Supplementary Online Appendix to "Scars of Recessions in a Rigid Labor Market."

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S.1 Variables Construction

This analysis exploits survey as well as administrative data from different sources. (i) Individual and family background variables are taken from the Sonar dataset, which is a survey-based dataset that follows a representative sample of three birth cohorts (born in 1976, 1978 or 1980) living in Flanders at age 23. The surveys were conducted when respondents were aged 23, 26 or 29 and register retrospectively and on monthly basis their most important activity - among which education - from the beginning of secondary education.[1] These observations are then matched with the following (ii) administrative data of Belgian Social Insurance institutions centralized at the Cross Roads Bank of Social Security (CBSS, hereafter, Data Warehouse): (ii-a) yearly data on the province of residence, obtained by the Regional Register of Belgium; these data are available from the year in which individuals turn age 18 (i.e. year 1994, 1996 and 1998 for cohort born in 1976, 1978 and 1980, respectively) up to year 2010; (ii-b) quarterly data on individual labor market performances for the period 1998-2010, provided by the Regional Social Security office (RSZ), the Regional Social Security office of Provincial and Local Administration (RSZPPO) and the Regional Institute for the Social Security of the Self-employed (RSVZ). Finally, (iii) the unemployment rate series are provided by the Labor Force Survey (LFS). In what follows we describe the data and the construction of the variables for each of these datasets.

S.1.1 Sonar Dataset: Educational Variables and the Moment of Graduation

The Sonar database is exploited to construct the following educational measures: (a) the moment of graduation, (b) the years of successfully attained education at age 17 (hereafter, "completed education at age 17"), (c) the total years of successfully attained education until graduation (hereafter, "completed education"). Based on the latter, we divide the sample into (d) low and high educated.

(a): The moment of graduation - The moment of graduation (month and year) is defined as the first exit from schooling after the completion of compulsory education (age 18 in Belgium). This variable is based on the monthly individual status provided by Sonar, which reports on a monthly basis whether the individual is studying, working, studying and working at the same time, or not working (and in case for which reason), from December of the year in which one turns 17 until at least the year in which one turns age 26.[2] According to our definition, individuals

[1] For details, see SONAR (2004a, 2003, 2004b).

[2] That is, in each month, an individual can be observed in full-time education, education and working at the same time, employment, unemployment, or non-employment. For the 1978 wave, information is only collected until age 26. For the other waves, it is gathered until October or November of the year one turns 29, depending on the date of the survey.

are considered out of education whenever they are not observed in regular education (i.e. if they are observed working, unemployed or not working). Note that those reporting as being in regular education and working at the same time are still considered as in education. In December of the year in which they turn age 17 all individuals in the sample are observed in education.[3] Whenever we cannot observe directly the transition from education to employment or unemployment, the exit from education is defined as not being in education for more than 4 subsequent months, independently of the destination (working, unemployment, not working, missing).

Imputation procedure for censored observations in Sonar - This procedure allows us to define the age of first exit from school for 96.5% of the sample. Among the observations for which the age of first exit is not defined, some individuals are censored at age 23 or 26 while still in ongoing education (3%): for these individuals, the age of first school exit is inferred (when possible) by exploiting the socio-economic position as reported at the end of each quarter for the period 1998-2010 by the Data Warehouse.[4] Intuitively, this is done assuming that, from the moment of censoring in the Sonar dataset, these observations remain in regular education until the moment in which they appear in the labor market according to the Data Warehouse. We cannot apply this procedure to individuals whose socio-economic position is never observed by the Data Warehouse: these individuals are dropped (0.11%). In some other cases, individuals are observed as workers - even before censoring - according to the Data Warehouse data. Among these cases we retain only individuals who are observed as employed in student jobs, while still in full-time education according to Sonar (2.75%). In contrast, we drop those who result employed in regular jobs while still in full-time education according to Sonar (0.13%), because of inconsistency between Sonar and Data Warehouse. Student jobs are defined according to the following criteria: (1) we exploit a variable provided by the Data Warehouse that identifies jobs that are "typically" undertaken while studying. (2) In case (1) is satisfied, we ensure that the time-worked in this potential student job does not exceed the maximum time a child is allowed to work, for his parents not to lose the family allowance that they receive for their children: this threshold amounts to 240 hours (i.e. roughly 30 days) per quarter except in the summer quarter, during which a child is allowed to work more. Hence, a potential student job is defined as student job if the individual has worked at most 30 days for each quarter except the summer.

For all other censored observations, the age of first exit from school is imputed by assuming that the individuals remain in education until the moment in which they are observed for the first time as active in the labor market, i.e. either as employed or as unemployed looking for a job. Accordingly, the moment of first exit from education is set just before the moment when they are first observed in the labor market. Note that the age of first exit from school is

[3] We drop few observations who quit education before the end of compulsory education.

[4] Participation to the labor market is defined as being employed or looking for a job; inactive status is not considered since could as well be in education.

imputed differently depending on whether the individuals are first observed in the labor market as employed or unemployed looking for a job. The reason is that an individual is observed as unemployed when he first receives the unemployment benefits (UB), but in Belgium the receipt of these UB implies a waiting period that varies between 9 and 12 months from the registration to the unemployment agency, depending on the age; this means that, for the unemployed, the actual moment of entry in the labor market is at the moment of registration to the unemployment agency rather than at the moment of receiving the UB. Accordingly, the age of first school exit for the unemployed takes into account this waiting period.

Check inconsistencies between Sonar and Data Warehouse - Recall that the year of graduation is defined mostly on information reported in Sonar, i.e. on survey-data. We verify the reliability of this information by exploiting the consistency with the (high-quality) administrative data by Data Warehouse: in particular, we check whether individuals are observed in the labor market according to the Data Warehouse in the years when they report to be still in full-time education in Sonar. Among the cases for which graduation is defined, 19.2% of the individuals are indeed observed in the labor market before their graduation year. Consistently with the aforementioned "student job" criterion, these observations are considered consistent if they are employed in student jobs. Inconsistent observations are dropped from the sample (4%).

(b):Completed education at age 17 - The Sonar dataset contains detailed information about the educational path of the individuals since secondary education: in each year, one can observe the type of education in which one is enrolled (e.g. full-time or part-time vocational), the type of program (general, vocational, artistic, technical, apprenticeship), the grade and the result at the end of each grade (successfully passed or not). This information is exploited to build completed education at age 17. This variable starts counting from the beginning of the first year of secondary education, and increases every time one passes a year, until the academic year in which one turns 17 (included). In the analysis, this variable is expressed so to give information about the educational progression of the individual at age 17 with respect to the theoretical years of schooling: 0 means that the individual is on time, positive numbers indicate the number of repeated grades, and -1 indicates that the individual has skipped one academic year. Note that this contains exactly the same information as completed education at age 17.

(c): Completed education - This is constructed similarly to "completed education at age 17". It counts the years of schooling successfully attained from the beginning of the secondary education. For individuals who are censored in Sonar database at 23 or 26 years old while still in ongoing education - and hence for which graduation is not observed in Sonar - completed education is corrected so that it is consistent with the imputed graduation, which is inferred using information from the Data Warehouse, as explained above. For these cases, it is assumed that, from the moment of censoring, all years in education were successfully passed until graduation. In each case, we ensure the consistency between completed education and the year of graduation,

dropping few individuals for which the imputed completed education is unrealistically too high with respect to the year of graduation.

(d): Low and High Educated - The sample is divided into two educational groups based on "completed education": low-educated are individuals who completed secondary education, that is who graduated at age 18, or at age 19 if enrolled in vocational program in secondary education (this is because secondary education ends after seven years for the vocational track and after 6 years for all other educational tracks.). High-educated are those who graduated later. In the main analysis these two groups are always studied separately.

S.1.2 Data Warehouse - Individual Labor Market Outcomes

Individual labor market outcomes are constructed by exploiting quarterly data from RSZ and RSZPPO database, as well as yearly data from RSVZ, for the period 1998-2010. RSZ and RSZPPO databases collect information on salary, earnings and time worked in dependent employment in the private and public sector, respectively; RSVZ database reports the registration in self-employment for the period 1998-2010 and yearly earnings from self-employment for the period 1998-2007. In the main analysis earnings from self-employment are not exploited as outcomes of interest since they are self-reported data, and hence, likely to be under-reported.[5] Based on these data, we construct the following yearly labor market outcomes: (a) log of earnings, (b) log of hours worked and (c) log of hourly wage in salaried employment;[6] (d) a working status as salaried employed (defined by strictly positive earnings and not being self-employed); (e) a self-employment status (if registered as such part of the year, irrespectively of being a salaried worker in the same year); (f) a working status comprising both salaried and self-employment. Descriptive statistics of these individual labor market outcomes is reported in Table S.1 and S.2 below, for low and high educated, respectively.

(a): Earnings - It is based on gross earnings, which for both RSZ and RSZPPO is defined as the sum of all remunerations that are subject to social contributions (including holiday allowances), excluding the allowances from contract termination: RSZ excludes premia from the definition, whereas RSZPPO includes premia and the Christmas bonus.

Earnings from salaried employment are provided in classes of 100 Euros, so that the earnings class equal to 0 refers to earnings between 1 and 100 Euros. We transform yearly earnings multiplying by 100, and adding 50 - the midpoint of the interval of each class - in order not to underestimate real earnings. In addition to quarterly earnings by separated sources, the Warehouse Data provide us with the sum of all earnings in a year (adding up yearly earnings from RSZ, RSZPPO and RSVZ). Hence, for the cases in which the individuals are not working

[5] However, a worker is considered as self-employed if a given year he is registered as self-employed according to RSVZ, or if he is not registered as such but reports positive earnings from self-employment to RSVZ.

[6] The notion of hours worked accounts for part-time versus full-time work. Hourly wage is constructed by dividing yearly earnings by the total number of hours worked in a year. For details, see below.

as self-employed, we use this sum as a measure of annual earnings from dependent employment, while for the years in which individuals are also self-employed, we compute by ourselves the sum of earnings from RSZ and RSZPPO - hence without considering the earnings from self-employment. Note that in this case, yearly earnings from RSZPPO and RSZ are first transformed from classes of 100 Euros in real earnings, and then summed up to obtain a yearly measure of earnings from dependent employment.

(b): Hours worked - The RSZ provides us with the number of working days in case of full-time work and the number of working hours in case of part-time work, while RSZPPO give us the number of working hours both for full-time and part-time work. To clean the data, we compute the total number of working days in case of full-time work - in RSZ and RSZPPO, separately - and drop the yearly observations whose values are above 312 working days per year, which corresponds to the maximum number of working days in case of full-time work in a 6 days per week regime. The equivalent number under a 5 days per week regime is 260. Then, for annual observations corresponding to full-time workers who work between 260 and 312 days per year, we assume a working regime of 6 days per week, while for the other cases we assume a working regime of 5 days per week. We decide to focus on hours worked in order to take into account also part-time work. Hence, for full-time work in RSZ, we convert working days in working hours, assuming a working regime of 8 (7.6) hours per day for the period 1998-2002 (2003-2010); this is because, in Belgium, the 7.6 hours per day regime for full-time work was introduced by law in January 2003 to replace the 8 hours per day regime. Accordingly, for full-time work in RSZ we transform the yearly working days in yearly working hours, by multiplying the former by 8 (7.6) until (strictly after) 2002. Then, we add up the yearly working hours for full-time and part-time work, and across sources (RSZ and RSZPPO) - in order to get a measure of the total number of hours worked in a year in dependent employment.

(c):Average Hourly Wage - The average hourly wage in dependent employment is obtained by dividing annual earnings by the annual number of hours worked, i.e. $(a)/(b)$.

Cleaning procedure for (a),(b) and (c) - For variables (a),(b) and (c), we check the presence of outliers according to the following procedure. Given the presence of minimum wages in Belgium, we detect bottom outliers by comparing the average hourly wage (c) with the corresponding hourly minimum wage.[7] The official monthly minimum wages are provided by the Conseil Regional du Travail of Belgium for each year. These numbers are adjusted by the Consumer Price Index (using the first quarter of 2011 as reference) and by age, as different percentages of the official minimum wage are applied for workers below age 21.[8] Then, for each minimum

[7] As a conservative measure - i.e. in order not to detect too many outliers - for this specific comparison we assume that earnings are at the top of each earnings-class instead of at the midpoint: i.e., multiply by 100 earnings in classes of 100 Euros and add 100 rather than 50 (as in the procedure explained in the text).

[8] Workers aged 17, 18, 19 and 20 receive 76%, 82%, 88% and 94% of the official monthly minimum wage, respectively. Workers aged 21 or more receive the entire official monthly minimum wage (Moulaert and Verly,

wage, year and age category, we construct the corresponding hourly minimum wages as follows: (i) compute the total annual earnings of a full-time worker paid at the minimum wage - by multiplying the monthly minimum wage times 12. (ii) Compute the total number of working hours in full-time work under the 5 and 6 days per week regimes, assuming the 8 (7.6) hours per day regime for the period 1998-2002 (2003-2010). This corresponds to 2496 (2080) annual working hours for the period 1998-2002 under the 6 (5) days per week regime, and 2371.2 (1976) annual working hours after 2003 under the 6 (5) days per week regime. (iii) Divide the total annual earnings calculated in (i) by the alternative results in (ii) to obtain the hourly minimum wages in full-time work under the 6 and 5 days per week regime for the period 1998-2002 and 2003-2010, respectively. (iv) For full-time workers that were observed in the 6 days per week regime, we apply the hourly minimum wage computed in (iii) under a 6 days per week regime; for all other workers we use the hourly minimum wages computed in (iii) under the 5 days per week regime. We detect as bottom outliers the annual observations in which the average hourly wage is below the corresponding hourly minimum wage: in this case, annual hours worked, annual earnings and average hourly wage are all replaced to missing.

Next, we check for the presence of outliers in the upper part of the distribution of annual earnings, average hourly wages and annual hours worked. As a general rule, we consider as top outliers the top percentile in the distribution of each of these variables. For average hourly wage and annual hours worked, we look at the distribution pooling all years together. For annual earnings, we identify as outliers the last percentile of the distribution of annual earnings by age, under the assumption that earnings do not differ systematically across years, but change over age. Similarly to the procedure used for bottom outliers, we replace to missing each of the variables (a), (b) and (c) whenever a top outlier in any of these three variables is detected. In total, according to this procedure 3% of the annual observations are detected as outliers. Finally, annual earnings, annual hours worked and average hourly wages are log-transformed.

(d): Salaried Employment Rate - The dummy for working in dependent employment is built upon the variable of annual earnings from salaried employment (a): the dummy is 1 when annual earnings are positive (i.e. if the worker has received a wage from salaried employment for at least 1 day in the year) or when earnings are missing because outliers. This is because outliers should be considered as employed individuals for whom one cannot calculate earnings or the time worked. Note that this outcome considers workers who in a given year worked (only) as salaried workers and never registered as self-employed.

