estimates suggest that graduating in bad economic times has a negative effect on the

probability of marriage.

In the Appendix B, we show that our results are robust to using predicted age at graduation, defined as the median age of graduation for a specific degree. By using the predicted age of graduation instead of actual time of graduation, we address concerns for endogenous timing of graduation in response to weak labor market conditions.

4.2 Impact on income

We find an initial negative effect on income followed by a recovery for both female and male secondary graduates. The catch up is faster for male graduates, who further experience a strong positive effect on income 4 to 9 years after graduation. A unit increase in the local unemployment rate at graduation increases the yearly labor income for male graduates by approximately 21.000 euros 7 years post-graduation. We do not observe such a medium-run positive effect for women.

4.3 Tertiary graduates

Figure A-1 for female and A-2 for male presents the impact on the main outcomes for tertiary graduates. For female tertiary graduates, we identify a persistent negative effect on the probability of cohabitation for graduates in the 10 years following graduation. There are some evidence of an initial positive effect on the number of children for male graduates, but in the long run the results for male and female graduates follow a similar pattern. Furthermore, graduating in a recession has a larger initial positive effect on the enrollment of tertiary educated men compared to women.

Women who graduate with a tertiary degree in poor economic times experience an initial drop in income that fades away 6 years post-graduation. In the long run, the impact is negative and statistically significant 20 years after graduation. For male tertiary graduates, we see an initial drop in earnings followed by no catch up and a persistent negative effect in the medium and long run. A unit increase in the local unemployment rate at graduation, decreases the yearly labor income 20 years post-graduation by almost 16.000 euro for female tertiary graduates and by almost 60.000 euro for male tertiary graduates.

5 Conclusions

In this paper we study the income, family formation and education enrollment trajectories of cohorts of newly graduates who entered the Finnish labor market in 1989–1999. During the early 1990s, Finland was hit by an exceptionally strong and unexpected deep recession. We exploit regional variation in the unanticipated unemployment rate level faced at graduation to

study how local labor market conditions impact on people's long-run socioeconomic trajectories.

We find that education enrollment and family formation vary substantially by education level and gender. While we observe an increase in enrollment rates for both secondary and tertiary graduates and a simultaneous drop in labor income, the income recovery in medium and long run differs by educational group and gender. In particular, looking at secondary education male graduates, we see a fast recovery and a positive effect on their earnings trajectories in the medium run. For secondary education female graduates and tertiary education female graduates, we find a recovery in earnings in the short run, but tertiary educated male graduates experience large and permanent earnings losses. Furthermore, we find that graduating in a recession increases the number of children over time for both male and female secondary graduates, while there is no effect on fertility for persons who graduate with tertiary education.

Evidence on labor market entry conditions and fertility is still scarce but it is crucial to understand, among other things, how long-run earnings trajectories come about over the lifetime. Our analysis shows that economic recessions can be experienced in substantially different ways by different socioeconomic groups. Public policies aimed at providing economic relief to labor market entrants in bad times should take into account how the interaction between education enrollment and family formation decisions varies by gender and educational background and translates into long-run earnings differentials.

Tables and figures

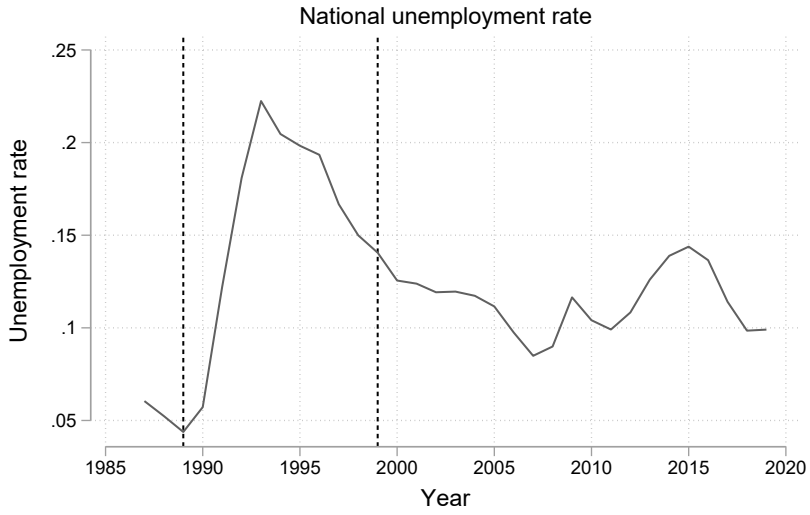


Figure 1: The national unemployment rate in Finland. The observation period 1989-1999 is marked by dotted lines.

