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Working while studying: does it lead to greater attachment to the regional labour market?

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## 6.1 INTRODUCTION

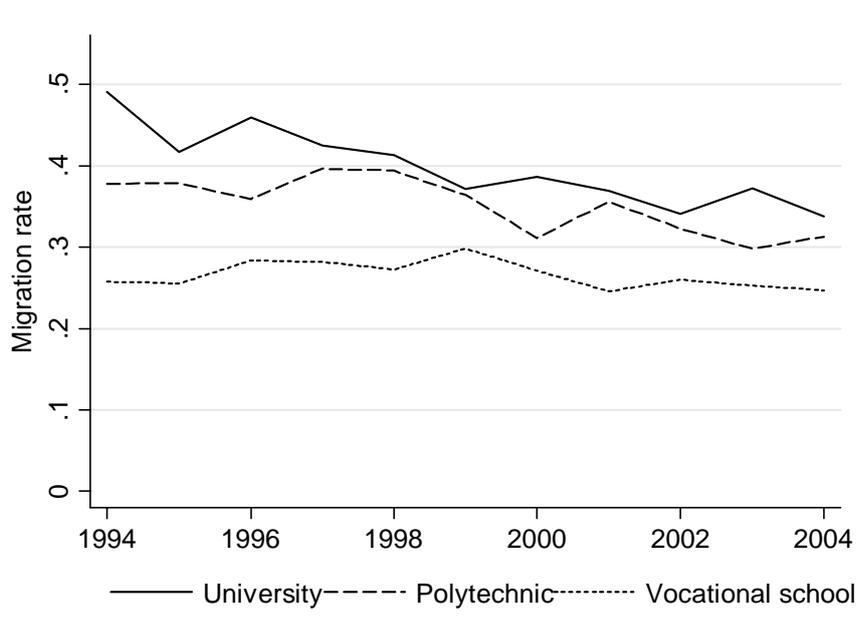
Extensive theoretical and empirical research indicates that highly educated individuals are more likely to migrate, as investments in human capital increase the expected returns on migration (see for example Greenwood, 1997, ch. 12). Recent empirical evidence has, however, shown that internal migration rates have fallen for the highly educated since the beginning of the 1990s in the United States<sup>1</sup> (Molloy et al., 2011; 2014). Figure 6.1 shows a similar pattern for higher-education graduates in Finland. A falling trend in internal migration is also visible in Britain (short-distance migration, Champion and Shuttleworth, 2015), Australia, Canada and Switzerland (Bell and Charles-Edwards, 2013). It is not clear whether the decline in mobility originates in changes in individual behaviour or characteristics, or is connected to a wider shift in the labour market. Traditionally, high labour mobility is seen as a sign of labour-market dynamism (Borjas, 1999). Conversely, low labour mobility can potentially prolong recessions and reduce growth. Hence, it is important to understand the underlining factors that affect migration.

We argue that the decline in the migration of higher-education graduates might be related to changes in the labour market, and particularly to how much they work during their studies. The American Community Survey for 2011 indicates that around 70 per

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<sup>1</sup> In the United States, population-level migration rates have also declined dramatically since the end of the 1990s (Partridge et al., 2012; Kaplan and Schulhofer-Wohl, 2012).

cent of college students worked part- or full-time while enrolled (Davis, 2012). In Finland, the magnitude of student employment is similar; over 60 per cent of university students are working during their studies despite the generous student-benefit system (OSF, 2016). As short-lived jobs before graduation can constitute a stepping stone to long-lasting jobs (Cockx and Picchio, 2012), work experience accumulated during the studies might attach youths to their study region. When students start to work, for example, to finance their education or to gain a higher standard of living, they begin to accumulate work-related human capital.<sup>2</sup> Occupational and industry-specific human capital is often needed to perform specialised tasks (Sullivan, 2010; Yamaguchi, 2012). If human capital is not easily taken to the new occupation or work, this accumulation can decrease migration due to the increased cost of moving. Yet the relationship between student work and migration is not fully understood.



*Figure 6.1 Migration rates within three years of graduation by level of education (in 1994–2004 in Finland)*

<sup>2</sup> Molloy et al. (2014) show that labour-market transitions (switching employers or occupations) and geographical mobility are strongly positively correlated in the US. Hence, the stability in human capital accumulation might explain at least partly why migration has declined.

*Source:* Own calculations based on 7 per cent random sample.

The purpose of this chapter is to investigate how working while studying is related to geographical mobility after education in Finland. The analysis focuses on high school graduates who have completed their first university, polytechnic or vocational school degree in 1991–2004. Our first observation from Figure 6.1 is that the mobility of university and polytechnic graduates has declined in Finland since the first half of the 1990s. Surprisingly, the decline of migration rates coincides with a period in which the Finnish economy expanded significantly, even though periods of economic growth are normally understood to be associated with higher rates of labour mobility (Saks and Wozniak, 2011). This finding is worrisome; high labour mobility is believed to be important for economic development because it improves the allocation of labour across regions (for example, Blanchard et al., 1992).

Our main contribution is to show that working while studying is negatively related to graduate migration in Finland (even after controlling for a rich set of confounding factors). Thus, increases in working while studying can partly explain why the migration rates have declined for higher-education graduates in Finland. Second, policy-makers in Finland are actively looking for ways to speed up graduation, and new constraints on working while studying might form part of the policy toolkit. Our results imply that restrictions on working while studying could potentially lead to the increased out-migration of graduates from higher education, particularly from regions outside the Helsinki capital region. Third, we also document differences in the relationship by study region and prior mobility.

The rest of the chapter is organised as follows. Section 6.2 reviews the related literature. Section 6.3 gives general information on the higher-education system in Finland. Section 6.4 introduces the data and method. Section 6.5 presents descriptive evidence

and estimation results. Section 6.6 discusses the findings and provides avenues for future research. Section 6.7 concludes.