(e): Self-employment Rate - Workers are defined self-employed if they are registered in the self-employment register in a given year. Workers who combined in the same year both salaried and self-employment are considered self-employed (and not salaried employed).

(f): Overall Employment Rate - This dummy considers working in either salaried or self-

2006). As a conservative choice, we consider the minimum wage of the previous age, i.e. we take the minimum wage of those aged 17 in the year in which one turns 18.

employment: it is the sum of (d) and (e).

S.1.3 Data Warehouse - Firm Permanent Characteristics and Firm Mobility

The Data Warehouse give us access to data on some characteristics of the firms in which the individuals are working in the observation period, as well as firms' identification numbers. We use the latter to come up with a measure of firm mobility. Among firm characteristics, quarterly data on the median daily wage paid out on June 30 in recruiting firms are exploited to build an indicator of permanent firm quality. Descriptive statistics of these data outcomes is reported in Table S.1 and S.2 below, for low and high educated, respectively.

Firm Mobility - This variable exploits the changes in the quarterly firm identification number. Transitions between self-employment and salaried employment are included in the definition of firm mobility, as we assign to self-employment a specific firm identifier. An individual is defined to change firm in year t if he is observed in a different firm in at least two quarters of the year t, or if the first firm in which he was employed in year t differs from the last firm in year $t-1$.

Permanent Firm Quality - In order to obtain this indicator of permanent firm quality we apply the following procedure, which is very close to Oreopoulos et al. (2012). (i) Quarterly nominal values of median daily wages paid by the firm are deflated by using two indexes of nominal wage trend from Belgostat (base year 1997) for white and blue collar workers, respectively; these are then converted in real terms by using the CPI (base year 2011). (ii) The data are log-transformed. (iii) Seasonal effects are taken out by regressing the quarterly time-varying data on dummies for quarters. (iv) The residuals from this regression are averaged by firm over the observed quarters, as many quarters as median daily wages are observed for each firm. Note that, due to this procedure, permanent characteristics are expressed in deviation from the average: for instance, a negative (positive) value of the median salary paid by the firm in a given quarter means that the firm paid less (more) compared to the average. (v) Since individuals may have changed firm within a calendar year, for each individual we average over the quarters of year t the permanent characteristics corresponding to the firms where an individual is observed working in t. This allows to get an annual indicator of the permanent characteristics of the average firm where an individual was employed.

S.1.4 Data Warehouse - Geographical Mobility

Geographical mobility is based on the province of residence, which for year t is measured in December of year $t-1$. The definition of the variable is as follows: an individual is defined to move in year t, if he lives in another province at the end of year t than where he lived at the end of year $t-1$. Note that, differently from all other outcomes which are observed for the period 1998-2010, residence is observed for the year in which individuals turn age 18 (which corresponds to year 1994, 1996 and 1998 for individuals born in 1976, 1978 and 1980,

respectively) until year 2010. Therefore, using our definition we are able to define the province of residence from experience 1 onwards for all graduation cohorts - in particular for the low-educated who graduates in the period 1994-1996, whose first year of experience occurs before 1998 (period at which the other outcomes are not observed). Note that this extra-availability of data on residence does not make a difference for the high educated, as the first year of experience for the first graduation cohort occurs in 1998. Descriptive statistics of geographical mobility is reported in Table S.1 and S.2 below, for the low and high educated, respectively.

S.1.5 LFS - Provincial unemployment rate

We use the 1994-2010 provincial unemployment rate series of the working population aged 15-64 (considering both men and women) based on the Labour Force Survey (LFS), since these series use the internationally accepted ILO definition of unemployment. In order to check the reliability we compared these series to the administrative ones provided by the National Employment Office of Belgium (RVA - Rijksdienst voor Arbeidsvoorziening) also available from 1994 onwards. In the latter series the unemployment rate is defined as the ratio of the number of unemployment benefit recipients searching for jobs to the number of individuals insured against unemployment. In general this results into higher unemployment rate figures than those of the LFS, but the evolution over time is overall very similar. Nevertheless, for the province Limburg, the two series displayed a very different pattern between 1994 and 1997. In those of the LFS the unemployment rates were increasing during these years while they were evolving downwards in the series of RVA. Since the unemployment rates in the other provinces were moving down in this period according to both data sources, we believe that a serious measurement error biases the LFS unemployment rate of Limburg severely during these years. Based on the RVA data, we therefore adjusted the LFS series of the unemployment rate of Limburg for the period 1994-1997. The details of the adjustment procedure can be obtained from the authors on request.

Table S.1: Descriptive Statistics of Individual Labor Market Outcomes, Permanent Firm Quality and Mobility: Low Educated.

Variable	Missings	Obs	Mean	Std. Dev.	Min	Max	Label
Annual Discrete Individual Labor Market Outcomes							
salaried	0	20507	0.833	0.373	0	1	1 if earnings>0 from salaried empl. in year t(& not self-empl.)
self-empl.	0	20507	0.128	0.335	0	1	1 if registered as self-empl. in t
overall empl.	0	20507	0.961	0.194	0	1	1 if either salaried or self-empl. in t
Annual Continuous Individual Labor Market Outcomes Expressed in Level§							
earnings	2993	17514	22667.740	8627.685	50	64550	gross earnings if salaried empl. in t
hours worked	2993	17514	1619.597	472.970	5	2264	hours worked (PT+FT) if salaried empl. in t
hourly wage	2993	17514	13.931	3.217	6.579	32.895	average hourly wage if salaried empl. in t
FT hours	2993	17514	1474.114	644.758	0	2264	Full-Time hours worked if salaried empl. in t
PT hours	2993	17514	145.483	359.528	0	2252	Part-Time hours worked if salaried empl. in t
Annual Continuous Individual Labor Market Outcomes Expressed in Log†							
log earnings	2993	17514	9.891	0.686	3.912	11.075	log gross earnings if salaried empl. in t
log hours worked	2993	17514	7.281	0.647	1.609	7.725	log hours worked if salaried empl. in t
log hourly wage	2993	17514	2.610	0.213	1.884	3.493	log average hourly wage if salaried empl. in t
Annual Permanent Firm Quality (raw values)							
median daily wage‡	2898	17609	116.1369	34.23114	7.0392	727.32	avg over quarters of median daily wage paid out in recruiting firm in t
Annual Mobility							
firm mobility‡‡	1362	19145	0.246	0.431	0	1	1 if change firm compared to last observed quarter in $t-1$ or within t
geographical mobility††	35	21636	0.015	0.120	0	1	1 if change province of residence in year t compared to $t-1$

This table is based on the sample of low-educated graduating in the period 1994-2001 (the sample studied in the main analysis).

§Outliers in any of the continuous outcomes are replaced to missings (for all countinuos outcomes) and still considered as salaried employed with not reliable info in terms of working hours, hourly wage and earnings. Continuous outcomes in level are related as follows: earnings=hours worked*hourly wage; FT hours+PT hours=hours worked.

†Log-transformed continuous variables are linearly related as follows: log earnings=log hours worked+log hourly wage.

‡We do not report descriptive statistics based on the variable used in the main analysis, since it is based on residuals (see Section S.1.3 for details) and therefore its values are not informative of permanent firms' quality. In contrast, to get some descriptive statistics we construct this variable according to the following "naive" procedure, which maintains the original values of the data. (i) Quarterly nominal values of median daily wage are deflated by using two indexes of nominal wage trend from Belgostat (base year 1997), for white and blue collar workers respectively, and then converted in real terms by using the CPI (base year 2011). (ii) Quarterly values are averaged by firm over all quarters in the observation period to get a measure of permanent characteristics of each firm (in the main analysis we additionally take out seasonal trends in a regression-based procedure). (iii) Average over quarters to get permanent characteristic of the average firm when a worker works in more than one firm in t.

‡‡Firm mobility is a dummy=1 in year t if an individual is observed in a different firm in at least two quarters of t, or if the first firm in which he was employed in t differs from the last firm in $t-1$. Transitions between self-employment and salaried employment are included in the definition.

††Geographical mobility is a dummy=1 in year t if an individual lives in another province at the end of t than where he lived at the end of $t-1$. Note that, differently from all other outcomes which are observed for the period 1998-2010, this variable is observed from the year in which individuals turn age 18 (i.e. 1994, 1996, 1998 for those born in 1976, 1978 and 1980, respectively) until 2010. This means that residence is observed from experience 1 also for individuals who graduated before 1997: i.e. for low educated who graduated in 1994-1996, residence at experience one is observed in 1995-1997, respectively. Note also that the missings in geographical mobility refer to missing residence in year 2011, which is used to look at geographical mobility for the last calendar year (2010). These observations were not dropped because year 2011 was not used in the main analysis.

Table S.2: Descriptive Statistics of Individual Labor Market Outcomes, Permanent Firm Quality and Mobility: High Educated.

Variable	Missings	Obs	Mean	Std. Dev.	Min	Max	Label
Annual Discrete Individual Labor Market Outcomes							
salaried	0	14490	0.830	0.375	0	1	1 if earnings>0 from salaried empl. in year t(& not self-empl.)
self-empl	0	14490	0.142	0.349	0	1	1 if registered as self-empl. in t
overall empl.	0	14490	0.972	0.165	0	1	1 if either salaried or self-empl. in t
Annual Continuous Individual Labor Market Outcomes Expressed in Level§							
earnings	1979	12511	29705.360	10424.370	150	65550	gross earnings if salaried empl. in t
hours worked	1979	12511	1778.674	431.405	5	2256	hours worked (FT+PT) if salaried empl. in t
hourly wage	1979	12511	16.708	4.490	6.667	33.093	average hourly wage if salaried empl. in t
FT hours	1979	12511	1633.485	655.300	0	2256	Full-Time hours worked if salaried empl. in t
PT hours	1979	12511	145.189	378.582	0	2252	Part-Time hours worked if salaried empl. in t
Annual Continuous Individual Labor Market Outcomes Expressed in Log†							
log earnings	1979	12511	10.191	0.603	5.011	11.091	log gross earnings if salaried empl. in t
log hours worked	1979	12511	7.409	0.535	1.609	7.721	log hours worked if salaried empl. in t
log hourly wage	1979	12511	2.782	0.258	1.897	3.499	log average hourly wage if salaried empl. in t
Annual Permanent Firm Quality (raw values)							
median daily wage‡	1780	12710	134.2078	33.50615	36.143	394.07	avg over quarters of median daily wage paid in recruiting firm in t
Annual Mobility							
firm mobility‡‡	676	13814	0.217	0.412	0	1	1 if change firm compared to last observed quarter in $t-1$ or within t
geographical mobility††	34	14456	0.032	0.175	0	1	1 if change province of residence in year t compared to $t-1$

This table is based on the sample of high-educated graduating in the period 1997-2007 (the sample studied in the main analysis).

§Outliers in any of the continuous outcomes are replaced to missings (for all countinuos outcomes) and still considered as salaried employed with not reliable info in terms of working hours, hourly wage and earnings. Continuous outcomes in level are related as follows: earnings=hours worked*hourly wage; FT hours+PT hours=hours worked.

†Log-transformed continuous variables are linearly related as follows: log earnings=log hours worked+log hourly wage.

‡We do not report descriptive statistics based on the variable used in the main analysis, since it is based on residuals (see Section S.1.3 for details) and therefore its values are not informative of permanent firms' quality. In contrast, to get some descriptive statistics we construct this variable according to the following "naive" procedure, which maintains the original values of the data. (i) Quarterly nominal values of median daily wage are deflated by using two indexes of nominal wage trend from Belgostat (base year 1997), for white and blue collar workers respectively, and then converted in real terms by using the CPI (base year 2011). (ii) Quarterly values are averaged by firm over all quarters in the observation period to get a measure of permanent characteristics of each firm (in the main analysis we additionally take out seasonal trends in a regression-based procedure). (iii) Average over quarters to get permanent characteristic of the average firm when a worker works in more than one firm in t.

‡‡Firm mobility is a dummy=1 in year t if an individual is observed in a different firm in at least two quarters of the t, or if the first firm in which he was employed in t differs from the last firm in $t-1$. Transitions between self-employment and salaried employment are included in the definition.

††Geographical mobility is a dummy=1 in year t if an individual lives in another province at the end of t than where he lived at the end of $t-1$. Note that the missings in geographical mobility refer to missing residence in year 2011, which is used to look at geographical mobility for the last calendar year (2010). These observations were not dropped because year 2011 was not used in the main analysis.

Table S.3: Employment Status Decomposition.

		Low educated				High educated			
		freq.	%	freq.	%	freq.	%	freq.	%
not working		800	3.9			407	2.81		
overall employment		19,707	96.1			14,083	97.19		
	of which:								
	salaried employed			17073	83.25			12,030	83.02
	self-employed			2634	12.84			2,053	14.17
	total			19,707	96.1			14,083	97.19
total		20,507	100			14,490	100		

Not working refers to situations of unemployment, education, or being out of the labor market. Salaried employment and self-employment add up to overall employment.

Table S.4: Availability of Firms' Characteristics.

	Individual Continuous Labor Market Outcomes If Salaried					
	Low educated			High educated		
Firm's Characteristics	Missings	Obs	Total	Missings	Obs	Total
Missings	2,453	505[§]	2,958	1,582	235[§]	1,817
Obs	540[†]	17,009	17,549	397[†]	12,276	12,673
total	2,993	17,514	20,507	1,979	12,511	14,490

†These observations are outliers in earnings. These individuals are still considered as salaried employed, but their corresponding earnings, hours worked and hourly wages are replaced to missing because the information is not reliable. For this reason firms' characteristics may be available also for outliers in earnings.
§For these observations firms' characteristics are missings even if the individuals are working as salaried employed.

S.2 Sample selection

The original Sonar sample contains 8958 individuals between men and women. From this sample we exclude the following observations, so to have a homogeneous sample: individuals who did not complete compulsory education, i.e. those who quit compulsory education by 31 December of the year one turns age 17 (0.17% of original Sonar sample);[9] individuals who are not Flemish, i.e. either do not have Belgian nationality or do not use to speak Dutch at the parental house (5.10%); individuals who attend special needs education (0.92%). Moreover, we focus on men (50.85%), since female labor supply is likely to differ from the male one due to mothering. We drop individuals with missing values in the following individual control variables, since this

[9]In the remainder of this section the percentages of observations are computed relative to the size of the original Sonar sample, i.e. out of 8958 individuals.

involves a small number of observations (2.19%): number of brothers, number of sisters, cohort, educational track at age 17 and completed education at age 17.