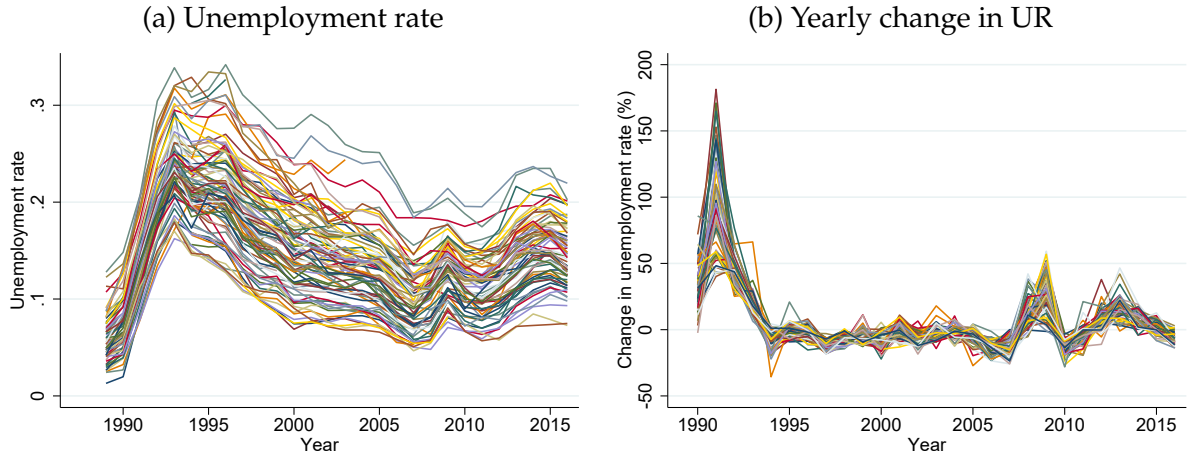


Figure 2: The sub-regional unemployment rates for years 1989-2016.

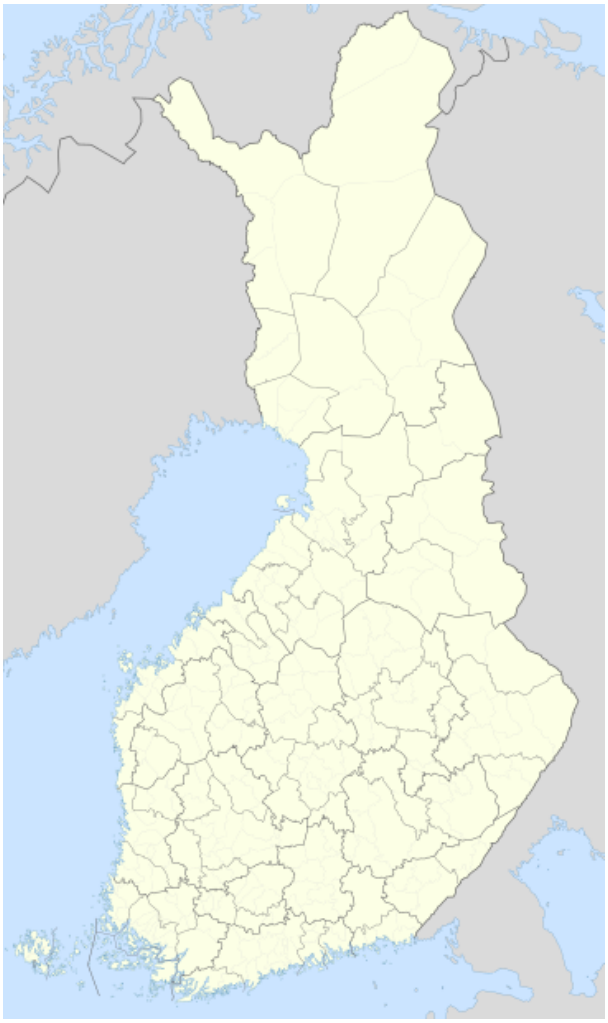


Figure 3: Subregions in Finland

Notes: The figure illustrates how Finland is divided into 69 different sub-regions from year 2021 onward. The number of sub-regions varies between 70 and 85 during our observation period and each sub-region form a local labor market in this study.