## 6.2 LITERATURE REVIEW

The positive relationship between education and migration has been documented in the literature for many decades. Since early contributions by Sjaastad (1962) and Bowles (1970), this literature has expanded enormously, confirming that college and university graduates are more geographically mobile than their less-educated peers (see for example Wozniak, 2010; Malamud and Wozniak, 2012). Recently, scholars have shown growing interest in the migration of graduates from higher education. The literature has shown, for example, that gender (Faggian et al., 2007), ethnicity (Faggian et al., 2006), field of study (Venhorst et al., 2010), local labour-market conditions (Venhorst et al., 2011) and location of the educational institution (Groen, 2010; Haapanen and Tervo, 2012) are important for mobility.

In addition, destination choices of graduates from higher education have been investigated. For example, Marinelli (2013) finds that return migrants (from study region to origin region) have a poorer academic performance and are less strongly attracted to highly innovative regions than onward migrants (see also Faggian et al., 2013). According to Ahlin et al. (2014), the attraction of urban regions among university graduates in Sweden is due to their thicker labour markets for skills: large cities increase employment probabilities and yield higher returns to human capital.

Nevertheless, very little is known about how students' work experience during the studies is related to their future geographical mobility. This observation is surprising because graduates are effectively transferring knowledge from the university sector to the labour market, and when they move, they further transfer this knowledge across regions (for example, Marinelli, 2013). Migration can also potentially mediate the effect

of education on other labour-market outcomes, since migration is important for gaining returns from education investments. For example, di Cintio and Grassi (2013) find large wage gains from migrating after university graduation and smaller wage gains from migrating to study in a university, compared to those who remain in their current region.

### **6.2.1 How Does Working While Studying Affect Migration?**

Theoretically, it is unclear whether working while studying should have a net positive or negative effect on graduate migration. On the one hand, working while studying expands local labour-market networks because the student's employer and fellow employees can share information about local jobs. The increased stability (for example, the lower risk of unemployment) is likely to reduce the propensity to move after graduation. Furthermore, those who work during their studies might disproportionately consist of students whose skills match well with the employment needs of the local industries, and vice versa. Therefore, the wage-opportunity cost of moving is relatively high for these matched workers and low for mismatched workers who might invest in migration as a means of improving their job matches (cf. discussion in Nakosteen et al. 2008, p. 772).

On the other hand, working while studying can also increase migration. A good employment history is an indicator of high productivity, which elicits job offers across the regions and thus increases a graduate's propensity to move. Migration also requires an initial outlay of financial resources. Graduates who have worked during their studies are better able to finance their migration efforts. However, because students in higher education are relatively wealthy in Finland and government support is generous (see Section 6.3), financial restrictions are unlikely to play a major role in the decision to move in Finland. In sum, the sign of the effect of working while studying on graduate migration is theoretically ambiguous, and empirically it remains an open question.

## 6.2.2 Other Labour-Market Outcomes

Although prior evidence on the relationship between working while studying and migration is lacking, a number of studies examine how employment during studying affects academic achievements and other labour-market outcomes after graduation. Working while studying is observed to prolong graduation, but it is less clear whether work harms students' GPAs (see for example Darolia, 2014; Nonis and Hudson, 2006). Avdic and Gartell (2015) show that Swedish student aid reform, which enhanced student employment during their studies, also decreased the pace of study among students from low socio-economic backgrounds. High-intensity work during studying is observed to slow academic progression in the United States (US) (Darolia, 2014), Italy (Triventi, 2014), France (Body et al., 2014), the United Kingdom (UK) (Jewell, 2014) and Finland (Häkkinen and Uusitalo, 2003). By contrast, student aid reforms that increased conditional financial aid in Germany (Glocker, 2011) and in Norway (Gunnæs et al., 2013) enhanced on-time graduation.

Working while studying has been found to affect labour-market outcomes such as employment and earnings after graduation, but estimated effects vary by country, level of education and empirical approach. In the US, studies have shown that employment during high school can have a positive earnings effect (see the early survey by Ruhm, 1997), but this might be explained by individual selection and unobserved heterogeneity (for example, Hotz et al., 2002). Still, Molitor and Leigh (2005) find that in-school work experience is a significant determinant of earnings in the US, but that it is more important for two-year than four-year college students (see also Light 2001). Häkkinen (2006) finds that student employment has a positive effect on earnings right after graduation from university in Finland (19 per cent one year after graduation), but when she accounts for the effect on the duration of studies, the earnings effect is insignificant. Her results suggest that although working while studying can ease the transition from

school to work, it has no long-term effect on earnings. Returns to student employment are also found to depend on what kind of jobs students have. Field-related employment during university studies has been found to result in lower unemployment risk and higher wages after graduation in Switzerland (Geel and Backes-Gellner, 2012) and in the UK (Jewell, 2014). In addition, Saniter and Siedler (2014) show that mandatory internships have a positive wage effect after graduation in Germany.

Moreover, a growing body of literature has investigated how different labour-market decisions can have profound long-term effects on youths' lives. The early career period is often 'chaotic'; changing jobs is common among youths (Neumark and Joyce, 2001; Ryan, 2001). The long-term outcomes depend on how young individuals succeed in these first labour-market years. For example, for graduates from universities of applied sciences, a poor match between education and job after graduation is found to lead to income penalty and worse job satisfaction (Diem, 2015). Unemployment at a young age or after graduation has a significant negative effect on future earnings (Doiron and Gørgens, 2008; Mroz and Savage, 2006; Oreopoulos et al., 2012; Wachter and Bender, 2006). In contrast, stability in the early career and a successful transition from school to work increases future labour-market activity (Neumark and Joyce, 2001) and adult earnings (Neumark, 2002). Migration is an often essential part of this transition.<sup>3</sup> Graduates choose a labour market at the beginning of their work life, and their mobility declines rapidly after they find a suitable job, establish a family and develop new social networks in the region (Gordon and Molho, 1995; Huff and Clark, 1978; Molho, 1995).