Imputation procedure for parental education - Father and mother education are defined as completed school-leaving age minus 12, so that these variables give the number of years of schooling attained from the beginning of secondary education. Missing values are about 10.69% and 8.86% for the father and the mother, respectively. In order to maximize the size of the sample used in the analysis, these missing values have been imputed, according to a regression based procedure, which adds a randomized residual to the predicted variables.[10] The imputation procedure exploits the individual controls with no missing (number of brothers, number of sisters, educational track at age 17 and completed education at age 17) and mother and father education - which have missings. Intuitively, the imputation is performed such that, for observations with missing values in one parent's education but not in the education of his/her partner, the linear prediction for the missing values exploits also the information on his/her partner's education, in addition to the information provided by the controls with no missings. In contrast, for observations with missing value in both mother and father education, the linear predictions for each parental education exploits only information provided by the controls with no missings. An error term extracted from a logistic distribution is added to the linear predictions. Then, the probability of an outcome is computed, by transforming the corresponding predictions by the inverse logit function. Finally, to each missing we assign the outcome for which the predicted probability is maximum.

Imputation procedure for residence - Data on the province of residence are collected from the year in which individuals turn age 18, which corresponds to year 1994, 1996 and 1998 for the cohort born in year 1976, 1978 and 1980, respectively. Considering all the observation period, this information is missing in 3.45% of the yearly observations. In order to maximize the size of the sample used in the analysis, missings in residence are imputed if the following two conditions are met: (i) the socio-economic position of the individual is known in the year in which residence is missing (i.e. if he is employed, unemployed or inactive according to the socio-economic position variable provided from the Data Warehouse): this is an indication that he still resided in Belgium in that particular year; (ii) the residence does not change the year before and the year after missing(s). That is, missings in residence are not imputed if individuals have unknown socio-economic position in the year of missing residence (which means that they are abroad in that year), or if their residence changes before and after missing. Note that condition (i) is directly available from the socio-economic position variable, which attributes value 4 if the position in unknown (values 1, 2 or 3 are assigned to employed, unemployed or inactive

[10]The addition of the error term aims at improving the regression-based imputation, which alone shows the following drawbacks: (i) distortion of variance, with respect to the trade-off between variance and bias; (ii) normative decision of the covariates for the predictions (Kalwij and van Soest, 2005; Frick and Grabka, 2003; Särndal and Lundström, 2005).

status respectively). This procedure allows us to impute and hence retain 2.22% of the missing observations.

We further restrict to individuals residing in Flanders in the moment of graduation (drop 1.1%) and drop individual graduating from age 25 onwards (2.15%). This selection leaves us with a sample of 3624 male individuals graduating at age 18-24. Last, to avoid complications in the estimation procedure, we restrict the sample to the following graduation periods: graduation year 1994-2001 for low-educated and graduation year 1997-2004 for high-educated. The final sample consists of 3514 male individuals. Descriptive statistics of the individual control variables for the final sample are reported in Table A.1 of Appendix A in the main text.

Finally, we consider 12 years of experience for the low educated and 10 years of experience for the high educated: low educated are followed longer since they graduate earlier. We make this selection based on the availability of the labor market outcomes, because we want to observe at least 4 graduation cohorts for a particular number of years of experience. The reason for that is that there needs to be some variation in the unemployment rate to identify the effect of the unemployment rate at graduation. Given that labor market outcomes are observed until year 2010 and we consider graduation year 1994-2001 (1997-2004) for low (high) educated, it follows that experience 12 (10) is observed for low (high) educated for the graduation cohorts 1994-1998 (1997-2000).

S.3 Description of the Final Sample

This section provides descriptive statistics of the final sample. In particular, Table S.9 shows that the level of education gives a good approximation of the collar-type job of the workers: 69% of the low educated are prevalently employed as blue collar workers, while for the high educated this figure is only 11%. Therefore, there is clear correspondence between low (high) educated and blue (white) collar workers. This also shows up in the distribution across sectors of industry for low and high educated youth (see Table S.10): 29%, 31% and 32% of the low educated are employed in the manufacturing sector at potential experience 1, 6 and 12, respectively. By contrast, the proportion of high educated working in manufacturing amounts to 7%, 18% and 19% at potential experience 1, 5 and 10, respectively. Besides, in the first year after graduation almost half of the high educated are employed in real estate activities, administrative and support service activities, as well as professional, scientific and technical activities (47% at potential experience 1; this proportion drops to 35% and 15% at potential experience 5 and 10); for the low educated this figure amounts to 29%, 20% and 13% at potential experience 1, 6 and 12, respectively.

Table S.5: Final Sample by Graduation Year and Birth Cohort: Entire Sample.

Number of Individuals					Fraction of sample				
grad_year	c76	c78	c80	Total	grad_year	c76	c78	c80	Total
1994	143	0	0	143	1994	0.04	0.00	0.00	0.04
1995	209	0	0	209	1995	0.06	0.00	0.00	0.06
1996	168	149	0	317	1996	0.05	0.04	0.00	0.09
1997	154	240	0	394	1997	0.04	0.07	0.00	0.11
1998	185	203	187	575	1998	0.05	0.06	0.05	0.16
1999	191	137	242	570	1999	0.05	0.04	0.07	0.16
2000	115	163	163	441	2000	0.03	0.05	0.05	0.13
2001	0	153	154	307	2001	0.00	0.04	0.04	0.09
2002	0	138	142	280	2002	0.00	0.04	0.04	0.08
2003	0	0	172	172	2003	0.00	0.00	0.05	0.05
2004	0	0	106	106	2004	0.00	0.00	0.03	0.03
Total	1,165	1,183	1,166	3,514	Total	0.33	0.34	0.33	1.00

Table S.6: Dividing the Sample between Low and High Educated.

completed education[§]	low educated	high educated	Total
2	39	0	39
3	89	0	89
4	113	0	113
5	185	0	185
6	1,096	0	1,096
7	363	224	587
8	0	53	53
9	0	710	710
10	0	371	371
11	0	236	236
12	0	34	34
13	0	1	1
Total	1,885	1,629	3,514

§Completed education refers to the number of years of education successfully attained from the beginning of secondary education, i.e. at age 12. Low educated are those who graduated with at most secondary education, which consists in 6 years of education (7 years in case of vocational track; 6 years for all other educational tracks). Therefore, low educated are those with at most 6 years of completed education if enrolled in general, technical, Part-Time vocational/apprenticeship program, and 7 years if enrolled in vocational education. High educated are those with higher completed education.

Table S.7: Final Sample: Number of Individuals by Graduation Year and Province of Residence at Graduation.

	Low educated						High educated					
grad_year	prov1	prov2	prov3	prov4	prov5	Total	prov1	prov2	prov3	prov4	prov5	Total
1994	30	9	31	48	25	143						
1995	47	22	44	48	48	209						
1996	84	45	65	85	38	317						
1997	78	41	65	67	36	287	29	14	24	19	21	107
1998	111	46	78	90	61	386	49	29	50	44	17	189
1999	99	42	47	64	47	299	56	54	61	63	37	271
2000	57	18	30	28	31	164	74	66	42	63	32	277
2001	26	8	11	17	18	80	62	39	45	48	33	227
2002							89	53	53	53	32	280
2003							54	35	24	33	26	172
2004							32	19	17	25	13	106
Total	532	231	371	447	304	1,885	445	309	316	348	211	1,629

The analysis considers the graduation period 1994-2001 and 1997-2004 for low and high educated, respectively. Provinces are in the following order from 1-5: Antwerp, Flemish Brabant, Western Flanders, Eastern Flanders, Limburg. Each combination of graduation year and province of residence at graduation represents a cluster *gp* in the main analysis. The number of individuals in each cluster corresponds to the cluster size.

Table S.8: Average Years of Completed Education by Graduation Year & Birth Cohort.

	Low educated				High educated			
grad_year	all cohorts	c76	c78	c80	all cohorts	c76	c78	c80
1994	5.02	5.02						
1995	5.91	5.91						
1996	5.61	6.03	5.14					
1997	5.84	6.04	5.77		8.09	8.41	7.00	
1998	5.43	5.95	6.04	4.80	8.78	9.05	7.12	
1999	6.10	6.15	6.16	6.08	9.13	9.58	8.55	7.00
2000	6.19	6.50	6.25	6.18	9.23	9.79	9.10	7.05
2001	6.19		5.80	6.21	9.40		9.86	8.53
2002					9.45		9.85	9.06
2003					9.76			9.76
2004					10.33			10.33
Total	5.75	5.76	5.75	5.74	9.28	9.28	9.23	9.31

The analysis considers the graduation period 1994-2001 and 1997-2004 for low and high educated, respectively. Completed education refers to the number of years of education successfully attained from the beginning of second education, i.e. at age 12.

Table S.9: Prevalent Function[§] Undertaken in the Observation Period.

	Low educated			High educated		
	Freq.	Percent	Cum.	Freq.	Percent	Cum.
blue-collar	1,297	68.81	68.81	177	10.87	10.87
white-collar	432	22.92	91.72	1,306	80.17	91.04
fonctionnaire	78	4.14	95.86	81	4.97	96.01
missing	78	4.14	100	65	3.99	100
Total	1,885	100		1,629	100	

§"Prevalent function" means the function that is undertaken more than 50% of the time in the observation period.

Table S.10: Distribution by sector of industry at given years of potential experience for low and high educated salaried workers

	low educated (%)			**high educated (%)**		
at potential experience:	1	6	12	1	5	10
Sector (one digit)						
Agriculture, forestry and fishing	1.73	1.22	0.83	0.76	0.56	0.14
Mining and quarrying	0.00	0.00	0.00	0.07	0.00	0.00
Manufacturing	29.06	31.46	31.86	16.6	18.33	18.56
Electricity, gas and water supply	2.27	2.57	2.12	1.60	1.40	1.42
Construction	11.9	14.05	15.75	3.13	3.79	3.68
Wholesale and retail trade; repair of motor vehicles and motorcycles	12.44	14.66	14.18	10.83	12.36	12.46
Accommodation and food service activities	4.09	2.57	1.93	1.53	0.98	0.99
Transporting, storage and communication	6.54	9.1	10.31	5.21	7.23	15.58
Financial and insurance activities	0.91	0.61	0.64	5.63	6.04	5.52
Real estate activities; administrative and support service activities; professional, scientific and technical activities	28.52	19.73	13.08	47.15	36.94	15.3
Public administration	0.00	0.00	0.00	0.00	1.62	9.07
Education	0.00	0.00	0.00	0.00	2.25	9.21
Human health and social work activities	1.09	1.71	5.89	4.72	5.34	5.67
Arts, entertainment and recreation; other services activities	1.45	2.2	0.83	2.71	3.16	2.41
Activities of households as employers; undifferentiated goods - and services - producing activities of households for own use	0.00	0.06	1.29	0.00	0.00	0.00
Activities of extraterritorial organisations and bodies	0.00	0.06	1.29	0.07	0.00	0.00
Total	100	100	100	100	100	100

S.4 Firm Mobility by Potential Experience.

Table S.11: Firm Mobility by Potential Experience.

	Low Educated					High Educated				
Pot. exp:	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
1	1,089	0.43	0.49	0	1	1,472	0.35	0.48	0	1
2	1,396	0.35	0.48	0	1	1,524	0.27	0.45	0	1
3	1,598	0.30	0.46	0	1	1,548	0.24	0.43	0	1
4	1,753	0.28	0.45	0	1	1,557	0.23	0.42	0	1
5	1,761	0.25	0.43	0	1	1,558	0.22	0.41	0	1
6	1,765	0.24	0.43	0	1	1,557	0.18	0.38	0	1
7	1,769	0.22	0.42	0	1	1,459	0.17	0.37	0	1
8	1,767	0.21	0.41	0	1	1,299	0.17	0.37	0	1
9	1,778	0.21	0.40	0	1	1,032	0.16	0.36	0	1
10	1,687	0.19	0.39	0	1	808	0.13	0.33	0	1
11	1,537	0.17	0.38	0	1					
12	1,245	0.17	0.37	0	1					
overall	19,145	0.25	0.43	0	1	13,814	0.22	0.41	0	1

The analysis considers the graduation period 1994-2001 and 1997-2004 for low and high educated, respectively.

Table S.12: Cumulative Firm Mobility by Experience (Proportion).

Low educated	Potential experience years												
cumulative firm mobility	1	2	3	4	5	6	7	8	9	10	11	12	Total
0	0.63	0.44	0.36	0.31	0.26	0.22	0.20	0.18	0.16	0.15	0.14	0.13	3.16
1	0.37	0.38	0.34	0.30	0.31	0.28	0.27	0.25	0.23	0.21	0.21	0.20	3.35
2	0.00	0.17	0.22	0.21	0.19	0.21	0.20	0.18	0.18	0.18	0.18	0.17	2.09
3	0.00	0.00	0.09	0.13	0.14	0.14	0.15	0.16	0.15	0.15	0.14	0.14	1.41
4	0.00	0.00	0.00	0.05	0.08	0.08	0.10	0.11	0.12	0.13	0.12	0.13	0.92
5	0.00	0.00	0.00	0.00	0.02	0.05	0.05	0.07	0.08	0.08	0.09	0.08	0.52
6	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.04	0.05	0.05	0.06	0.28
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.03	0.03	0.05	0.05	0.17
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.05
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03
10	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
11	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
12	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	12.00
changed job in >2 out of the first 5 years§					0.25								
changed job in >3 out of first 5 years					0.10								
changed job in >4 out of first 5 years					0.02								
changed job in >2 out of first 10 years										0.46			
changed job in >3 out of first 10 years										0.31			
changed job in >4 out of first 10 years										0.18			

High educated	Potential experience years										
cumulative firm mobility	1	2	3	4	5	6	7	8	9	10	Total
0	0.71	0.56	0.45	0.37	0.31	0.27	0.23	0.20	0.18	0.17	3.45
1	0.29	0.35	0.38	0.37	0.36	0.34	0.33	0.31	0.28	0.26	3.28
2	0.00	0.09	0.15	0.19	0.21	0.24	0.23	0.23	0.25	0.24	1.83
3	0.00	0.00	0.02	0.06	0.09	0.10	0.12	0.14	0.15	0.16	0.85
4	0.00	0.00	0.00	0.01	0.03	0.05	0.06	0.08	0.08	0.09	0.40
5	0.00	0.00	0.00	0.00	0.00	0.01	0.02	0.03	0.04	0.05	0.15
6	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01	0.01	0.03
7	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.01
8	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
9	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Total	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	10.00
changed job in >2 out of the first 5 years§					0.12						
changed job in >3 out of first 5 years					0.03						
changed job in >4 out of first 5 years					0.00						
changed job in >2 out of first 10 years										0.32	
changed job in >3 out of first 10 years										0.16	
changed job in >4 out of first 10 years										0.07	

The analysis considers the graduation period 1994-2001 and 1997-2004 for low and high educated, respectively. Moreover, the sample of low educated in this case is restricted to individuals who are observed continuously from experience 1 to 12. Note that in the sample of analysis not all low educated individuals are observed continuously throughout 12 years of experience because of availability of the data: labor market outcomes are provided for the period 1998-2010, while graduation period ranges 1994-2001 for the low educated. This means that only individuals graduating from 1997 are observed from experience one, which occurs in year 1998; in contrast, those for instance graduating in 1994 are observed from experience 4 (1994+4=1998). For the high educated this is not a problem as the first graduation cohort graduates in 1997.