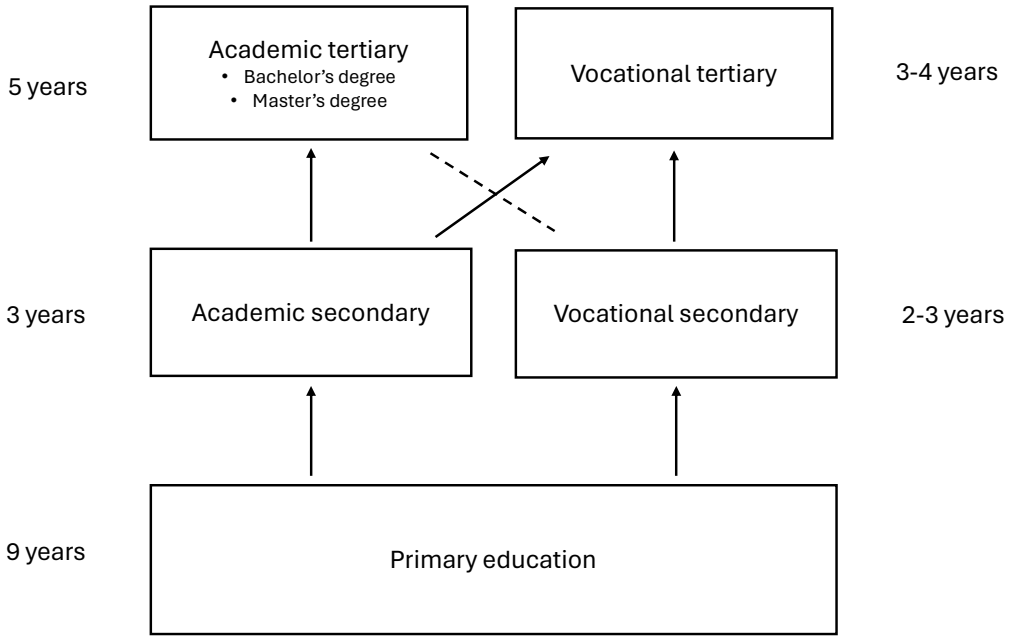
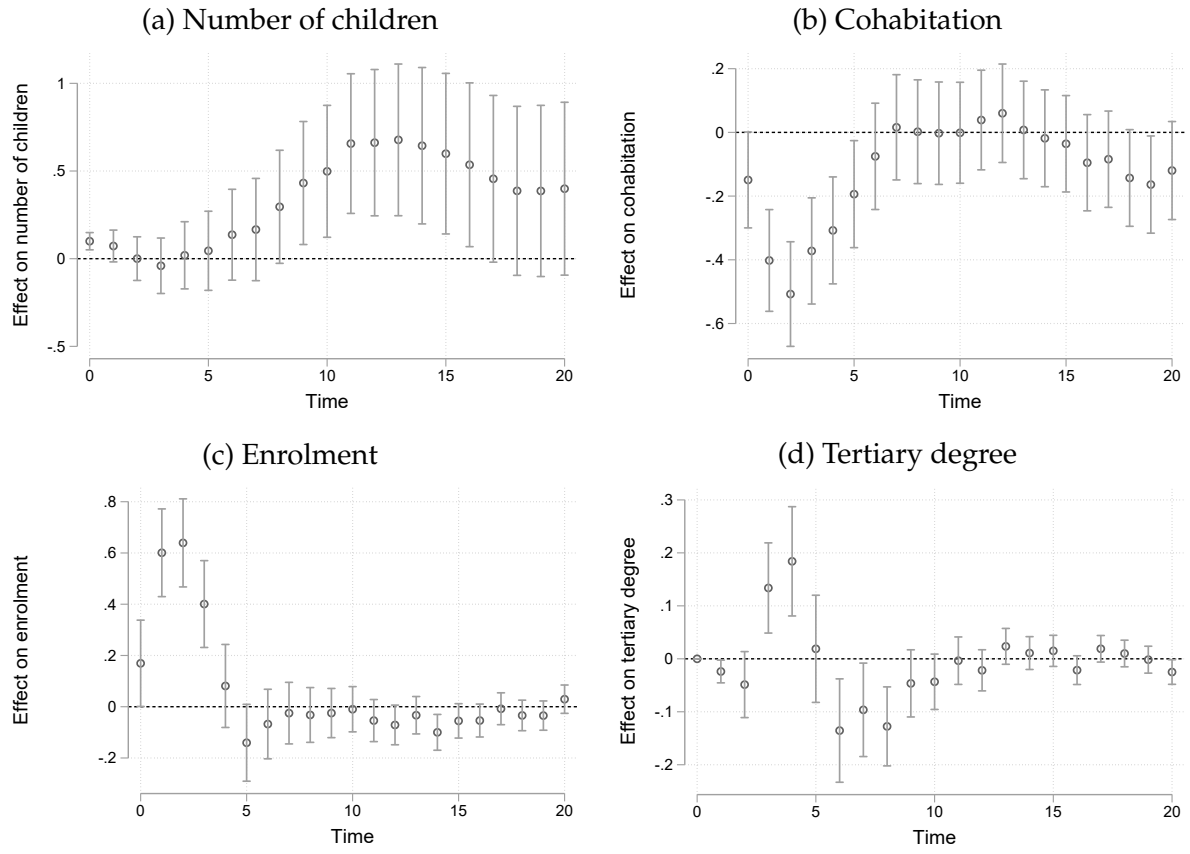