In sum, the literature on graduate migration and the effects of working while studying on other labour-market outcomes has expanded recently, but it is still unknown how

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<sup>3</sup> The decision to move is often made simultaneously with job acceptance. For example, Détang-Dessendre and Molho (1999) find that unemployed individuals are more likely to undertake contracted migration as opposed to speculative long-distance migration.

work-related activities during studies are related to future mobility. Since working while studying can provide essential information on the local labour market before graduation, it is likely to be an important factor in determining whether the graduate stays in the study region. Gained work experience is a competitive advantage over graduates without experience, especially in the slow-growth regions, where employment opportunities are scarce.

### 6.3 INSTITUTIONAL SETTING: HIGHER EDUCATION IN FINLAND

After completing compulsory education, approximately 50 per cent of students in Finland will continue to high school, which lasts for three years and ends with a matriculation examination. High school gives qualifications for applying to institutions of tertiary education, that is, universities and polytechnics. Approximately 36 per cent of applicants to polytechnics and 29 per cent of applicants to universities are successful and commence studies (Statistics Finland, 2013). As entry to tertiary education is highly competitive, many students also complete vocational school after high school. Nonetheless, only 12 per cent of new vocational school students had a high school degree in 2012 (OSF, 2012). Degrees from vocational schools and colleges were more common for high-school graduates at the beginning of the 1990s than they are today because the vocational schooling system was more fragmented and no polytechnics existed in Finland. The polytechnics were formed gradually after 1991 by merging 215 vocational colleges and schools. This expanded the higher-education network to 26 polytechnics in addition to the pre-existing 15 universities. As illustrated by Figure 6.2, the universities are located in ten regions, whereas the networks of polytechnics and vocational schools cover the entire country.

In Finland, education is practically free at all levels, and students receive government support, which consists of three parts: direct allowances, housing benefits and

government-guaranteed loans. After the student support system reform of 1992, subsidy levels and the rules guiding the use of entitlements have been relatively stable for the majority of students. From 1992 to 2012, government support for students in higher education has increased: direct monthly allowances from €64 to €98 (by 13 per cent), monthly housing benefits from €149 to €202 (by 36 per cent) and the maximum of government-guaranteed loans from €202 to €300 (by 49 per cent; see Ministry of Education and Culture, 2012). At the same time, living costs have increased by 40 per cent and the general income level by 93 per cent. Therefore, the financial incentives for working have increased over time because much of the increase in benefits has been in the government-guaranteed loans that Finnish students are reluctant to take.<sup>4</sup>

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<sup>4</sup> According to a survey by the Ministry of Education and Culture, one in five students had taken a student loan in the academic year 2005–06, and the major reason why students do not take student loans is their unwillingness to live in debt (Viuhko, 2006).

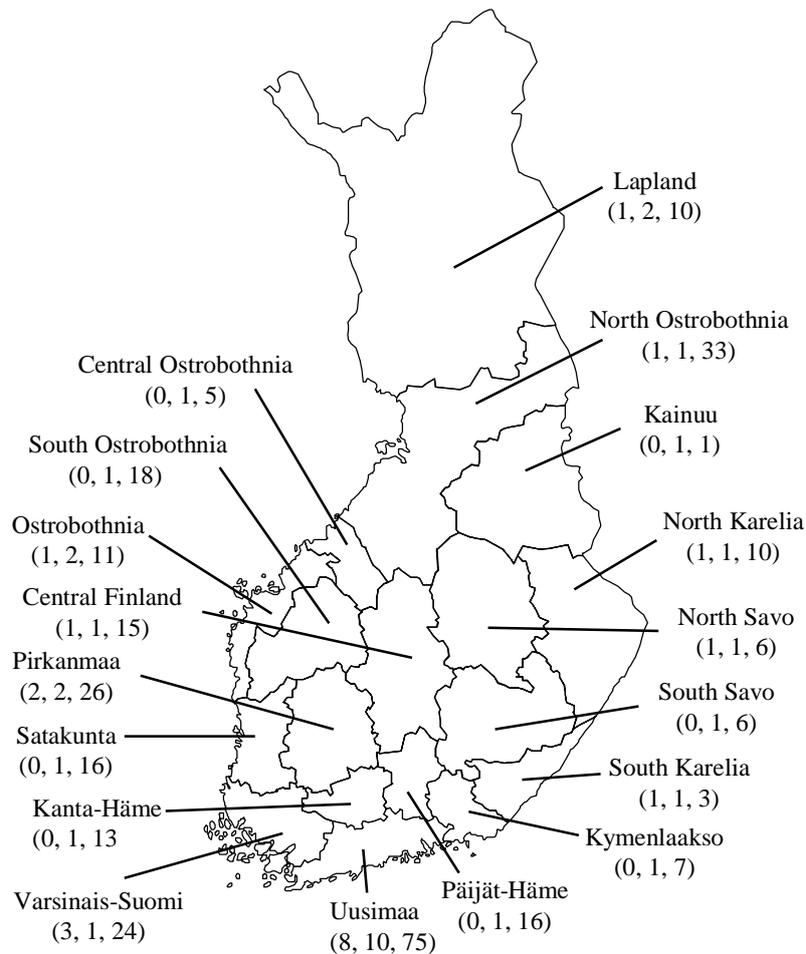


Figure 6.2 NUTS 3 regions and educational institutions in Finland in 2004

Note: Number of universities, polytechnics and vocational schools are given in parentheses below the name of the region.

Source: Statistics Finland, Education Statistics.

The support system allows students to earn substantial amounts during the academic year and still receive full student benefits. For example, in 1998–2007 students were allowed to earn €505 for each month they received full student benefits and/or housing benefits, and this earnings limit was €1,515 for each benefit-free month.<sup>5</sup> Thus, students

<sup>5</sup> From 1995 to 1997, students were allowed to earn €303 per subsidy month. Allowances were cut by 10 per cent on every €50 above the limit. Students who earned more than €1,180 per month on average were not entitled to student benefits. In 2008, earnings limits were raised by 30 per cent.

who collect full benefits from the typical nine study months could still annually earn €9,090 without the need to repay the allowances.