§This statistics means "proportion who changed job in more than 2 out of the first 5 years after graduation": it is computed by summing up the cells in column 5 of the above matrix from row 3 until the last one. The other statistics are computed similarly.

S.5 Testing for the Endogeneity of the Graduation Cohort

S.5.1 Is the Timing of Graduation Endogenous?

According to economic theory the effect of economic conditions on the timing of graduation is ambiguous. On the one hand, a recession decreases the expected labor market income and, hence, the opportunity cost of education. On the other hand, it also reduces the expected returns to education and liquidity of the parents to finance education, so that early school leaving is enhanced. Existing empirical evidence is also mixed, but usually finds that unemployment raises the enrollment rate (see e.g. Card and Lemieux, 2001 and Clark, 2011). Micklewright et al. (1990) by contrast find that the regional unemployment rate tends to reduce the demand for schooling. Petrongolo and San Segundo (2002) and more recently Tumino and Taylor (2013) report that the youth unemployment rate, as proxy for the opportunity cost, raises the probability of remaining in education, while the adult unemployment rate, as proxy for the returns, reduces this probability.

For our purpose it is important to rule out that the adult unemployment rate affects the timing of graduation. If this were the case, then it would affect the composition of the graduation cohort over the business cycle and any association between the unemployment rate and some labor market outcome could just reflect this variable composition rather than a causal effect. To test this we check whether the age of graduation is related to the provincial unemployment rate in that year. Since in Belgium education is compulsory until age 18, we can implement this test by estimating a discrete duration model in which we regress an indicator of graduating since age 17 on birth cohort dummies, individual characteristics x_i and the province of living measured at age 17, the elapsed duration in education since age 17, and the unemployment rate in each potential year of graduation (interacted with the elapsed duration), and by subsequently testing whether the coefficients of latter interactions are jointly significantly different from zero. We deal with selectivity induced by unobserved heterogeneity. The data are clustered in 15 clusters according to the birth year b (1976, 1978 or 1980) and the five provinces p of living at age 17. Problems of inference induced by the small number of clusters are solved in a similar two step approach as in the main analysis.[11]

We follow Kiefer (1988) and Jenkins (1995) to estimate the discrete duration model as a sequence of (yearly) binary choices from age 17 until age 24 ($a \in \{17, 18, ..., 24\}$).[12] In order to obtain correctly sized standard errors, we first regress the discrete-time hazard rate of graduating at a particular age on x_i and the group-age fixed effects $\mu^h_{bpa^*}$, where superscript h allows

[11] Notice that the size of all groups always satisfy the aforementioned rule of Cochran (1954), so that the asymptotic inference should work in this case.

[12] In order to maintain the same data as those that are used in the main analysis as well as to avoid problems of inference induced by too small cell sizes, we right censor duration at the end of the year in which individuals become 24.

distinguishing these effects from the μ_{gpt} in the main analysis and $a^* \equiv a - 17$. In a second step the estimated $\hat{\mu}^h_{bpa^*}$ are then linearly regressed on the covariates that vary at the group-age level, one of which is the provincial unemployment rate.

In the first step, the conditional discrete-time hazard $h_{ibpa^*}(x_i, \epsilon^h)$ is assumed to take on the complementary log-log specification:

$$h_{ibpa^*}(x_i, \epsilon^h) \equiv P(A^*_{ibp} = a^* | A^*_{ibp} \geq a^*; x_i, \epsilon^h) = 1 - \exp\left[-\exp\left(\mu^h_{bpa^*} + x_i'\delta^h + \epsilon^h\right)\right] \quad \text{(S.1)}$$

where A^*_{ibp} is the random age (minus 17) at which individual i of birth cohort b and living at age 17 in province p graduates and ϵ^h is realization of a random individual unobserved heterogeneity term $\mathcal{E}^h$ that is independently distributed from x_i, b and p.

This model is estimated by maximum likelihood. To form the likelihood, note that the discrete survival rate at age a^* is simply $\prod_{s=1}^{a^*}\left(1 - h_{ibps}(x_i, \epsilon^h)\right)$. Consequently, if c_i denotes an indicator that is equal to zero in case of right censoring, i.e. in case that individual i is still in education at the start of the calendar year in which he becomes 25 ($a^* = 25 - 17 = 8$), and one otherwise. Then the log-likelihood function (from which the unobserved heterogeneity is integrated out) can be expressed as follows:

$$\log \mathcal{L} = \sum_{i=1}^{N} \log \int_{-\infty}^{\infty} \left[h_{ibpa^*}(x_i, \epsilon^h)\right]^{c_i} \prod_{s=1}^{a^*-1} \left(1 - h_{ibps}(x_i, \epsilon^h)\right) dG(\epsilon^h) \quad \text{(S.2)}$$

where N denotes the total number of observations and $G(\epsilon^h)$ is the distribution of unobserved heterogeneity. We perform a sensitivity analysis in which (i) $\epsilon^h = 0$, (ii) ϵ^h is Normally distributed with mean zero, or (iii) $\exp(\epsilon^h)$ is Gamma distributed with mean one.

In the second step, the following linear regression is estimated by FGLS according to the methods described in Section 5.2 in the main text:

$$\hat{\mu}^h_{bpa^*} = \gamma^h_{a^*} + \beta^h_{a^*} u_{pt} + \eta^h_p + \lambda^h_b + v^h_{bpa^*} \quad \text{(S.3)}$$

where $t \equiv b + a$ is the year of potential graduation, $\gamma^h_{a^*}$ is an age specific fixed effect describing the evolution of the baseline hazard, η^h_p a provincial specific effect, λ^h_b a birth cohort fixed effect, and $v^h_{bpa^*} = e^h_{pba^*} + (\hat{\mu}^h_{bpa^*} - \mu^h_{bpa^*})$ is completely analogously defined as in Section 5.2 in the main text. The parameters of interest are $\beta^h_{a^*}$. They measure the effect of the provincial unemployment rate u_{pt} on the hazard rate of graduating in that year. We test their joint significance.

Table S.13: Test for Exogenenous Timing of Graduation: Second Step FGLS

	(1)	(2)	(3)
Unobserved heterogeneity (UH)	without UH	Gamma distributed	Normally distributed
Top panel: $\beta^h_{a^*}$ restricted to be equal for all ages			
$\beta^h_{a^*}$	0.0239	0.0497	0.0438
	(0.0299)	(0.0347)	(0.0369)
Parameters in second step	14	14	14
Obs in second step	105	105	105
P-value of chi2 test	0.2983	0.7168	0.9251
Bottom panel: $\beta^h_{a^*}$ allowed to vary over ages			
$\beta^h_{a^*}$ at a*=1	-0.0039	-0.0021	0.0033
	(0.0488)	(0.0547)	(0.0640)
$\beta^h_{a^*}$ at a*=2	0.1172**	0.1401**	0.1513**
	(0.0504)	(0.0575)	(0.0642)
$\beta^h_{a^*}$ at a*=3	0.0319	0.0705	0.0683
	(0.0524)	(0.0559)	(0.0581)
$\beta^h_{a^*}$ at a*=4	0.0486	0.0647	0.0540
	(0.0613)	(0.0653)	(0.0671)
$\beta^h_{a^*}$ at a*=5	-0.0646	-0.0498	-0.0545
	(0.0619)	(0.0656)	(0.0675)
$\beta^h_{a^*}$ at a*=6	0.0452	0.0878	0.0794
	(0.0529)	(0.0592)	(0.0617)
$\beta^h_{a^*}$ at a*=7	-0.0908	-0.0377	-0.0514
	(0.0807)	(0.1048)	(0.1019)
Parameters in second step	20	20	20
Obs in second step	105	105	105
P-value of chi2 test	0.423	0.800	0.948
Test of joint significance of $\beta^h_{a^*}$ (P-val)†:	0.334	0.075	0.118
log variance of UH (first step)§	-	-0.0041	1.3160***
	-	(0.0827)	(0.2398)

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table shows the effect of increasing the provincial unemployment u_{pt} by one *pp* on the hazard rate of graduating in that year. Since the event starts from age 18 and is right-censored after age 24, the baseline hazard $a^* = age - 17$ ranges from 1 to 7. The top panel reports the estimate of $\beta^h_{a^*}$ in (S.3); the bottom panel reports the estimates of $\beta^h_{a^*}$ obtained from estimating (S.3) in which the provincial unemployment rate u_{pt} is interacted with age specific fixed effects of the baseline hazard. The estimates are obtained from a two-step FGLS described in detail in Section 5.2 if the main text and briefly below. First step: (S.1) is estimated by maximum likelihood, either neglecting the unobserved heterogeneity (UH) (column 1), or assuming that the UH is Gamma or Normally distributed (column 2 and 3). Second step: (S.3) is estimated by FGLS, where the inverse of the variance matrix of the $\hat{\mu}^h_{bpa^*}$ in the first step is used as weight. If the χ^2 goodness-of-fit statistic rejects the model (P-value>0.05), standard errors clustered at the *bp* level are reported; otherwise conventional ones. These estimations are computed on the entire sample, i.e. without distinguishing between low and high educated.

†For the bottom panel it tests the null hypothesis that all $\beta^h_{a^*}$ are equal to zero.

§The estimated log of the variance of the unobserved heterogeneity is obtained from the first step.

Table S.13 presents the outcome of the test regarding the exogeneity of the timing of grad-

uation. We report for all three duration models (without, Gamma and Normally distributed unobserved heterogeneity) the parameters of interest in the second step FGLS regression of Equation (S.3), i.e. the coefficients $\beta^h_{a^*}$ of the provincial unemployment rate u_{pt}, and the log of the variance of the distribution of unobserved heterogeneity (if applicable). In the top panel we report the results of the models in which we restrict all $\beta^h_{a^*}$ to be equal over age, while the bottom panel the results of the unrestricted models are displayed.

According to the χ^2 goodness-of-fit statistics none of the six specifications can be rejected against the saturated model, so that the conventional standard errors are reported. The unrestricted model assuming Normally distributed unobserved heterogeneity provides the best fit to the data. In line with theory, the estimated coefficients in the models accounting for heterogeneity are in most cases larger in absolute value than in the models neglecting it. In the restricted models none of the parameters of interest are significantly different from zero. In the unrestricted models, a higher unemployment rate highly significantly accelerates school leaving at age 19 ($a^* = 2$). However, the coefficients at other ages are never significant, do not display any systematic pattern and can even have the opposite sign. Moreover, we do not have any clear explanation for this finding. We therefore argue that the significant result is obtained by chance. The fact that we cannot reject the hypothesis that all $\beta^h_{a^*}$ are equal to zero (see the bottom line of bottom panel in Table S.13), is in line with this interpretation. We therefore conclude that the timing of graduation is exogenous to the business cycle. Further evidence for this conclusion is reported in Section S.9, where we show that our main findings are not sensitive to the inclusion of the completed number of years of education as a control variable.

S.5.2 Is the Province of Residence at Graduation Influenced by Local Labor Market Conditions?

Our identification strategy requires that youths (or their parents, if youth still live at their parents' house) do not move prior to graduation to provinces where the unemployment rate falls relatively to other provinces. For then the composition of recent graduates in provinces would be correlated with local labor market conditions, and it would no longer be possible to disentangle the effects of the latter from the former. To check whether this is a threat to identification, we measured the fraction of youth in our sample that has changed residence between the first year that our data inform about the place of living, i.e. on December 31 of the year in which the individual turns 17, and the moment at which the unemployment rate at graduation u_{gp}, our main regressor of interest, is measured, i.e. at the start of the year of graduation. Since only 0.44% of the individuals in the sample changed residence in that period, the issue can be safely ignored.

S.6 Complete Estimation Results for Low Educated

Table S.14: First Step Estimation: Low Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
live in single-parent	0.0284	-0.0460	-0.0152	0.0481	-6.4318	34.1092
	(0.0516)	(0.0520)	(0.0177)	(0.0639)	(56.9915)	(24.6182)
not live with parents	0.0537**	-0.0436*	-0.0217	-0.0488	-54.1461	19.8639
	(0.0265)	(0.0251)	(0.0143)	(0.0460)	(41.9977)	(17.0054)
HH members aged 0-11	-0.0142	0.0136	0.0015	-0.0566**	-40.4398**	1.7354
	(0.0147)	(0.0143)	(0.0060)	(0.0241)	(18.8287)	(7.4735)
HH members aged 12-17	0.0147	-0.0138	-0.0043	0.0132	8.8881	1.0011
	(0.0111)	(0.0102)	(0.0058)	(0.0142)	(16.6629)	(7.6926)
HH members aged 18-29	-0.0008	0.0028	-0.0031	-0.0167	-16.9359	3.8838
	(0.0109)	(0.0102)	(0.0052)	(0.0130)	(14.8053)	(6.4400)
HH members aged 30-64	0.0037	-0.0114	0.0013	0.0561	46.8355	-3.4421
	(0.0457)	(0.0466)	(0.0137)	(0.0557)	(45.1878)	(17.7092)
HH members aged 65+	0.0132	-0.0106	-0.0041	0.0773**	64.2378*	-18.0643
	(0.0356)	(0.0347)	(0.0133)	(0.0306)	(37.0874)	(21.8596)
father education	-0.0027	0.0020	-0.0013	-0.0038	-6.4999*	3.7912**
	(0.0028)	(0.0026)	(0.0013)	(0.0032)	(3.6161)	(1.6774)
mother education	-0.0107***	0.0102***	-0.0018	-0.0092**	-11.1093***	3.6916*
	(0.0031)	(0.0030)	(0.0014)	(0.0040)	(4.0517)	(1.8991)
years of delay in sec.edu	0.0118	-0.0250**	-0.0116**	-0.0892***	-96.0414***	20.2979***
	(0.0110)	(0.0101)	(0.0053)	(0.0144)	(14.9899)	(7.1780)
technical edu†	0.0304	0.0189	0.0223*	0.1598***	137.5642***	-28.0554
	(0.0276)	(0.0262)	(0.0134)	(0.0402)	(41.6928)	(18.6938)
vocational edu†	0.0346	0.0210	-0.0179	0.0706*	-2.3482	-3.4916
	(0.0281)	(0.0267)	(0.0134)	(0.0401)	(41.5358)	(18.9772)
apprenticeship/PT voc†	-0.0460	0.0814**	-0.0187	0.1766***	89.3406	-20.8304
	(0.0430)	(0.0402)	(0.0186)	(0.0580)	(59.9006)	(27.6646)
birth cohort78††	0.0084	-0.0220	-0.0135	-0.0991***	-128.2615***	14.3591
	(0.0280)	(0.0273)	(0.0134)	(0.0321)	(35.1430)	(15.3584)
birth cohort80††	-0.0087	-0.0234	-0.0348**	-0.2619***	-305.1146***	55.8014**
	(0.0384)	(0.0370)	(0.0177)	(0.0486)	(51.1070)	(22.5020)
cluster-time FE§	*Not reported*					
Observations	32,466		34,164		34,164	
R-squared	0.7253		0.9928		0.8171	

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (3) in Section 5.2 of the main text on mentioned outcomes. This is the first step regression of the two-step FGLS approach, described in detail in Section 5.2 of the main text. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this first step is estimated from an OLS SUR on the first two outcomes in the sum. For discrete outcomes in column 1-2, Eq. (3) is estimated by Linear Probability Model. Standard errors are clustered at the individual level. The individual control variables, measured when the individuals are aged 17, are reported in order: 1 if live with single parent; 1 if not live with either parents; number of other household members in different age classes; parent's education; years of delay in secondary education; choice of educational track in secondary education; birth cohort dummies. These variables are expressed in deviation from the mean. Cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ are not reported.