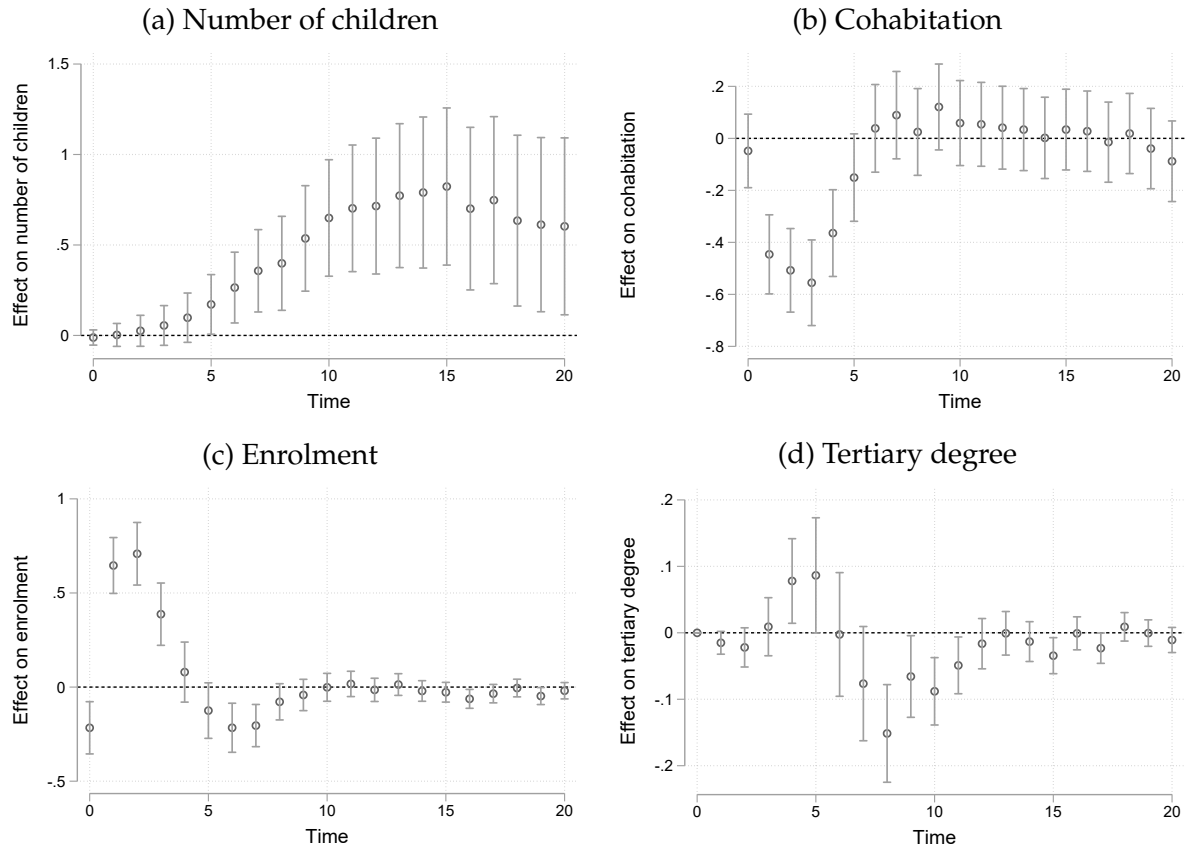
Figure 4: The Finnish education system.