#### 6.4 DATA AND METHOD

Our analysis is based on the Longitudinal Census Files and the Longitudinal Employment Statistics File constructed by Statistics Finland. These datasets are annually updated from the registers, and contain a large set of variables spanning 1987 to 2006, including information on, for example, high-school matriculation exam scores, spouses, parents and regions of residence. For this study, we use a 7 per cent random sample of individuals who were Finnish residents in 2001.

The analysis focuses on high-school graduates who have completed their first master's, polytechnic or vocational school degree in 1991–2004, that is, to fourteen cohorts of graduates.<sup>6</sup> Because we only know the matriculation exam results from 1990 onwards, we restrict the sample to individuals who completed high school in the period 1990–96 in our main analysis. We censor the later high-school cohorts to allow sufficient time for them to graduate from higher education within the study time-frame. We also exclude 124 individuals who were older than 25 when they graduated from high school to increase the homogeneity of the sample. After deleting a further 2,872 observations with incomplete data, we are left with 10,077 graduates from university, polytechnic or vocational school. On average, they were 25 years old at graduation.

We investigate the propensity to move within three years of graduation. First, students' NUTS 3 region of residence is saved one year before graduation. Migrants are then defined as students who change their NUTS 3 region of residence (on an annual basis) at least once by the end of the second year after graduation. For example, a student who

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<sup>6</sup> Bachelor's degrees are not relevant here, because it was very uncommon to graduate with a bachelor's degree from universities before the Bologna process was adopted in Finland in 2005.

received a degree in 2000 will be classified as migrant if (s)he changed regions in 1999–2002. Thus, a non-migrant is someone who did not move between 1999 and 2002. This definition of migration is motivated by prior research showing that many graduates from higher education already move before graduation and that the propensity to move declines rapidly after graduation (Haapanen and Tervo, 2012).

Following Böckerman and Haapanen (2013), Haapanen and Tervo (2012) and Nivalainen (2004), we study long-distance migration between the nineteen Finnish NUTS 3 regions. Although short-distance migration is also common near the graduation year (for example, because of leaving student accommodation), we focus on migration between the NUTS 3 regions, which constitute distinct labour markets and cultural and geographic areas in Finland. We believe that this definition of migration gives a reliable measure of the graduate's decision to change the labour-market area and not just to commute over a longer distance. Robustness checks (available on request) show that our estimation results are similar when NUTS 4 classification (that is, 79 regions) is used instead.

We have constructed two measurements of work that are used to investigate the relationship between working while studying on migration. First, we define full-time work over a three-year period before the graduation year by using annual earnings, which are deflated using the consumer price index (base year 2000). Statistics Finland classifies an individual as a full-time worker for the year if his/her earnings exceed €8,409 (Statistics Finland, 2000). This definition of full-time work is also used by Böckerman et al. (2009). We apply this threshold using average annual earnings over the three-year period. Second, we define an individual as a part-time worker if his/her average earnings from the same period are less than €8,409 but more than €6,060. The lower threshold for part-time work is based on the rules related to student benefits discussed above. Students can earn a maximum of €505 per month and receive full

student benefits each month ( $12 \times \text{€}505 = \text{€}6,060$ ). Results available on request indicate that our conclusions below are not sensitive to small changes in lower-bound limits for earnings.<sup>7</sup>

Since our dependent variable, migration, is binary, we use probit models to estimate how working while studying is related to graduate migration. To allow for the relationship between working status and migration to vary according to the level of education, our models include a full set of interaction terms between the level of education and working status. The probit models also use a number of background variables to control for individual-specific heterogeneity (such as high-school grades to control for individual differences in ability). Table 6.1 displays the variables used in the models and their definitions and mean values.

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<sup>7</sup> Months of employment are also available in our data, but we believe that earnings are a more accurate measurement of work, particularly for students. Students can work irregularly for a few hours per day. In the administrative files one hour of work per day is counted as a work-day, and fourteen work-days is registered as a work-month. This might distort the measurement of work particularly for students who are relatively distinct from the remainder of the labour force.

Table 6.1 Description of variables and their mean values

Variable	Description	Mean
<i>Dependent variable</i>		
Migration	1 if individual changes NUTS 3 region of residence at least once during a period starting one year before the graduation year and ending two years after the graduation year, 0 otherwise	0.32
<i>Working while studying</i>		
Full-time work	1 if average annual earnings over €8,409 during 3-year period before graduation year, 0 otherwise	0.19
Part-time work	1 if average annual earnings €6,060–8,409 during 3-year period before graduation year, 0 otherwise	0.14
Less than part-time work	1 if average annual earnings less than €6,060 during 3-year period before graduation year, 0 otherwise	0.67
<i>Level of education</i>		
Master's degree	1 if graduated with master's degree, 0 otherwise	0.30
Polytechnic degree	1 if graduated with polytechnic degree (lower-degree-level tertiary education), 0 otherwise	0.26
Vocational school degree	1 if graduated with vocational school degree (upper-secondary-level education or lowest-level tertiary education), 0 otherwise	0.44
<i>Control variables</i>		
Age	Graduation age	25.08
Age <sup>2</sup>	Graduation age squared	635.2
Female	1 if female, 0 otherwise	0.61
Swedish	1 if Swedish speaking minority, 0 otherwise	0.05
Married*	1 if married, 0 otherwise	0.06
Children*	1 if at least one child, 0 if no children	0.24
Female with children*	Interaction term (female × children)	0.16
Spouse's education*	0 if not married, 1 if comprehensive education, ... , 5 if university education	0.55
Spouse's employment*	1 if spouse is employed, 0 otherwise	0.09
Spouse's income*	Annual income of spouse, €1,000	0.86
Home-owner*	1 if owns a flat or house, 0 otherwise	0.21
HS work experience	Sum of work months over 3-year period during high school	6.26
HS work experience <sup>2</sup>	HS work experience squared	92.08
Math score	Matriculation exam score for math grades at the basic and advanced level from high school (1–10; 10 is the best)	3.27
Language score	Matriculation exam score for the grade of the native language (1–5; 5 is the best)	2.39
Missing scores	1 if matriculation score(s) missing, 0 otherwise	0.33
Migrated for studies	1 if study region of higher education is not high school region (NUTS 3), 0 otherwise	0.20
Parent's region	1 if mother or father is living in the study region; otherwise	0.79
Unemployment rate*	Average unemployment rate for 20–34-year-old population in the NUTS 4 study region	18.55