†Choice of educational track in secondary education: reference is general education.

††Birth dummies: reference is born in 1976.

§Cluster-time FE identify observations referring to individuals graduating in year g, living in province p at graduation and whose outcome is measured in calendar year y. The FE included in the regression on discrete outcomes differ from the ones included in the regression on continuous outcomes, because different selection rules are applied for discrete and continuous outcomes, and hence different groups are retained (see Table A.2 in Appendix A of the main text and Section 5.2 of the main text).

Table S.15: Second Step OLS Estimation: Low Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
URate_grad	-0.0115	0.0328	-0.0080	-0.0119	-24.9982	27.2606
	(0.0239)	(0.0221)	(0.0177)	(0.0414)	(42.3072)	(19.7239)
URate_grad*lin_exp	0.0128**	-0.0160***	0.0000	-0.0093	-10.0671	-2.8690
	(0.0057)	(0.0049)	(0.0052)	(0.0181)	(12.9797)	(9.2303)
URate_grad*lin_exp|exp>3	-0.0158**	0.0131**	-0.0016	0.0096	16.1812	-0.8707
	(0.0071)	(0.0061)	(0.0055)	(0.0206)	(15.0691)	(11.9548)
URate_grad*lin_exp|exp>6	0.0006	0.0051	0.0003		-9.3893	6.8536
	(0.0056)	(0.0057)	(0.0021)		(8.5323)	(5.7855)
URate_grad*lin_exp|exp>9	0.0061	-0.0052	0.0010	0.0008	1.3590	1.8411
	(0.0058)	(0.0040)	(0.0039)	(0.0080)	(10.9054)	(5.7275)
URate_grad*lin_exp*upturn				0.0021		
				(0.0114)		
URate_grad*lin_exp|exp>3*upturn				0.0012		
				(0.0168)		
URate_grad*lin_exp|exp>6*upturn						
URate_grad*lin_exp|exp>9*upturn				0.0071		
				(0.0108)		
d_exp1	0.7512***	0.1165**	2.3176***	6.9075***	958.9185***	298.9458***
	(0.0457)	(0.0457)	(0.0356)	(0.1224)	(126.9019)	(94.2751)
d_exp2	0.7461***	0.1226***	2.3619***	7.0090***	1,123.5383***	228.2590***
	(0.0438)	(0.0427)	(0.0312)	(0.1034)	(111.9305)	(80.9229)
d_exp3	0.7618***	0.1226***	2.4055***	7.0345***	1,217.5205***	164.6059***
	(0.0378)	(0.0381)	(0.0262)	(0.0861)	(88.0276)	(58.8217)
d_exp4	0.7607***	0.1386***	2.4389***	7.0675***	1,283.7424***	137.2792***
	(0.0352)	(0.0373)	(0.0230)	(0.0673)	(73.2986)	(42.1305)
d_exp5	0.7707***	0.1459***	2.4769***	7.0772***	1,307.9451***	126.0374***
	(0.0347)	(0.0367)	(0.0199)	(0.0623)	(65.3467)	(30.5050)
d_exp6	0.7710***	0.1474***	2.5213***	7.1275***	1,403.3019***	83.4630***
	(0.0317)	(0.0337)	(0.0191)	(0.0684)	(72.0378)	(29.6944)
d_exp7	0.7754***	0.1597***	2.5574***	7.1523***	1,447.5870***	66.9784
	(0.0291)	(0.0303)	(0.0212)	(0.0751)	(83.4648)	(40.3594)
d_exp8	0.7781***	0.1707***	2.6028***	7.1260***	1,444.8401***	64.4567
	(0.0306)	(0.0290)	(0.0249)	(0.0971)	(105.4114)	(55.5343)
d_exp9	0.7633***	0.1883***	2.6408***	7.1943***	1,508.9936***	40.3436
	(0.0323)	(0.0292)	(0.0292)	(0.1112)	(126.6040)	(74.3594)
d_exp10	0.7637***	0.1918***	2.6761***	7.1655***	1,495.2992***	39.0506
	(0.0342)	(0.0279)	(0.0341)	(0.1275)	(155.2295)	(94.9612)
d_exp11	0.7620***	0.2083***	2.7130***	7.1683***	1,529.4159***	11.1327
	(0.0373)	(0.0292)	(0.0401)	(0.1555)	(182.0271)	(115.4204)
d_exp12	0.7492***	0.2204***	2.7425***	7.1461***	1,544.8297***	-12.8784
	(0.0437)	(0.0318)	(0.0467)	(0.1729)	(207.2307)	(133.9152)
current_URate*lin_exp			-0.0024	-0.0127	-13.1490	4.6741
			(0.0026)	(0.0079)	(10.2617)	(6.0726)
current_URate*lin_exp|exp>3			0.0021	0.0195	18.4495	-5.8028
			(0.0047)	(0.0140)	(17.0719)	(9.9964)
current_URate*lin_exp|exp>6			0.0005	0.0056	1.0209	2.1206
			(0.0040)	(0.0117)	(13.8847)	(6.9309)
current_URate*lin_exp|exp>9			-0.0010	-0.0291**	-4.2898	-10.2813
			(0.0046)	(0.0127)	(15.8712)	(8.0814)
lin_grad_year	0.0403***	-0.0214	0.0279***	0.0472	65.4507**	-8.6015
	(0.0137)	(0.0138)	(0.0073)	(0.0320)	(29.6637)	(21.6567)
lin_grad_year|trend>3	-0.0240	0.0215	-0.0069	0.0140	15.5502	-11.5497
	(0.0179)	(0.0169)	(0.0054)	(0.0249)	(25.3218)	(14.1348)

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Table S.15 – continued from previous page

	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
lin_grad_year|trend>6	-0.0132	0.0144	-0.0155	0.0307	6.5676	11.5773
	(0.0285)	(0.0283)	(0.0126)	(0.0221)	(32.5098)	(20.9785)
d_y2000			-0.0125	-0.0172	-38.8673	26.1713
			(0.0104)	(0.0543)	(44.5270)	(28.7443)
d_y2001			-0.0182	-0.0247	-74.2369	49.9492
			(0.0164)	(0.0820)	(75.5566)	(47.9611)
d_y2002			-0.0126	-0.0565	-102.6201	49.9582
			(0.0219)	(0.0946)	(92.2693)	(64.9251)
d_y2003			0.0200	-0.0836	-185.5176	68.4335
			(0.0287)	(0.1172)	(116.2514)	(85.2820)
d_y2004			0.0018	-0.0544	-187.7900	76.6086
			(0.0353)	(0.1384)	(145.0028)	(105.8795)
d_y2005			-0.0177	-0.0954	-231.4900	91.1613
			(0.0406)	(0.1591)	(171.9990)	(126.0796)
d_y2006			-0.0366	-0.0984	-263.5384	116.7552
			(0.0475)	(0.1884)	(200.9022)	(145.7559)
d_y2007			-0.0440	-0.0899	-257.7645	127.6621
			(0.0550)	(0.2165)	(229.4389)	(163.9872)
d_y2008			-0.0730	-0.0695	-272.8240	147.2443
			(0.0625)	(0.2441)	(262.2820)	(186.8023)
d_y2009			-0.0610	-0.1343	-359.7139	160.6956
			(0.0687)	(0.2624)	(286.1192)	(206.2585)
d_y2010			-0.0785	-0.0978	-348.4011	181.8591
			(0.0745)	(0.2868)	(315.8287)	(229.1536)
lin_calend_year|trend>3	-0.0132*	-0.0011				
	(0.0067)	(0.0047)				
lin_calend_year|trend>6	0.0027	0.0051				
	(0.0052)	(0.0044)				
lin_calend_year|trend>9	0.0023	-0.0064				
	(0.0041)	(0.0047)				
d_province2	-0.0467*	0.0323	-0.0192	-0.0614	-202.5254**	122.4041***
	(0.0254)	(0.0225)	(0.0220)	(0.0772)	(98.6645)	(39.8929)
d_province3	-0.0599*	0.0782***	0.0169	0.0557	15.7333	30.6915
	(0.0302)	(0.0276)	(0.0201)	(0.0576)	(73.9502)	(34.2322)
d_province4	-0.0299*	0.0355**	0.0258	0.0107	-49.9896	33.2321*
	(0.0169)	(0.0155)	(0.0169)	(0.0361)	(41.1422)	(17.4238)
d_province5	-0.0578***	0.0616***	0.0242	0.1082	48.6183	15.0094
	(0.0206)	(0.0217)	(0.0210)	(0.0734)	(88.1180)	(39.9302)
lin_calend_year_province2			-0.0081***	0.0086	14.2801	-6.1889
			(0.0027)	(0.0088)	(13.7433)	(5.7350)
lin_calend_year_province3			-0.0092***	-0.0036	-2.7219	-3.3067
			(0.0029)	(0.0065)	(8.7463)	(3.7209)
lin_calend_year_province4			-0.0027	0.0017	4.1164	-2.1860
			(0.0027)	(0.0045)	(5.8421)	(3.3370)
lin_calend_year_province5			-0.0030	-0.0121	-8.2976	-2.0106
			(0.0027)	(0.0081)	(8.9590)	(3.5839)
Observations	564		756		756	
Amemiya-Nold test†	-0.0015	-0.0013	-0.0004	-0.0020	-1826.0490	-526.2726
R-squared	0.9941		0.9998		0.9944	

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Table S.15 – continued from previous page

	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (4) in Section 5.2 of the main text by OLS on mentioned outcomes. This is the second step regression of the two-step approach described in detail in Section 5.2 of the main text, where this second step is estimated by OLS. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this second step is estimated from a OLS SUR on the first two outcomes in the sum. Effects on the third outcome (the sum) are then obtained from the adding-up constraints. Standard errors are clustered at graduation time-province (gp) level. The dependent variables of the second step are the cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ estimated in each corresponding first step regression, given by Eq. (3) in Section 5.2 of the main text. The covariates of the second step are described below (in order): $URate\_grad$ is the unemployment rate at graduation u_{gp}. $URate\_grad * lin\_exp$ is an interaction between u_{gp} and a linear trend in experience. $URate\_grad * lin\_exp|exp > 3$ is u_{gp} interacted with a linear trend in experience that starts from exp>3. More in general, variables $URate\_grad * lin\_exp$-$URate\_grad * lin\_exp|exp > 9$ specify the linear spline in potential experience $f_g(e)$ that multiplies the provincial unemployment rate at graduation u_{gp}. The slope of the spline changes at experience 3, 6 and 9 for low educated, as explained in Eq. (2) in Section 5.1 of the main text. Variables $URate\_grad * lin\_exp * upturn$-$URate\_grad * lin\_exp|exp > 9 * upturn$ are triple interactions of u_{gp} with $f_{gu}(e)$ and a dummy=1 if graduation occurs in an upturn. They allows u_{gp} to have a different effect over experience in upturn/downturn. d_exp1-d_exp12 are experience FE. Since they define constant-terms for each experience level, the constant is omitted in the specification. $current\_URate * lin\_exp$-$current\_URate * lin\_exp|exp > 9$ are interactions between the current unemployment rate u_{tp} with $f_t(e)$. Variables lin_grad_year-$lin\_grad\_year|trend > 6$ is the spline for the graduation year $f_0(g)$. d_y2000-d_y2010 are calendar year FE for the period 1998-2010. Identification requires dropping both year 1998 and 1999: the first is the reference FE, while the second has to be dropped because of the following accounting identity: $calend\_year = exp + grad\_year$. In this choice of dropping a second calendar year we followed Oreopoulos et al. (2012). Calendar year is alternatively specified with a spline, by means of variables $lin\_calend\_year|trend > 3$-$lin\_calend\_year|trend > 9$, where the first term of the spline is omitted because of the aforementioned accounting identity. $d\_province2$-$d\_province5$ are province FE (province 1 is the reference). $lin\_calend\_year * d\_province2$-$lin\_calend\_year * d\_province5$ are province-specific linear time trends. Depending on the outcome, we impose restrictions which cannot be jointly rejected at the 5% level, as follows: the effect of u_{gp} is restricted to be symmetric in upturn and downturn (for salaried and self-employment, log hourly wage, full-time and part-time hours worked); the effect of u_{tp} is set to be zero (for salaried and self-employment); calendar year FE are specified with a spline (for salaried and self-employment); provincial time trends are set to be zero (for salaried and self-employment).

§ For log hours worked, it is also imposed $\beta_{g2} = 0$, i.e. the slope of the linear spline remains fixed after 6 years of experience. This restriction cannot be rejected.

† The Amemiya-Nold test is an estimate of the variance of the cluster-time errors e_{gpt}, described in Eq. (5) in Section 5.2 of the main text. A negative statistics is evidence that the unobserved cluster-time shocks are indeed zero. Accordingly, one can implement the FGLS procedure as in Wooldridge (2006, 2010).