Figure 5: Impact on main outcomes for secondary female graduates.



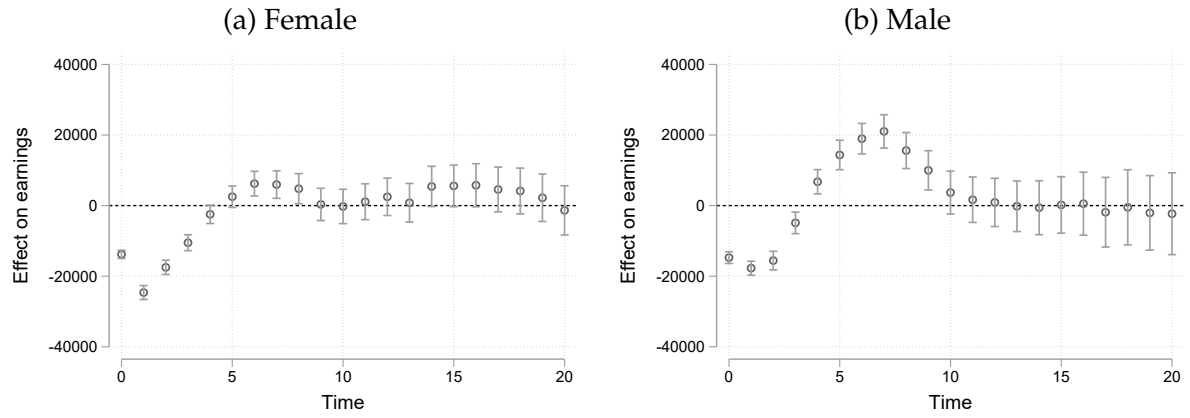
Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Figure 6: Impact on main outcomes for secondary male graduates.



Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Figure 7: Impact on income for secondary female and male graduates.



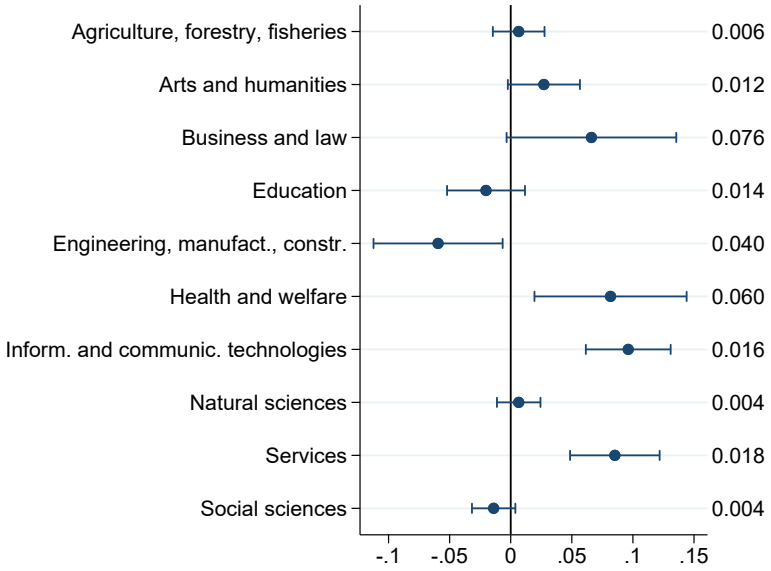
Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Table 1: Marginal effects for a unit-increase in the local unemployment rate

	Female				Male			
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Income	Enrolment	Cohab.	No. children	Income	Enrolment	Cohab.	No. children
Time								
0	-138***	0.169**	-0.149*	0.100***	-147***	-0.216***	-0.048	-0.011
5	25	-0.141*	-0.194**	0.045	144***	-0.125*	-0.151*	0.171**
10	-2	-0.010	-0.001	0.498***	37	-0.001	0.059	0.649***
15	56*	-0.055	-0.036	0.599**	2	-0.027	0.034	0.823***
20	-13	0.029	-0.120	0.399	-23	-0.019	-0.088	0.603**
No. obs.	1,383,141	1,383,141	1,383,141	1,383,141	1,379,842	1,379,842	1,379,842	1,379,842
Avg. dep. var.	15,871	0.156	0.711	0.848	23,504	0.118	0.693	0.647

Notes: Columns (2) to (4) and (8) to (8) report marginal effects in percentage points for a unit percent increase in the local unemployment rate (the remaining partial effects are not rescaled). Time measured in years since graduation.