Notes: Estimations also use NUTS 3 study region dummies and graduation year dummies for high school and the next degree. Study region refers to the region where the graduate receives his/her first degree after high school. Variables marked (\*) are measured three years before the year of graduation. Earnings were deflated using consumer price index in 2000.

Control variables are measured three years before graduation year or earlier. They are thus determined before our work measurements to avoid endogeneity problems. The control variables contain information on individual, family, parent and regional characteristics that have been linked to migration decisions in the prior literature. They include individual and household factors such as marriage (for example, Newbold, 2001), spouse's earnings (for example, Haapanen and Tervo, 2012), education in general (for example, Malamud and Wozniak, 2012), high qualifications (for example, Venhorst et al., 2010) and earlier migration behaviour (for example, DaVanzo, 1983), which all have an effect on graduate migration.

Although our models utilise a number of control variables, we cannot entirely exclude the possibility that some unobserved factor is affecting both student employment and migration decisions. Individuals make educational and locational choices according to their own preferences and capabilities, which are practically impossible to observe. This self-selection problem can bias the estimation results despite the extensive use of individual and region-specific background variables. Thus, caution should be exercised when interpreting the results as (causal) effects of student work on future migration. The estimated parameters below reflect conditional correlations between the factors of interest.

## 6.5 RESULTS

### 6.5.1 Descriptive Analysis

We will first provide descriptive results on student employment and graduate migration before presenting our estimation results. Figure 6.3 illustrates the extent to which Finnish graduate cohorts worked over the three-year period before their graduation in 1994–2004. After a severe recession in the early 1990s, the share of students who worked full-time or part-time grew substantially. For example, in 1996, only 11 per cent

of university graduates worked full-time before graduation, but in 2004, this had increased to 36 per cent. The change is similar in magnitude for polytechnic and vocational school graduates. Unfortunately, our data do not enable us to investigate whether students work for the same firm or industry before and after graduation. Successful employee–job or employee–industry matches before graduation could be a crucial factor in determining migration decisions in the future. Because we only observe the amount of work measured by annual earnings, it should be stressed that employed students can have multiple employers and employment spells during their studies. We cannot observe their importance with our data.

Increased student employment indicates that more students enter the labour markets before graduation. In Figure 6.4, we consider how graduates' propensity to move is related to their work experience during the studies. Again, each group of graduates (university, polytechnic and vocational school graduates) is displayed separately. Migration within three years of graduation is clearly less common for those who worked full-time before graduation. For example, approximately 19 per cent of university students who worked full-time and graduated in 2004 migrate, against 33 per cent among those who did not. Although this negative relationship between student employment and migration is relatively similar across the graduate groups, the decline in the migration rates is most noticeable for polytechnic and university graduates, as also illustrated by Figure 6.1.