Table S.16: Second Step FGLS Estimation: Low Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
URate_grad	-0.0238	0.0501**	0.0100	-0.0525*	-164.8746***	56.8591***
	(0.0220)	(0.0236)	(0.0154)	(0.0275)	(39.6889)	(16.4111)
URate_grad*lin_exp	0.0063	-0.0144*	-0.0055	0.0087	41.1335***	-20.5795***
	(0.0063)	(0.0075)	(0.0037)	(0.0092)	(8.4565)	(5.3600)
URate_grad*lin_exp|exp>3	-0.0040	0.0087	0.0040	-0.0085	-30.4640***	18.6047***
	(0.0079)	(0.0089)	(0.0037)	(0.0118)	(8.9870)	(6.7193)
URate_grad*lin_exp|exp>6	-0.0026	0.0074*	0.0042**		-24.5012***	10.5285**
	(0.0047)	(0.0042)	(0.0018)		(6.8968)	(3.9159)
URate_grad*lin_exp|exp>9	0.0017	-0.0057*	-0.0058**	-0.0030	19.8884***	-8.1435*
	(0.0034)	(0.0033)	(0.0022)	(0.0079)	(6.9654)	(4.0476)
URate_grad*lin_exp*upturn				-0.0108		
				(0.0075)		
URate_grad*lin_exp|exp>3*upturn				0.0183		
				(0.0117)		
URate_grad*lin_exp|exp>6*upturn						
URate_grad*lin_exp|exp>9*upturn				0.0013		

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Table S.16 – continued from previous page

	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
				(0.0115)		
d_exp1	0.8569***	0.0796	2.2692***	7.1194***	1,225.9931***	182.0557***
	(0.0646)	(0.0637)	(0.0378)	(0.1094)	(126.8483)	(58.2625)
d_exp2	0.8516***	0.0793	2.3175***	7.2186***	1,415.8790***	91.2670
	(0.0639)	(0.0617)	(0.0359)	(0.0974)	(114.1311)	(54.6505)
d_exp3	0.8457***	0.0847	2.3647***	7.2388***	1,465.8398***	73.3560
	(0.0623)	(0.0600)	(0.0350)	(0.0838)	(105.5893)	(50.3020)
d_exp4	0.8543***	0.0972	2.4002***	7.2710***	1,500.8617***	66.5529
	(0.0613)	(0.0599)	(0.0347)	(0.0741)	(99.0005)	(47.0799)
d_exp5	0.8612***	0.1073*	2.4316***	7.2705***	1,525.3920***	81.6274*
	(0.0609)	(0.0595)	(0.0343)	(0.0647)	(91.6504)	(44.6073)
d_exp6	0.8524***	0.1058*	2.4691***	7.3052***	1,532.2297***	94.6461**
	(0.0602)	(0.0594)	(0.0348)	(0.0572)	(86.7440)	(40.3467)
d_exp7	0.8530***	0.1226**	2.5001***	7.3216***	1,543.8087***	95.9874**
	(0.0601)	(0.0594)	(0.0346)	(0.0525)	(84.4805)	(38.9072)
d_exp8	0.8633***	0.1165*	2.5330***	7.3568***	1,520.6944***	109.3179***
	(0.0605)	(0.0602)	(0.0354)	(0.0570)	(87.0377)	(36.0375)
d_exp9	0.8576***	0.1263**	2.5667***	7.3706***	1,528.2080***	141.4640***
	(0.0614)	(0.0612)	(0.0369)	(0.0624)	(89.3094)	(34.8296)
d_exp10	0.8578***	0.1340**	2.5935***	7.3918***	1,530.9900***	152.9140***
	(0.0632)	(0.0628)	(0.0394)	(0.0699)	(100.0108)	(37.5158)
d_exp11	0.8569***	0.1404**	2.6227***	7.4047***	1,534.6193***	148.0725***
	(0.0652)	(0.0652)	(0.0425)	(0.0844)	(112.5650)	(39.2476)
d_exp12	0.8533***	0.1350**	2.6424***	7.4290***	1,524.9435***	148.2635***
	(0.0683)	(0.0677)	(0.0461)	(0.0995)	(128.1002)	(43.1278)
current_URate*lin_exp			-0.0008	-0.0073**	-2.7920	4.4547*
			(0.0011)	(0.0035)	(3.9967)	(2.5871)
current_URate*lin_exp|exp>3			-0.0011	0.0070	4.0244	-7.0951
			(0.0021)	(0.0065)	(8.6607)	(5.0969)
current_URate*lin_exp|exp>6			0.0025	-0.0032	8.6961	3.2832
			(0.0024)	(0.0058)	(9.5344)	(3.8670)
current_URate*lin_exp|exp>9			0.0020	0.0117*	-9.0042	-5.1401
			(0.0029)	(0.0067)	(7.4738)	(3.7716)
lin_grad_year	0.0173	-0.0100	0.0396***	0.0264	19.0216	16.0035
	(0.0201)	(0.0197)	(0.0102)	(0.0258)	(35.5687)	(15.2251)
lin_grad_year|trend>3	-0.0012	0.0030	-0.0235*	0.0277*	21.4500	-10.2731
	(0.0221)	(0.0218)	(0.0124)	(0.0164)	(37.5160)	(14.2848)
lin_grad_year|trend>6	-0.0152	0.0060	0.0087	-0.0004	44.8529	-23.3993**
	(0.0283)	(0.0270)	(0.0157)	(0.0200)	(37.5199)	(11.1892)
d_y2000			-0.0089	-0.0207	-21.8402	0.0906
			(0.0066)	(0.0233)	(23.2243)	(10.8590)
d_y2001			-0.0108	-0.0419	-5.2062	-20.1063
			(0.0116)	(0.0399)	(38.5634)	(17.5764)
d_y2002			-0.0049	-0.0355	10.6677	-53.7633***
			(0.0151)	(0.0489)	(54.0165)	(19.3777)
d_y2003			0.0292	-0.0821	-69.3960	-74.0548***
			(0.0199)	(0.0697)	(70.6908)	(25.9086)
d_y2004			0.0161	-0.0719	-29.2518	-92.8033***
			(0.0242)	(0.0818)	(85.3414)	(30.5642)
d_y2005			-0.0009	-0.0818	-56.0160	-114.5512***
			(0.0289)	(0.0964)	(104.9215)	(36.2211)
d_y2006			-0.0117	-0.1070	-16.5626	-126.2454***
			(0.0340)	(0.1119)	(121.1634)	(41.2826)
d_y2007			-0.0170	-0.1288	4.0424	-132.1354***
			(0.0391)	(0.1307)	(140.5737)	(47.5882)
d_y2008			-0.0315	-0.1495	3.5323	-121.5956**
			(0.0453)	(0.1484)	(159.4959)	(54.3311)

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Table S.16 – continued from previous page

	salaried	self-empl.	log wage	log hours§	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
d_y2009			-0.0187	-0.1670	-76.4815	-149.4521**
			(0.0505)	(0.1632)	(173.8986)	(58.7294)
d_y2010			-0.0378	-0.1970	-54.4050	-155.5810**
			(0.0565)	(0.1761)	(192.4969)	(64.9975)
lin_calend_year|trend>3	-0.0057	-0.0005				
	(0.0063)	(0.0059)				
lin_calend_year|trend>6	-0.0064	0.0073*				
	(0.0048)	(0.0043)				
lin_calend_year|trend>9	0.0027	-0.0025				
	(0.0045)	(0.0039)				
d_province2	-0.0448	0.0339	-0.0169	-0.0166	-33.2013	5.9581
	(0.0276)	(0.0262)	(0.0217)	(0.0526)	(92.8610)	(39.2545)
d_province3	-0.0710***	0.0677***	0.0423**	0.0635	156.8683**	-63.1090**
	(0.0228)	(0.0223)	(0.0206)	(0.0504)	(68.5089)	(30.5171)
d_province4	-0.0391**	0.0319**	0.0434***	0.0267	29.4486	-24.5258
	(0.0167)	(0.0155)	(0.0148)	(0.0412)	(56.6118)	(24.7125)
d_province5	-0.0382	0.0407	0.0201	0.1331**	198.9715**	-26.1553
	(0.0272)	(0.0262)	(0.0181)	(0.0598)	(76.9946)	(32.3431)
lin_calend_year_province2			-0.0052**	0.0035	14.3407*	-1.9295
			(0.0022)	(0.0050)	(7.3382)	(3.5427)
lin_calend_year_province3			-0.0058***	-0.0115**	-14.5633**	6.0920*
			(0.0020)	(0.0052)	(6.0903)	(3.4753)
lin_calend_year_province4			0.0004	-0.0030	-5.0574	3.8559
			(0.0022)	(0.0046)	(4.8954)	(2.8497)
lin_calend_year_province5			-0.0028	-0.0121**	-11.7671*	-0.4693
			(0.0022)	(0.0058)	(6.7259)	(2.7682)
R-squared	0.9986		0.9999		0.9953	
WSSR (2nd step)	331		1289		1519	
Obs (2nd step)	375		756		754	
Parameters (2nd step)	54		88		86	
Test joint signif. all imposed restr.(P-val)	0.286		0.155		0.268	
P-value of chi2 test	0.341		0.000		0.000	
cluster (at which level)	no		g*p		g*p	
Imposed Restrictions:						
effect URate at grad. symmetric up/downturn	yes	yes	yes	no	yes	yes
effect Current Urate over exp=0	yes	yes	no	no	no	no
spline for calendar year FE	yes	yes	no	no	no	no
effect prov-time trends=0	yes	yes	no	no	no	no

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (4) in Section 5.2 of the main text by FGLS on mentioned outcomes. This is the second step regression of the two-step FGLS approach described in detail in Section 5.2 of the main text. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this second step is estimated from a FGLS SUR on the first two outcomes in the sum. Effects on the third outcome (the sum) are then obtained from the adding-up constraints. The dependent variables of the second step are the cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ estimated in each corresponding first step regression, given by Eq. (3) in Section 5.2 of the main text. A description of the covariates reported in the Table is in the footnote of Table S.15 above. In this FGLS SUR, the data are weighted by the inverse of the cluster-robust variance matrix of $\hat{\mu}_{gpt}$ estimated in the first step. For discrete outcomes, the Moore-Penrose generalized inverse of this matrix is used as weight, to take into account the perfect serial correlation induced by the fact that, for specific clusters, the outcomes do not vary over time (see Section 5.2 of the main text for details). Depending on the outcome, we impose restrictions which cannot be jointly rejected at the 5% level: these restrictions are listed in the bottom panel of the table. If the χ^2 goodness-of-fit statistic rejects the model (P-value>0.05), standard errors clustered at the *gp* level are reported; otherwise conventional ones. For completeness we report also the weighted sum of squared residuals (WSSR), the number of estimated parameters and the number of observations, which are used to compute the χ^2 test.

§ For log hours worked the following additional restriction (not mentioned in the table) is also imposed: $\beta_{g2} = 0$, i.e. the slope of the linear spline remains fixed after 6 years of experience. This restriction cannot be rejected.

S.7 Complete Estimation Results for High Educated

Table S.17: First Step Estimation: High Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
live in single-parent	-0.0142	0.0185	-0.0108	-0.0948	-58.7515	-23.5552
	(0.1065)	(0.1089)	(0.0494)	(0.0769)	(97.1894)	(38.6768)
not live with parents	0.0055	-0.0545	-0.0066	-0.0186	12.8753	-13.5174
	(0.0458)	(0.0384)	(0.0281)	(0.0462)	(66.2764)	(31.5662)
HH members aged 0-11	-0.0093	0.0050	-0.0024	-0.0281	-59.1713*	24.8043
	(0.0202)	(0.0194)	(0.0117)	(0.0220)	(30.7132)	(16.6696)
HH members aged 12-17	0.0071	-0.0014	0.0117	-0.0212	-34.8318*	14.4708
	(0.0149)	(0.0144)	(0.0080)	(0.0134)	(20.0060)	(10.9179)
HH members aged 18-29	0.0003	0.0014	0.0030	-0.0343**	-31.4121*	5.0918
	(0.0132)	(0.0129)	(0.0075)	(0.0140)	(18.9413)	(9.4834)
HH members aged 30-64	0.0055	0.0163	-0.0120	-0.0171	32.9106	-53.7095**
	(0.0990)	(0.1021)	(0.0467)	(0.0626)	(80.2774)	(26.7216)
HH members aged 65+	0.0113	-0.0076	-0.0168	0.0506*	70.0408	-28.3348
	(0.0456)	(0.0421)	(0.0215)	(0.0271)	(62.1322)	(35.4918)
father education	-0.0048	0.0034	0.0048***	-0.0010	4.2756	-4.3901*
	(0.0034)	(0.0033)	(0.0018)	(0.0028)	(4.3456)	(2.3938)
mother education	-0.0043	0.0023	-0.0009	-0.0113***	-16.0538***	6.2931**
	(0.0039)	(0.0038)	(0.0019)	(0.0033)	(4.8368)	(2.6061)
years of delay in sec.edu	0.0099	-0.0070	-0.0703***	-0.0562***	-83.9288***	20.8350
	(0.0168)	(0.0165)	(0.0097)	(0.0181)	(23.2658)	(12.6673)
technical edu†	0.0130	-0.0057	-0.0276**	0.0158	5.8643	2.7490
	(0.0217)	(0.0211)	(0.0117)	(0.0208)	(30.7576)	(16.8961)
vocational edu†	0.0398	-0.0062	-0.0990**	0.0463	-61.2107	90.4418
	(0.0846)	(0.0822)	(0.0417)	(0.0741)	(146.4928)	(84.9388)
apprenticeship/PT voc†	-0.6675***	0.7161***	-0.1879***	0.0344	-323.0605***	265.5299***
	(0.0551)	(0.0537)	(0.0341)	(0.0450)	(73.6523)	(41.9571)
birth cohort78††	0.0193	-0.0259	-0.0873***	-0.0242	-10.6798	-15.6678
	(0.0274)	(0.0259)	(0.0149)	(0.0283)	(37.6116)	(20.8565)
birth cohort80††	0.0735**	-0.0810**	-0.1795***	-0.0664*	-100.0433*	14.4197
	(0.0359)	(0.0337)	(0.0213)	(0.0395)	(53.7439)	(28.6471)
cluster-time FE§	*Not reported*					
Observations	22,886		24,314		24,314	
R-squared	0.7108		0.9951		0.8345	

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (3) in Section 5.2 of the main text on mentioned outcomes. This is the first step regression of the two-step FGLS approach, described in detail in Section 5.2 of the main text. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this first step is estimated from an OLS SUR on the first two outcomes in the sum. For discrete outcomes in column 1-2, Eq. (3) is estimated by Linear Probability Model. Standard errors are clustered at the individual level. The individual control variables, measured when the individuals are aged 17, are reported in order: 1 if live with single parent; 1 if not live with either parents; number of other household members in different age classes; parent's education; years of delay in secondary education; choice of educational track in secondary education; birth cohort dummies. These variables are expressed in deviation from the mean. Cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ are not reported.

†Choice of educational track in secondary education: reference is general education.

††Birth dummies: reference is born in 1976.