Figure 8: Any tertiary education by field of education.



Notes: The outcome variable is a dummy variable for having any tertiary degree 5 years after graduation, The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

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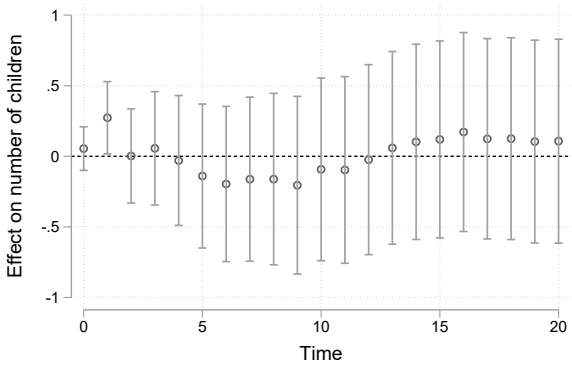
Appendix

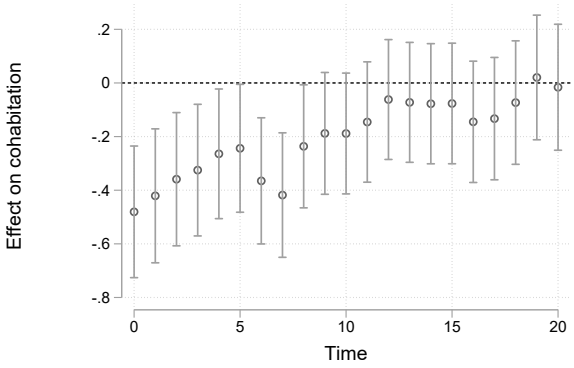
A Results for tertiary graduates

Figure A-1: Impact on main outcomes for tertiary female graduates.