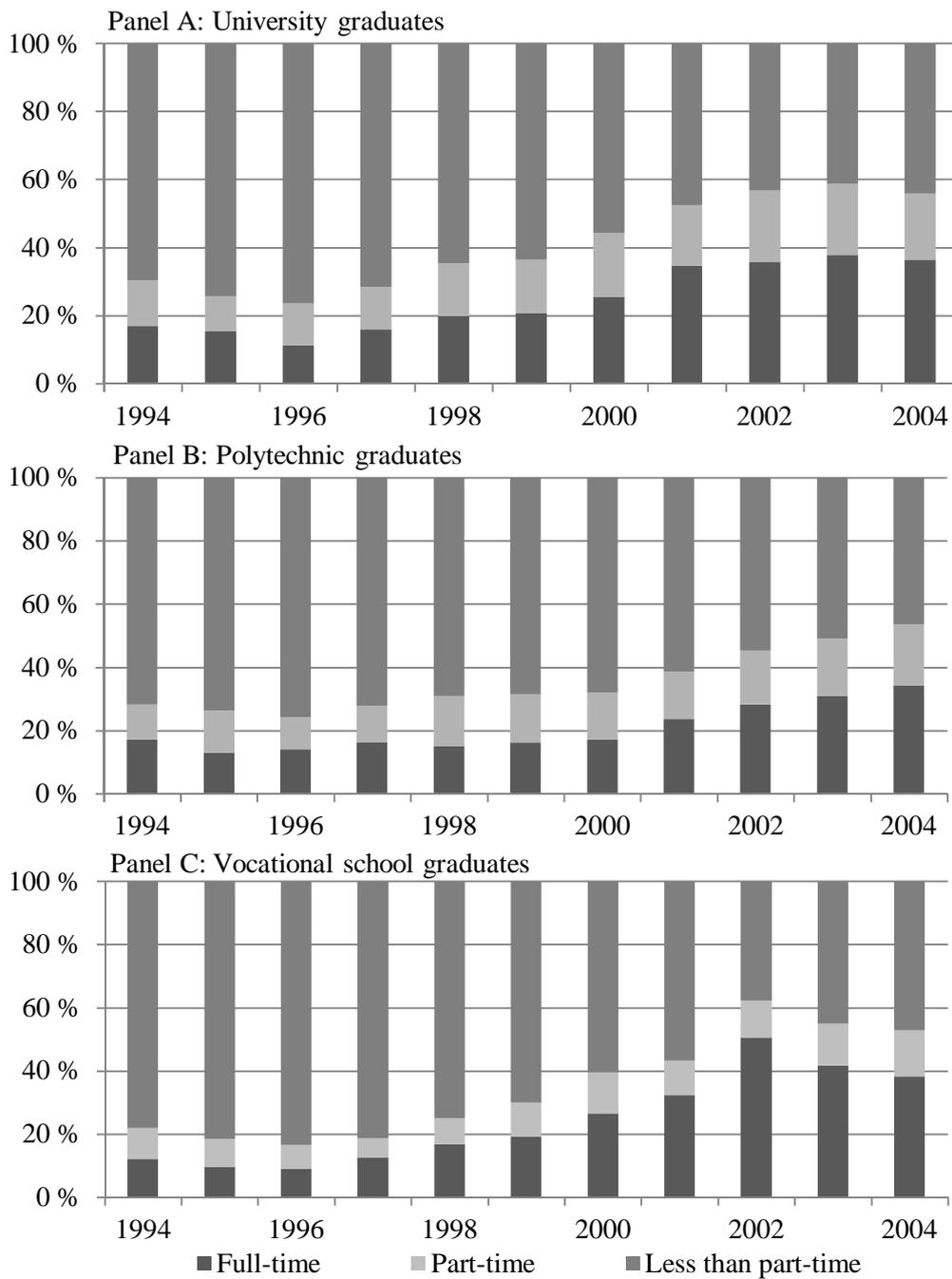
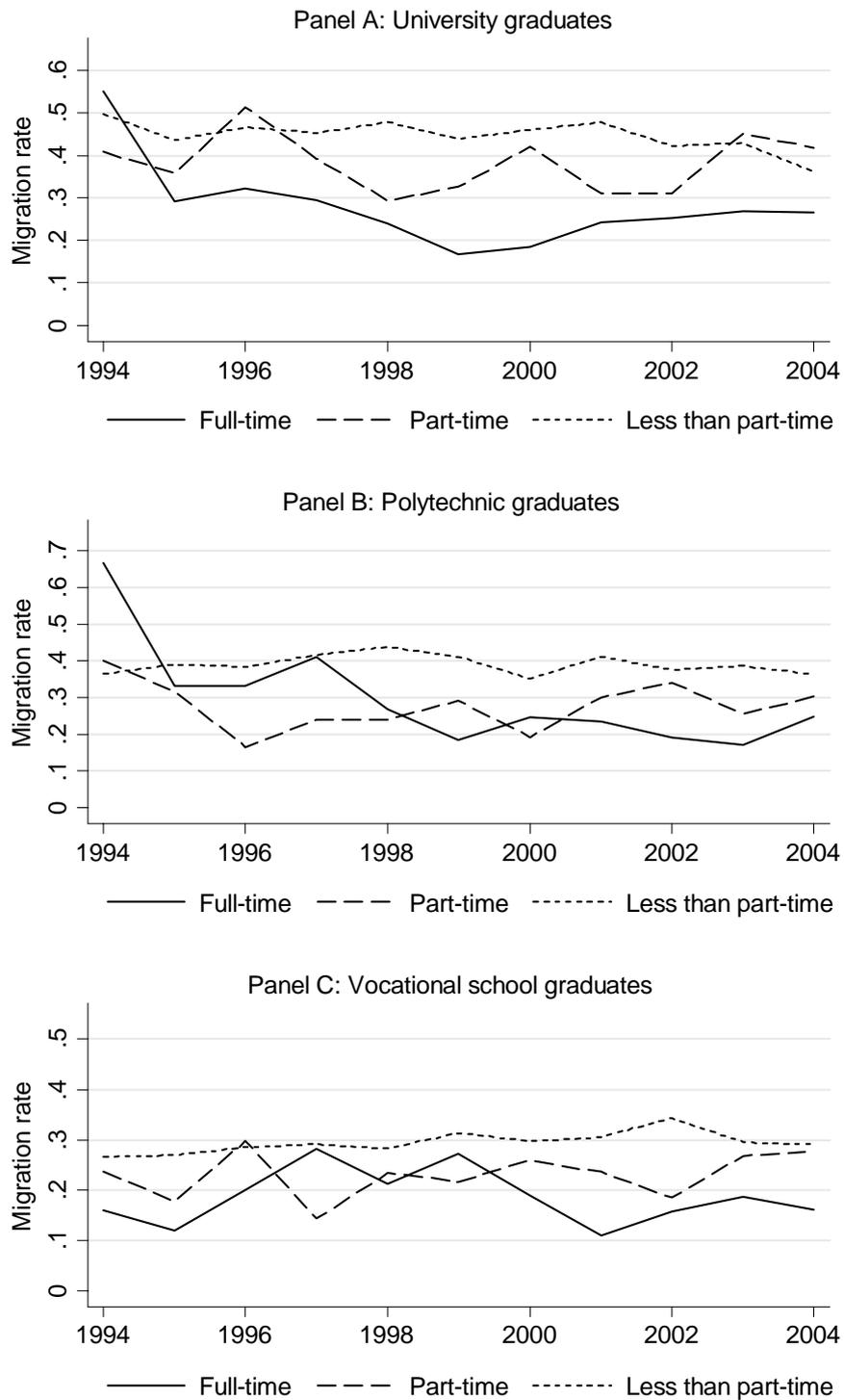


Figure 6.3 Proportion of graduates working full-time, part-time, or less than part-time by level of education

Note: No restrictions are placed on the matriculation year.

Source: Own calculations based on 7 per cent random sample.



*Figure 6.4 Migration rates within three years of graduation by prior work experience and level of education*

*Note:* No restrictions are placed on the matriculation year.

*Source:* Own calculations based on 7 per cent random sample.