§Cluster-time FE identify observations referring to individuals graduating in year g, living in province p at graduation and whose outcome is measured in calendar year y. Note that the FE included in the regression on discrete outcomes differ from the ones included in the regression on continuous outcomes, because different selection rules are applied for discrete and continuous outcomes, and hence different groups are retained (see Table A.2 in Appendix A of the main text and Section 5.2 of the main text).

Table S.18: Second Step OLS Estimation: High Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
URate_grad	-0.0427**	0.0355*	-0.0088	-0.0835	-91.4880*	32.3351
	(0.0169)	(0.0201)	(0.0098)	(0.0526)	(45.3291)	(19.2652)
URate_grad*lin_exp	0.0169***	-0.0145**	-0.0027	0.0311*	30.9963**	-5.5913
	(0.0047)	(0.0068)	(0.0026)	(0.0162)	(13.3616)	(6.8823)
URate_grad*lin_exp|exp>3	-0.0209***	0.0199***	0.0039	-0.0217	-25.9922*	-0.2021
	(0.0060)	(0.0072)	(0.0040)	(0.0184)	(14.6282)	(9.9671)
URate_grad*lin_exp|exp>6	0.0058	-0.0084	0.0017	-0.0224**	4.8011	2.7938
	(0.0061)	(0.0053)	(0.0031)	(0.0099)	(20.9446)	(9.5876)
URate_grad*lin_exp*upturn				0.0129	5.6285	
				(0.0110)	(11.3489)	
URate_grad*lin_exp|exp>3*upturn				-0.0351*	-10.2750	
				(0.0205)	(23.0995)	
URate_grad*lin_exp|exp>6*upturn				0.0356**	-9.1289	
				(0.0135)	(27.8938)	
d_exp1	0.9689***	0.0333	2.3866***	7.4621***	1,501.2335***	230.6942***
	(0.0430)	(0.0461)	(0.0203)	(0.1105)	(120.6049)	(46.0044)
d_exp2	0.9292***	0.0619	2.4581***	7.4502***	1,646.6508***	136.5209***
	(0.0442)	(0.0480)	(0.0245)	(0.0717)	(90.1631)	(34.4444)
d_exp3	0.9159***	0.0690	2.5161***	7.3154***	1,638.2554***	79.8997*
	(0.0435)	(0.0485)	(0.0275)	(0.0690)	(76.6823)	(43.6743)
d_exp4	0.8922***	0.0885	2.5699***	7.1631***	1,621.2628***	25.6041
	(0.0483)	(0.0524)	(0.0339)	(0.1158)	(98.2383)	(70.0681)
d_exp5	0.8657***	0.1114**	2.6220***	7.0046***	1,567.8224***	-17.4379
	(0.0497)	(0.0529)	(0.0431)	(0.1781)	(142.7774)	(102.0089)
d_exp6	0.8294***	0.1342**	2.6595***	6.8335***	1,516.2816***	-54.8387
	(0.0527)	(0.0552)	(0.0517)	(0.2477)	(193.0891)	(135.4781)
d_exp7	0.8024***	0.1582***	2.6984***	6.6729***	1,442.1611***	-74.7287
	(0.0557)	(0.0573)	(0.0604)	(0.3079)	(240.9555)	(169.6860)
d_exp8	0.7659***	0.1857***	2.7469***	6.5074***	1,391.0482***	-116.9754
	(0.0569)	(0.0598)	(0.0681)	(0.3783)	(296.0228)	(202.4608)
d_exp9	0.7368***	0.2091***	2.7816***	6.3768***	1,348.6060***	-142.4168
	(0.0603)	(0.0632)	(0.0767)	(0.4463)	(352.6231)	(236.8329)
d_exp10	0.7055***	0.2376***	2.8009***	6.1864***	1,253.7807***	-169.8802
	(0.0671)	(0.0678)	(0.0865)	(0.5135)	(402.3159)	(271.3453)
current_URate*lin_exp					-0.9215	
					(6.7461)	
current_URate*lin_exp|exp>3					5.4568	
					(16.1967)	
current_URate*lin_exp|exp>6					-5.0503	
					(13.4528)	
lin_grad_year	-0.0246	0.0090	0.0514***	-0.1554**	-69.1863	-16.0394
	(0.0162)	(0.0174)	(0.0068)	(0.0655)	(55.3554)	(29.6588)
lin_grad_year|trend>3	-0.0051	0.0193	-0.0038	0.0002	22.9224	-17.7204
	(0.0209)	(0.0222)	(0.0124)	(0.0144)	(30.7012)	(22.1972)
lin_grad_year|trend>6	-0.0332*	0.0270	-0.0052	0.0206	42.8455	-21.7279
	(0.0195)	(0.0176)	(0.0118)	(0.0214)	(31.9825)	(18.6639)
d_y2000			-0.0243*	0.2275**	154.9824*	7.2023
			(0.0140)	(0.1076)	(81.1079)	(48.7754)
d_y2001			-0.0399*	0.3992**	231.8595	26.4881
			(0.0211)	(0.1788)	(139.5020)	(78.2480)
d_y2002			-0.0425	0.5822**	290.4235	88.4649
			(0.0290)	(0.2439)	(183.7660)	(110.8750)
d_y2003			0.0145	0.6609**	124.6172	187.8584
			(0.0360)	(0.3013)	(235.8363)	(144.9946)

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Table S.18 – continued from previous page

	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
d_y2004			-0.0048	0.8437**	208.4257	213.7200
			(0.0449)	(0.3674)	(288.0389)	(174.9526)
d_y2005			-0.0203	1.0296**	293.3327	239.4540
			(0.0556)	(0.4369)	(343.7920)	(208.1228)
d_y2006			-0.0172	1.2162**	368.0552	275.0646
			(0.0649)	(0.5033)	(395.8863)	(241.0492)
d_y2007			-0.0164	1.3988**	466.0036	308.0828
			(0.0750)	(0.5723)	(447.9135)	(275.3444)
d_y2008			-0.0346	1.5682**	558.6072	326.8093
			(0.0847)	(0.6428)	(501.5399)	(309.9391)
d_y2009			-0.0124	1.7273**	573.8484	379.8259
			(0.0951)	(0.7092)	(558.5416)	(343.9877)
d_y2010			-0.0414	1.8996**	658.0239	400.9781
			(0.1041)	(0.7763)	(612.3930)	(377.9615)
lin_calend_year|trend>3	0.0215**	-0.0131				
	(0.0104)	(0.0097)				
lin_calend_year|trend>6	-0.0001	0.0050				
	(0.0068)	(0.0063)				
lin_calend_year|trend>9	-0.0015	-0.0057				
	(0.0065)	(0.0059)				
d_province2	0.0117	0.0014	-0.0566*	-0.0049	74.7160	-28.7352
	(0.0176)	(0.0169)	(0.0309)	(0.1011)	(73.5696)	(28.2519)
d_province3	-0.0345	0.0458	-0.0194	0.0624	13.5300	43.8943
	(0.0274)	(0.0288)	(0.0336)	(0.0597)	(83.0897)	(45.6237)
d_province4	-0.0306*	0.0248	-0.0288	0.0980*	35.6973	57.3384
	(0.0169)	(0.0151)	(0.0218)	(0.0530)	(81.6450)	(41.3521)
d_province5	-0.0196	0.0208	0.0297	-0.0290	-32.0965	7.4747
	(0.0141)	(0.0138)	(0.0231)	(0.0694)	(101.3922)	(45.8290)
lin_calend_year_province2			0.0042	0.0029	-3.2237	1.7653
			(0.0027)	(0.0102)	(8.8182)	(3.8674)
lin_calend_year_province3			-0.0040	-0.0082	-3.8914	-2.3396
			(0.0036)	(0.0064)	(11.0287)	(5.0573)
lin_calend_year_province4			0.0032	-0.0121**	-2.8661	-7.6270*
			(0.0028)	(0.0057)	(8.5770)	(3.8364)
lin_calend_year_province5			-0.0061**	0.0016	1.7957	-1.0461
			(0.0026)	(0.0071)	(11.7184)	(5.4416)
Observations	482		646		646	
Amemiya-Nold test†	-0.00243	-0.00211	-0.00035	-0.00231	-5238.837	-1361.398
R-squared	0.9951		0.9999		0.9958	

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Table S.18 – continued from previous page

	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (4) in Section 5.2 of the main text by OLS on mentioned outcomes. This is the second step regression of the two-step approach described in detail in Section 5.2 of the main text, where this second step is estimated by OLS. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this second step is estimated from a OLS SUR on the first two outcomes in the sum. Effects on the third outcome (the sum) are then obtained from the adding-up constraints. Standard errors are clustered at graduation time-province (gp) level. The dependent variables of the second step are the cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ estimated in each corresponding first step regression, given by Eq. (3) in Section 5.2 of the main text. The covariates of the second step are described below (in order): $URate\_grad$ is the unemployment rate at graduation u_{gp}. $URate\_grad * lin\_exp$ is an interaction between u_{gp} and a linear trend in experience. $URate\_grad * lin\_exp|exp > 3$ is u_{gp} interacted with a linear trend in experience that starts from exp>3. More in general, variables $URate\_grad * lin\_exp$-$URate\_grad * lin\_exp|exp > 6$ specify the linear spline in potential experience $f_g(e)$ that multiplies the provincial unemployment rate at graduation u_{gp}. The slope of the spline changes at experience 3 and 6 for high educated, as explained in Eq. (2) in Section 5.1 of the main text. Variables $URate\_grad * lin\_exp * upturn$-$URate\_grad * lin\_exp|exp > 6 * upturn$ are triple interactions of u_{gp} with $f_{gu}(e)$ and a dummy=1 if graduation occurs in an upturn. They allows u_{gp} to have a different effect over experience in upturn/downturn. d_exp1-d_exp10 are experience FE. Since they define constant-terms for each experience level, the constant is omitted in the specification. $current\_URate * lin\_exp$-$current\_URate * lin\_exp|exp > 6$ are interactions between the current unemployment rate u_{tp} with $f_t(e)$. Variables lin_grad_year-$lin\_grad\_year|trend > 6$ is the spline for the graduation year $f_0(g)$. d_y2000-d_y2010 are calendar year FE for the period 1998-2010. Identification requires dropping both year 1998 and 1999: the first is the reference FE, while the second has to be dropped because of the following accounting identity: $calend\_year = exp + grad\_year$. In this choice of dropping a second calendar year we followed Oreopoulos et al. (2012). Calendar year is alternatively specified with a spline, by means of variables $lin\_calend\_year|trend > 3$-$lin\_calend\_year|trend > 9$, where the first term of the spline is omitted because of the aforementioned accounting identity. $d\_province2$-$d\_province5$ are province FE (province 1 is the reference). $lin\_calend\_year * d\_province2$-$lin\_calend\_year * d\_province5$ are province-specific linear time trends. Depending on the outcome, we impose restrictions which cannot be jointly rejected at the 5% level, as follows: the effect of u_{gp} is restricted to be symmetric in upturn and downturn (for salaried and self-employment, log hourly wage, part-time hours worked); the effect of u_{tp} is set to be zero (for salaried and self-employment, log hourly wage, log hours worked, part-time hours worked); calendar year FE are specified with a spline (for salaried and self-employment); provincial time trends are set to be zero (for salaried and self-employment).
† The Amemiya-Nold test is an estimate of the variance of the cluster-time errors e_{gpt}, described in Eq. (5) in Section 5.2 of the main text. A negative statistics is evidence that the unobserved cluster-time shocks are indeed zero. Accordingly, one can implement the FGLS procedure as in Wooldridge (2006, 2010).

Table S.19: Second Step FGLS Estimation: High Educated

Outcomes:	discrete		continuous			
	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
URate_grad	-0.0258	0.0087	-0.0184	-0.0565***	-132.7637***	31.0621**
	(0.0183)	(0.0165)	(0.0114)	(0.0207)	(28.4491)	(13.0104)
URate_grad*lin_exp	0.0096*	-0.0076*	-0.0046*	0.0214***	50.7776***	-7.7613*
	(0.0052)	(0.0045)	(0.0024)	(0.0067)	(8.1339)	(4.3468)
URate_grad*lin_exp|exp>3	-0.0089	0.0104*	0.0042	-0.0248***	-63.7346***	10.0000**
	(0.0061)	(0.0055)	(0.0031)	(0.0071)	(8.7159)	(4.9163)
URate_grad*lin_exp|exp>6	-0.0041	-0.0001	-0.0023	0.0046	20.5970**	-2.1085
	(0.0039)	(0.0038)	(0.0021)	(0.0066)	(8.5333)	(1.2834)
URate_grad*lin_exp*upturn				-0.0090**	-13.0287**	
				(0.0044)	(4.8606)	
URate_grad*lin_exp|exp>3*upturn				0.0186***	21.0758**	
				(0.0067)	(8.0703)	
URate_grad*lin_exp|exp>6*upturn				-0.0136**	-12.9939*	
				(0.0066)	(6.7360)	
d_exp1	0.9697***	0.0308	2.3992***	7.4988***	1,709.5018***	141.1729***
	(0.0568)	(0.0557)	(0.0334)	(0.0572)	(101.9240)	(31.5225)
d_exp2	0.9408***	0.0574	2.4429***	7.5401***	1,905.9920***	64.8359***
	(0.0553)	(0.0543)	(0.0333)	(0.0388)	(74.3620)	(21.5103)
d_exp3	0.9331***	0.0648	2.4848***	7.5086***	1,937.7451***	43.0083**

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Table S.19 – continued from previous page