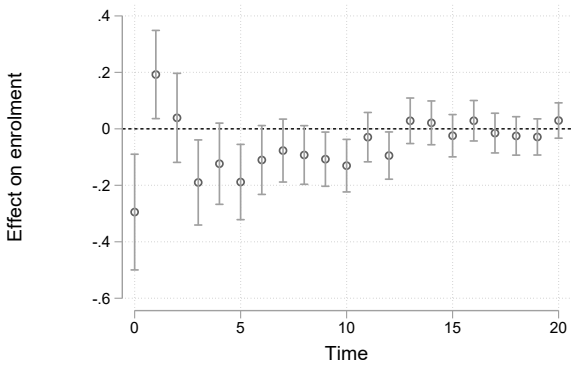
(a) Number of children



(b) Cohabitation

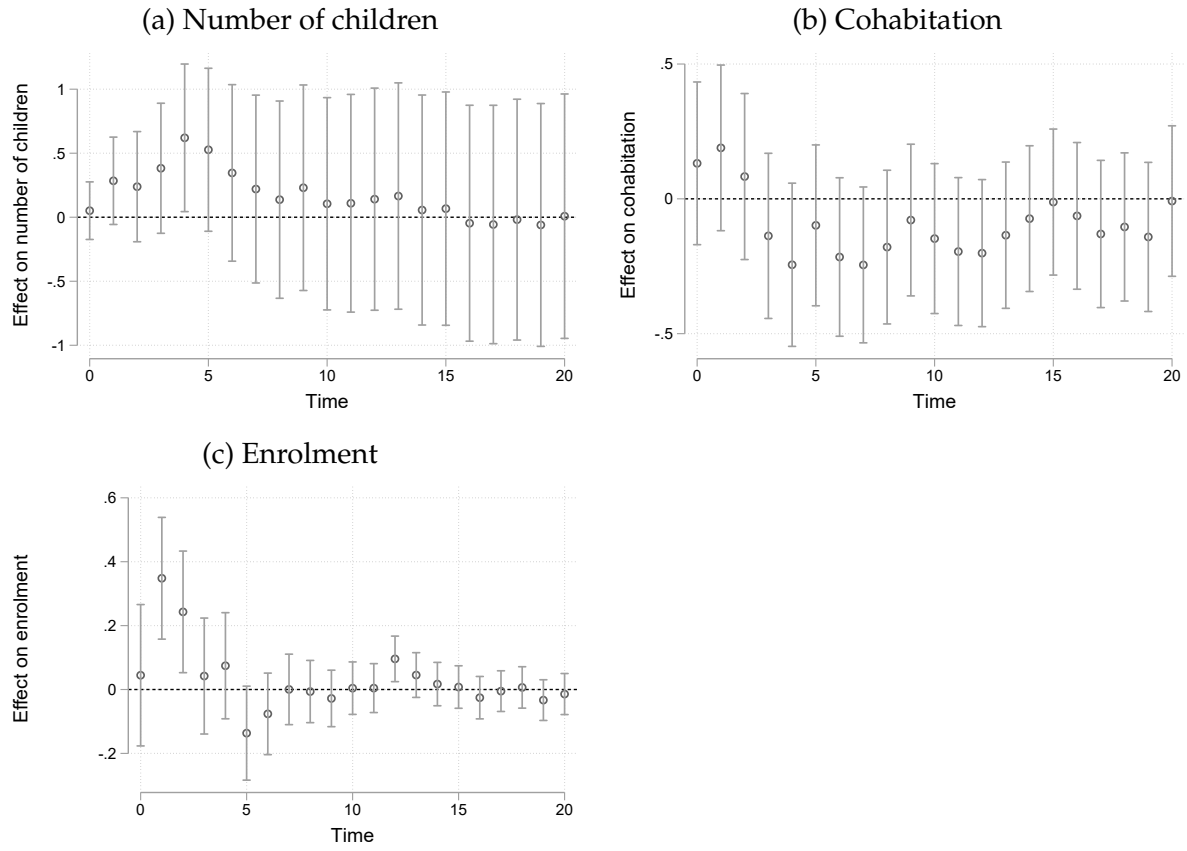


(c) Enrolment



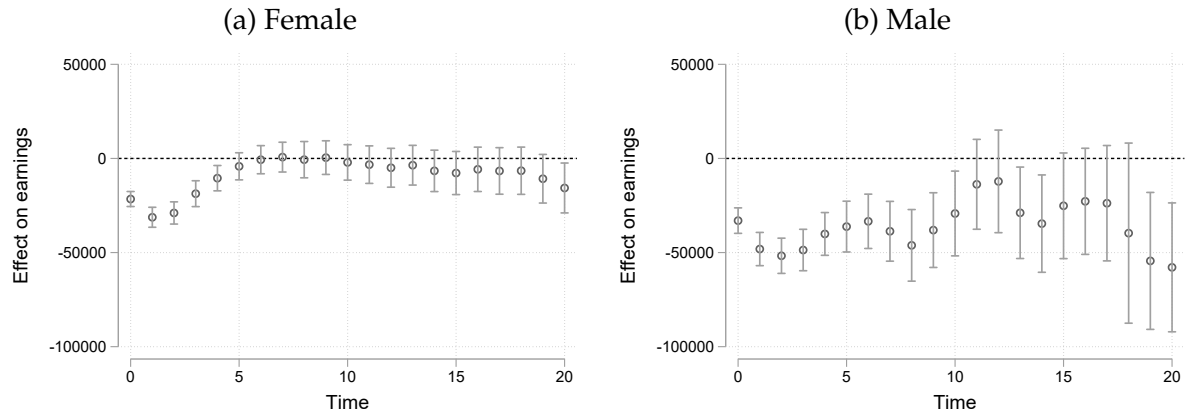
Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Figure A-2: Impact on main outcomes for tertiary male graduates.



Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Figure A-3: Impact on income for tertiary female and male graduates.



Notes: The figure depicts the results for an estimation of the model presented in section 3. The dots are coefficient estimates and capture the change in the outcome variable due to a unit increase in the regional unemployment rate. The bars represent the 95% confidence interval.