## 6.5.2 Modelling

Our descriptive analysis revealed a negative relationship between working while studying and future mobility. Next we will investigate whether this negative relationship holds even after controlling for confounding factors. First, Table 6.2 shows the baseline results for the entire country and regionally disaggregated results (Helsinki capital region vs the rest of the country). Then we show the relevance of the prior (school-to-school) mobility on the results. Throughout, we report average marginal effects on migration.<sup>8</sup>

The results for the entire country show, as expected, that the level of education is positively related to migration propensity (see column (1) in Table 6.2). The estimated average marginal effects indicate that university graduates with a master's degree have, on average, a 12 percentage-point higher propensity to migrate than vocational school graduates. The corresponding figure for the polytechnic graduates is 5 percentage points. Yet student employment is negatively related to migration propensity. Students who have worked full-time (part-time) are 7 (4) percentage points less likely to migrate than those who have not worked significantly prior to graduation (that is, the reference group). These findings suggest that better labour-market opportunities during studies significantly decrease migration later on.

As our probit model contains interaction terms between the level of education and working status, we can investigate how the relationship between student employment and migration varies with the level of education. Although students who work full-time have, on average, a 7 percentage-point lower propensity to move, the conditional marginal effects show that the negative relationship is particularly strong for university graduates (−12 per cent) and polytechnic graduates (−9 per cent) but not significant for

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<sup>8</sup> Probit estimates are available on request from the authors.

vocational school graduates. Part-time work also hinders migration of polytechnic university graduates.

*Table 6.2 Average marginal effects on migration propensity by study region*

Dependent variable: Migration (1/0)	Entire country (1)	Study region is Helsinki (2)	Study region is not Helsinki (3)
<i>Level of education</i>			
Master's degree <sup>a</sup>	0.119*** (0.014)	0.041** (0.019)	0.159*** (0.018)
Polytechnic degree <sup>a</sup>	0.049*** (0.012)	0.004 (0.016)	0.068*** (0.015)
<i>Working while studying</i>			
Full-time work <sup>b</sup>	-0.070*** (0.014)	-0.038** (0.015)	-0.095*** (0.019)
Part-time work <sup>b</sup>	-0.039*** (0.014)	-0.052*** (0.016)	-0.030 (0.019)
<i>Conditional on master's degree</i>			
Full-time work <sup>b</sup>	-0.118*** (0.020)	-0.068*** (0.024)	-0.134*** (0.029)
Part-time work <sup>b</sup>	-0.047** (0.022)	-0.077*** (0.027)	-0.017 (0.030)
<i>Conditional on polytechnic degree</i>			
Full-time work <sup>b</sup>	-0.094*** (0.022)	-0.045* (0.024)	-0.117*** (0.031)
Part-time work <sup>b</sup>	-0.062*** (0.024)	-0.049* (0.028)	-0.068** (0.031)
<i>Conditional on vocational school degree</i>			
Full-time work <sup>b</sup>	-0.022 (0.021)	-0.006 (0.024)	-0.057** (0.028)
Part-time work <sup>b</sup>	-0.020 (0.022)	-0.030 (0.024)	-0.016 (0.030)
Log likelihood	-5,343	-999	-4,285
Pseudo R-squared	0.152	0.095	0.097
Average predicted migration rate	0.318	0.118	0.405
Number of observations	10,077	3,046	7,031

*Notes:* Average marginal effects (AMEs) are based on probit models that include main effects for the level of education and working status and the full set of interactions. All three models also contain the control variables described in Table 6.1. Marginal effects are computed as averages over all relevant observations. Conditional AMEs are computed only for the selected graduate population (for example, master's). \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

a. Reference education is a vocational school degree (for example, 'full-time work' displays its AME on migration relative to working less than part-time for all graduates).

b. Reference working status is less than part-time.

Migration decisions are likely to be differently determined in the Helsinki region than elsewhere in the country (cf. Haapanen and Tervo, 2012). The Helsinki region is the only metropolitan area in Finland, and approximately one-third of all economic activity occurs there. Therefore, columns (2) and (3) in Table 6.2 present the average marginal effects that have been estimated separately for sub-samples of students living inside and outside the Helsinki region. The results confirm our expectations. Having a master's (polytechnic) degree is related to only a 4 (0) percentage-point increase in migration propensity in the Helsinki region, whereas outside Helsinki, having a completed master's (polytechnic) degree is on average related to a 16 (7) percentage-point higher migration propensity than having a vocational school degree. This finding is in line with Haapanen and Tervo (2012): graduates from higher education tend to stay in the Helsinki region, where migration rates are lower than outside Helsinki. In our data, the average predicted migration rate is 12 per cent in the Helsinki region and 41 per cent elsewhere in the country.

Table 6.2 shows that graduates who work full-time during their studies are more likely to stay in their study region than those who work less, but the negative relationship is stronger for those who live outside the Helsinki region (see columns (2) and (3)). There are many reasons why working while studying may have a smaller effect in the Helsinki region. The demand for student work is greater in the vicinity of the capital region, and high living expenditures, such as rent, can force students to work to finance their daily life. Elsewhere, rent and other living expenditures are more modest but jobs are also harder to find. Thus, local work experience might be appreciated by employers more outside the Helsinki region. It is also possible that other unobservable factors might explain the observed difference in the estimated relationship across the regions.

Finally, in Table 6.3, we have further divided the two regional samples according to graduates' prior mobility (stayers vs movers). In particular, stayers (movers) are defined

as graduates whose study region is (not) the same as their high-school region. The results show that migration history does matter: average predicted migration rates across the four sub-samples (the bottom of Table 6.3) reveal that Helsinki region stayers are, on average, the least likely to move after graduation, whereas movers graduating outside Helsinki are the most migratory. As expected, movers are more geographically mobile after graduation than stayers in both regional samples. Nonetheless, both stayers and movers graduating from Helsinki are less mobile than graduates outside Helsinki.