Table A-1: Marginal effects for a unit-increase in the local unemployment rate

	Female				Male			
	(1) Income	(2) Enrolment	(3) Cohab.	(4) No. children	(5) Income	(6) Enrolment	(7) Cohab.	(8) No. children
Time								
0	-216***	-0.295***	-0.481***	0.055	-330***	0.045	0.132	0.051
5	-42	-0.188***	-0.244**	-0.140	-362***	-0.137*	-0.098	0.527
10	-21	-0.130***	-0.188	-0.092	-292**	0.004	-0.147	0.105
15	-78	-0.024	-0.077	0.119	-252*	0.008	-0.012	0.067
20	-157**	0.029	-0.016	0.107	-579***	-0.014	-0.008	0.008
No. obs.	690,721	690,721	690,721	690,721	452,628	452,628	452,628	452,628
Avg. dep. var.	23,787	0.048	0.748	1.158	37,827	0.035	0.759	1.106

Notes: Columns (2) to (4) and (8) to (8) report marginal effects in percentage points for a unit percent increase in the local unemployment rate (the remaining partial effects are not rescaled). Time measured in years since graduation.

B Results by vocational and academic education

B.1 Vocational secondary education

Table A-2: Marginal effects for a unit-increase in the local unemployment rate

	Female				Male			
	(1) Income	(2) Enrolment	(3) Cohab.	(4) No. children	(5) Income	(6) Enrolment	(7) Cohab.	(8) No. children
Time								
0	-137***	0.605***	-0.414***	0.223***	-164***	0.155*	-0.164	-0.041
5	-58**	0.010	-0.399***	0.019	82***	-0.007	-0.167	-0.023
10	-24	0.029	0.036	0.465	18	0.007	0.075	0.368
15	35	-0.073	-0.066	0.985**	54	-0.029	0.088	0.486
20	-4	0.001	0.013	1.211**	52	-0.008	-0.020	0.447
No. obs.	449,855	449,855	449,855	449,855	706,274	706,274	706,274	706,274
Avg. dep. var.	13,121	0.081	0.706	1.087	21,125	0.058	0.694	0.725

Notes: Columns (2) to (4) and (8) to (8) report marginal effects in percentage points for a unit percent increase in the local unemployment rate (the remaining partial effects are not rescaled). Time measured in years since graduation.

B.2 Academics secondary education

Table A-3: Marginal effects for a unit-increase in the local unemployment rate

	Female				Male			
	(1) Income	(2) Enrolment	(3) Cohab.	(4) No. children	(5) Income	(6) Enrolment	(7) Cohab.	(8) No. children
Time								
0	-141***	-0.158	-0.039	0.027	-158***	-0.669***	0.101	0.001
5	62***	-0.302***	-0.135	-0.001	84***	-0.242*	-0.281**	0.179**
10	3	-0.019	-0.029	0.381*	34	0.023	0.073	0.574***
15	52	-0.032	0.004	0.268	-60	0.006	0.022	0.872***
20	-19	0.054	-0.174*	-0.152	-76	-0.023	-0.080	0.514
No. obs.	933,286	933,286	933,286	933,286	673,568	673,568	673,568	673,568
Avg. dep. var.	17,198	0.192	0.713	0.733	25,998	0.180	0.691	0.566

Notes: Columns (2) to (4) and (8) to (8) report marginal effects in percentage points for a unit percent increase in the local unemployment rate (the remaining partial effects are not rescaled). Time measured in years since graduation.

C Predicted age of graduation

Table A-4: Marginal effects for a unit-increase in the local unemployment rate

	Female				Male			
	(1) Income	(2) Enrolment	(3) Cohab.	(4) No. children	(5) Income	(6) Enrolment	(7) Cohab.	(8) No. children
Time								
0	-93***	-0.188**	-0.218***	-0.009	-98***	-0.562***	-0.170***	0.021*
5	32**	-0.085	-0.296***	0.119	155***	-0.194***	-0.267***	0.212***
10	-6	-0.028	0.040	0.576***	116***	-0.050	0.092	0.804***
15	47*	-0.059*	-0.005	0.585***	55	-0.016	0.118*	1.038***
20	-24	-0.026	-0.079	0.370	8	-0.020	0.008	0.896***
No. obs.	1,648,599	1,648,599	1,648,599	1,648,599	1,729,768	1,729,768	1,729,768	1,729,768
Avg. dep. var.	14,958	0.153	0.700	0.893	21,838	0.112	0.672	0.644

Notes: Columns (2) to (4) and (8) to (8) report marginal effects in percentage points for a unit percent increase in the local unemployment rate (the remaining partial effects are not rescaled). Time measured in years since graduation.