For brevity, we only discuss the average marginal effects of working while studying on migration. Overall, results show that regardless of the sample, working is negatively (or insignificantly) related to graduate migration, but the level of education moderates the relationship. For graduates from vocational education, we do not find a significant (negative) relationship between working and graduate migration. The only exceptions are stayers outside Helsinki. For polytechnic graduates, working while studying notably decreases the migration propensity for the stayers but not for the movers. This result applies both to graduates from Helsinki and other regions. It is possible that polytechnic students who originate from the region are particularly well informed about possible job opportunities compared with students arriving from other regions. The reverse is true for university graduates: working while studying at a university slows down migration more for movers than for stayers in both types of regions. In sum, the level of education, prior mobility and type of region play a role in moderating the relationship between working while studying and graduate migration.

Table 6.3 Average marginal effects on subsequent migration propensity by study region and prior migration status

Dependent variable: Migration (1/0)	Study region is Helsinki		Study region is not Helsinki	
	(1) Stayer	(2) Mover	(3) Stayer	(4) Mover
<i>Level of education</i>				
Master's degree <sup>a</sup>	0.053** (0.021)	-0.002 (0.043)	0.175*** (0.020)	0.082** (0.038)
Polytechnic degree <sup>a</sup>	0.012 (0.016)	-0.033 (0.042)	0.071*** (0.017)	0.038 (0.039)
<i>Working while studying</i>				
Full-time work <sup>b</sup>	-0.041*** (0.016)	-0.035 (0.038)	-0.086*** (0.021)	-0.116*** (0.041)
Part-time work <sup>b</sup>	-0.032** (0.016)	-0.096** (0.039)	-0.012 (0.021)	-0.094** (0.042)
<i>Conditional on master's degree</i>				
Full-time work <sup>b</sup>	-0.065*** (0.024)	-0.068 (0.049)	-0.090** (0.035)	-0.201*** (0.054)
Part-time work <sup>b</sup>	-0.028 (0.031)	-0.146*** (0.048)	0.036 (0.035)	-0.149** (0.059)
<i>Conditional on polytechnic degree</i>				
Full-time work <sup>b</sup>	-0.068*** (0.023)	0.002 (0.065)	-0.122*** (0.034)	-0.056 (0.072)
Part-time work <sup>b</sup>	-0.068*** (0.024)	0.022 (0.086)	-0.077** (0.034)	-0.000 (0.079)
<i>Conditional on vocational school degree</i>				
Full-time work <sup>b</sup>	-0.011 (0.024)	-0.001 (0.075)	-0.064** (0.031)	-0.050 (0.075)
Part-time work <sup>b</sup>	-0.015 (0.024)	-0.103 (0.084)	0.000 (0.033)	-0.104 (0.078)
Log likelihood	-570	-402	-3,506	-736
Pseudo R-squared	0.082	0.068	0.096	0.094
Average predicted migration rate	0.080	0.223	0.377	0.547
Number of observations	2,233	813	5,852	1,179

Notes: Stayers (movers) are individuals whose study region is (not) the same as their high-school region (NUTS 3). See also notes to Table 6.2. \*\*\* p < 0.01, \*\* p < 0.05, \* p < 0.1.

## 6.6 DISCUSSION

This chapter has contributed to the prior literature studying the possible impacts that the intensity of work experience during studies has on student-level outcomes (cf. Darolia, 2014). Tertiary education takes many years to complete, but little is known about how students' activities during this period affect their future outcomes.

Our analysis has shown that working while studying is negatively related to migration. University and polytechnic graduates are observed to be more geographically mobile than similar vocational school graduates, but work experience accumulated during the studies decreases the migration probability after graduation. We find that the negative relationship between work and migration propensity is larger outside the Helsinki capital region and that the intensity of work matters, as full-time work hinders migration more than part-time work. Results are also heterogeneous to prior mobility.

Our results are consistent with the theoretical view that working while studying expands local labour-market opportunities such as local personal networks (and thus stability in the region), which is likely to reduce the propensity to move after graduation. The observed negative relationship between working while studying and graduate migration can also provide one explanation why Häkkinen (2006) found no earnings gains from work during university studies in Finland. Geographical mobility is often required to obtain the full benefits from investments in university education (cf. di Cintio and Grassi, 2013). Mobility has been shown to decrease the probability of over-education, because it improves education–job matches after graduation (Iammarino and Marinelli, 2015; see also Jauhiainen, 2011). In future investigations, it may be possible to quantify the magnitude to which geographical mobility mediates the effect of student employment on labour-market outcomes after graduation from higher education.

Further research should be undertaken to investigate the causal effects of student employment on graduate migration, for example by utilising institutional changes. Many countries have made changes to their education system during recent decades. These changes – exogenous to individuals' education decisions – can provide opportunities for robust results. The identification of the causal effects is also enhanced by the increased availability of micro-level register data that hold information on all individuals (that is, population) in a specific country (see for example Koster and

Venhorst, 2014, for the Netherlands). Furthermore, student registers from educational institutions should be linked with employee–employer data. When these data become available for research, they will allow researchers to more finely control for observed heterogeneity.

Moreover, research is needed on the quality of job matches in which students work. Industrial or occupational mobility related to the field of studies might significantly improve future employment opportunities. However, low-skilled jobs (that is, ‘McJobs’) might place a negative stigma on the students. Hence, the quality of jobs may also have an effect on the future mobility. Finally, it would be interesting to study how working while studying relates to firm-level outcomes. Do firms have incentives to hire and invest in the students’ human capital because they are particularly prone to move away from the study region after graduation?

## 6.7 CONCLUDING REMARKS

In this chapter, we have documented a negative relationship between working while studying and graduate migration. Our results for Finland also show that the negative relationship between working while studying and graduate migration is stronger for higher levels of education and outside the Helsinki capital region. Increases in student employment can thus provide one possible explanation for why geographic mobility among Finnish graduates from higher education has decreased recently over time and why some prior studies have found little effect of working while studying on labour-market success. In future investigations, it is important to investigate whether or not the decline in geographical mobility has worsened the match between jobs and graduates.

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