	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
	(0.0540)	(0.0533)	(0.0334)	(0.0326)	(69.4179)	(20.7862)
d_exp4	0.9258***	0.0763	2.5181***	7.4682***	1,955.6993***	35.3342
	(0.0538)	(0.0532)	(0.0353)	(0.0502)	(95.3896)	(31.1004)
d_exp5	0.9079***	0.0945*	2.5499***	7.4050***	1,938.0647***	24.3331
	(0.0543)	(0.0535)	(0.0384)	(0.0764)	(136.8705)	(46.1787)
d_exp6	0.8982***	0.1083*	2.5708***	7.3546***	1,941.3592***	7.7160
	(0.0562)	(0.0554)	(0.0432)	(0.1034)	(183.4455)	(63.8553)
d_exp7	0.8877***	0.1167**	2.5894***	7.3062***	1,937.0128***	3.6514
	(0.0589)	(0.0579)	(0.0479)	(0.1339)	(230.4968)	(80.2243)
d_exp8	0.8613***	0.1369**	2.6090***	7.2465***	1,907.5481***	0.4558
	(0.0627)	(0.0613)	(0.0539)	(0.1630)	(281.2384)	(98.1468)
d_exp9	0.8377***	0.1579**	2.6192***	7.1994***	1,891.2816***	2.2098
	(0.0671)	(0.0653)	(0.0598)	(0.1911)	(330.2644)	(115.9887)
d_exp10	0.8150***	0.1707**	2.6230***	7.1421***	1,852.2196***	6.1605
	(0.0729)	(0.0709)	(0.0673)	(0.2196)	(381.8000)	(133.9872)
current_URate*lin_exp					-7.9607***	
					(2.4082)	
current_URate*lin_exp|exp>3					19.0362***	
					(4.8666)	
current_URate*lin_exp|exp>6					-13.7122***	
					(4.8368)	
lin_grad_year	-0.0169	0.0116	0.0353***	-0.0628**	-22.8865	-2.8056
	(0.0194)	(0.0191)	(0.0103)	(0.0306)	(53.1461)	(19.2831)
lin_grad_year|trend>3	-0.0042	0.0060	-0.0109	0.0256**	-6.0510	14.6038
	(0.0221)	(0.0221)	(0.0133)	(0.0122)	(25.7994)	(11.0858)
lin_grad_year|trend>6	-0.0362	0.0392	0.0104	0.0366**	80.7248**	-51.1515***
	(0.0284)	(0.0284)	(0.0109)	(0.0143)	(35.2520)	(15.2233)
d_y2000			0.0165*	0.0610	-26.6306	-9.5551
			(0.0093)	(0.0403)	(63.6992)	(26.7663)
d_y2001			0.0347*	0.1076	-33.6986	1.0926
			(0.0180)	(0.0690)	(118.5847)	(43.9962)
d_y2002			0.0544**	0.1799*	-6.4181	12.6021
			(0.0245)	(0.0998)	(168.1877)	(60.9035)
d_y2003			0.1253***	0.1695	-91.7889	33.3459
			(0.0322)	(0.1310)	(220.8156)	(79.5331)
d_y2004			0.1289***	0.2448	-70.6336	40.0388
			(0.0382)	(0.1595)	(271.2868)	(96.7843)
d_y2005			0.1344***	0.3112	-78.1185	43.9727
			(0.0458)	(0.1897)	(320.7529)	(115.4804)
d_y2006			0.1587***	0.3620	-60.0532	47.7650
			(0.0534)	(0.2216)	(372.7299)	(133.7550)
d_y2007			0.1873***	0.4257	-13.9987	46.8146
			(0.0607)	(0.2525)	(425.3406)	(152.0748)
d_y2008			0.1917***	0.4870*	14.9304	49.7238
			(0.0688)	(0.2821)	(476.3703)	(170.3990)
d_y2009			0.2328***	0.5344*	12.3347	61.1454
			(0.0772)	(0.3120)	(529.1195)	(188.3118)
d_y2010			0.2285**	0.5976*	40.1475	69.7336
			(0.0843)	(0.3412)	(581.2636)	(207.3524)
lin_calend_year|trend>3	0.0096	-0.0079				
	(0.0093)	(0.0081)				
lin_calend_year|trend>6	-0.0006	0.0044				
	(0.0050)	(0.0044)				
lin_calend_year|trend>9	0.0032	-0.0068*				
	(0.0041)	(0.0040)				
d_province2	0.0302	-0.0306	-0.0594*	0.0563	116.7313**	-36.1011**
	(0.0260)	(0.0260)	(0.0345)	(0.0390)	(51.7205)	(15.2201)

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Table S.19 – continued from previous page

	salaried	self-empl.	log wage	log hours	FT hours	PT hours
	(1)	(2)	(3)	(4)	(5)	(6)
d_province3	-0.0221	0.0208	-0.0293	0.0256	-32.9023	-10.5819
	(0.0280)	(0.0280)	(0.0217)	(0.0351)	(60.0183)	(16.2143)
d_province4	0.0016	-0.0023	-0.0053	0.0567	157.2709***	-39.6587**
	(0.0206)	(0.0205)	(0.0208)	(0.0369)	(56.3724)	(15.3425)
d_province5	-0.0184	0.0186	0.0081	0.0642*	83.7151	-14.2460
	(0.0279)	(0.0278)	(0.0237)	(0.0343)	(56.5859)	(17.6747)
lin_calend_year_province2			0.0009	-0.0055	-11.1725*	4.3444**
			(0.0035)	(0.0037)	(5.5786)	(2.0338)
lin_calend_year_province3			-0.0072***	-0.0024	7.9390	-1.8570
			(0.0025)	(0.0033)	(5.9834)	(1.8436)
lin_calend_year_province4			0.0013	-0.0045	-10.7012*	0.8637
			(0.0030)	(0.0037)	(5.6221)	(1.6140)
lin_calend_year_province5			-0.0034	-0.0042	0.5409	-3.3208*
			(0.0028)	(0.0035)	(5.3448)	(1.7501)
R-squared	1.0000		0.9999		0.9988	
WSSR (2nd step)	271.55829		1084.3865		1058.984	
Obs (2nd step)	310		646		646	
Parameters (2nd step)	48		75		78	
Test joint signif. all imposed restr.(P-val)	0.494		0.309		0.390	
P-value of chi2 test	0.3293804		2.89E-34		4.48E-32	
cluster (at which level)	no	no	g*p	g*p	g*p	g*p
Imposed Restrictions:						
effect URate at grad. symmetric up/downturn	yes	yes	yes	no	no	yes
effect Current Urate over exp=0	yes	yes	yes	yes	no	yes
spline for calendar year FE	yes	yes	no	no	no	no
effect prov-time trends=0	yes	yes	no	no	no	no

Significance level: *** p<0.01, ** p<0.05, * p<0.1. Standard errors between parentheses. The table reports the results from estimating Eq. (4) in Section 5.2 of the main text by FGLS on mentioned outcomes. This is the second step regression of the two-step FGLS approach described in detail in Section 5.2 of the main text. Since the outcomes satisfy adding-up constraints (salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked), this second step is estimated from a FGLS SUR on the first two outcomes in the sum. Effects on the third outcome (the sum) are then obtained from the adding-up constraints. The dependent variables of the second step are the cluster-time fixed effects (FE) $\hat{\mu}_{gpt}$ estimated in each corresponding first step regression, given by Eq. (3) in Section 5.2 of the main text. A description of the covariates reported in the Table is in the footnote of Table S.18 above. In this FGLS SUR, the data are weighted by the inverse of the cluster-robust variance matrix of $\hat{\mu}_{gpt}$ estimated in the first step. For discrete outcomes, the Moore-Penrose generalized inverse of this matrix is used as weight, to take into account the perfect serial correlation induced by the fact that, for specific clusters, the outcomes do not vary over time (see Section 5.2 of the main text for details). Depending on the outcome, we impose restrictions which cannot be jointly rejected at the 5% level: these restrictions are listed in the bottom panel of the table. If the χ^2 goodness-of-fit statistic rejects the model (P-value>0.05), standard errors clustered at the *gp* level are reported; otherwise conventional ones. For completeness we report also the weighted sum of squared residuals (WSSR), the number of estimated parameters and the number of observations, which are used to compute the χ^2 test.

S.8 The Effects of the Control Variables in the First Step

This section discusses briefly the estimated effects of the control variables in the first step estimation, which are reported in Table S.14 and S.17 for low and high educated, respectively.

- *Household composition*: For both low and high educated, a higher number of young household members (aged less than 11 when the individual was aged 17) is associated with lower hours worked in full-time employment, on average. These individuals may allocate more time in household activities or leisure because of particular preferences or time constraints due to the presence of younger members in the household.

- *Parental education*: (i) For low educated, mother and father education are both negatively associated with hours worked (and full-time hours worked) and positively related with part-time hours worked. For high educated the same relationship holds for mother education. This may capture the effect of unobserved liquidity constraints on time worked, so that less constrained individuals - associated with higher parental education - work more (less) hours in part-time (full-time) jobs, and overall less hours in salaried employment. In the same spirit, low educated individuals with low educated mothers are also more likely to opt for salaried employment - which provides an expected stable income under long-term contracts - while they are more likely to engage in (riskier) self-employment if their mothers are high educated. (ii) In addition, for high educated, father education is positively associated with hourly wages. This is a standard result: father education may indicate family connections; or, it can be a proxy for (not observed) father earnings or family wealth, thereby reflecting better initial conditions or particular values shared in the family (i.e. ambitions). For low educated, this relation is not significant. This suggests that family background is more important predictor of individual wages for high than for low educated.[13]

- *Delay in secondary education at age 17*: For low educated, the number grades repeated at age 17 has a negative effect on self-employment, wages, hours worked and full-time hours worked, while a positive effect on part-time hours worked. For high educated, it has a negative impact on wages, hours worked and full-time hours worked. The signs of the effects are expected: students that already repeated a grade at age 17 are likely to be negatively selected from the population of students and therefore have, on average, worse labor market performances.

- *Educational track compared to general education*: For low educated, choosing a technical track at age 17 is associated with higher wages and more hours worked, especially in full-

[13]Parents with higher education levels have children with higher education level (Black et al., 2005). As a matter of fact, the correlation between completed education and father education is larger for high (0.2054) than for low educated (0.0768). The same correlation for mother education is similar - still positive, but slightly smaller: 0.1808 and 0.0665 for high and low educated, respectively.

time jobs, compared to general education. Therefore, for this group technical education is the most profitable track. For high educated instead general education is associated with better labor market performances than the other options. This result is also standard, since general education is the typical choice for those who want to access tertiary education.

- *Birth cohort 1978 and 1980 compared to 1976*: For both high and low educated, cohort 1978 and 1980 are associated with lower wages than cohort 1976. This is explained by the sample selection, in particular by the fact that labor market outcomes are observed from 1998 onwards, while for cohort 1976 and 1978 graduation can occur earlier, i.e. as from 1994 and 1996 respectively (at age 18, i.e. the end of compulsory education). Consequently, cohort 1976 (1978) is under-represented at potential experience 1-4 (1-2) compared to cohort 1980, since these years of experience are not observed for those born in 1976 (1978) who graduated before age 23 (21).[14] The tabulations below show that labor market outcomes of cohort 1976 and 1978 are under-represented in the first years of experience and over-represented in the last years of experience. Given that wages increase with tenure and seniority, this may explain the negative correlation between wage and birth cohort.

In what calendar year is experience 1 observed?

	all				low educated			high educated		
year	c1976	c1978	c1980	Total	c1976	c1978	c1980	c1976	c1978	c1980
1998	154	240	0	394	71	216	0	83	24	0
1999	185	203	187	575	22	177	187	163	26	0
2000	191	137	242	570	13	61	225	178	76	17
2001	115	163	163	441	2	20	142	113	143	21
2002	0	153	154	307	0	5	75	0	148	79
2003	0	138	142	280				0	138	142
2004	0	0	172	172				0	0	172
2005	0	0	106	106				0	0	106
Total	645	1,034	1,166	2,845	108	479	629	537	555	537

[14]For someone born in 1976 (1978) who graduated at age 23 (21), graduation occurs in 1997 and the first year of potential experience is observed, as it occurs in 1998.

In what calendar year is experience 10 observed?										
	all				low educated			high educated		
year	c1976	c1978	c1980	Total	c1976	c1978	c1980	c1976	c1978	c1980
2004	143	0	0	143	143	0	0	83	24	0
2005	209	0	0	209	209	0	0	159	26	0
2006	168	148	0	316	168	148	0	173	76	17
2007	154	238	0	392	71	214	0	111	142	20
2008	181	198	186	565	22	172	186			
2009	185	137	241	563	12	61	224			
2010	113	161	159	433	2	19	139			
Total	1,153	882	586	2,621	627	614	549	526	268	37

In addition, for low educated cohort 1978 and 1980 are associated with less hours worked (and less hours worked in full-time jobs) than cohort 1976; cohort 1980 is also associated with more hours worked in part-time jobs than cohort 1976. For high educated instead, cohort 1980 has lower (higher) probability to be self- (salaried) employed than cohort 1976. We do not have an explanation for these correlations.

S.9 Tables of the Sensitivity Analysis

Table S.20: Individual Discrete Labor Market Outcomes: Low Educated

		sensitivity tests:				
	baseline	education[†]	national[§]	probit[‡]	2nd-step OLS	one-step
Imposed Restrictions:[§§]						
Effect URate at grad. symmetric up/downturn	yes	yes	-	yes	yes	yes
Effect Current Urate over exp=0	yes	yes	yes	yes	yes	yes
Spline for calendar year FE	yes	yes	-	yes	yes	yes
Effect prov-time trends=0	yes	yes	yes	yes	yes	yes
Level of clustering[††]	no	no	no	no	$g*p$	$g*p$
Salaried employment						
potential exp	(1)	(2)	(3)	(4)	(5)	(6)
1	-0.017	-0.016	0.004	0.000	0.001	-0.006
	(0.018)	(0.018)	(0.020)	(0.023)	(0.020)	(0.021)
2	-0.011	-0.008	-0.001	0.009	0.014	0.005
	(0.015)	(0.015)	(0.020)	(0.021)	(0.017)	(0.017)
3	-0.005	0.000	-0.007	0.017	0.027	0.017
	(0.015)	(0.015)	(0.020)	(0.018)	(0.015)	(0.015)
4	-0.002	0.003	-0.011	0.018	0.024	0.014
	(0.015)	(0.014)	(0.019)	(0.017)	(0.014)	(0.014)
5	0.000	0.006	-0.014	0.019	0.021	0.011
	(0.014)	(0.014)	(0.020)	(0.017)	(0.014)	(0.014)
6	0.002	0.009	-0.018	0.018	0.018	0.009
	(0.015)	(0.015)	(0.021)	(0.017)	(0.015)	(0.015)
7	0.002	0.007	-0.010	0.018	0.015	0.007
	(0.014)	(0.014)	(0.020)	(0.016)	(0.013)	(0.013)
8	0.002	0.005	-0.003	0.016	0.013	0.005
	(0.014)	(0.014)	(0.021)	(0.016)	(0.012)	(0.013)
9	0.002	0.003	0.005	0.013	0.010	0.003
	(0.015)	(0.015)	(0.022)	(0.014)	(0.012)	(0.013)
10	0.003	0.005	0.013	0.014	0.014	0.007
	(0.015)	(0.014)	(0.022)	(0.013)	(0.010)	(0.011)
11	0.004	0.007	0.020	0.019	0.018	0.011
	(0.015)	(0.015)	(0.024)	(0.016)	(0.009)	(0.010)
12	0.006	0.009	0.027	0.019	0.021	0.015
	(0.015)	(0.015)	(0.028)	(0.015)	(0.010)	(0.011)
Self-employment						
1	0.036	0.048	0.015	0.021	0.017	0.025
	(0.018)	(0.018)	(0.016)	(0.031)	(0.019)	(0.019)
2	0.021	0.024	0.022	0.006	0.001	0.008
	(0.015)	(0.014)	(0.016)	(0.026)	(0.016)	(0.016)
3	0.007	0.001	0.028	-0.008	-0.015	-0.010
	(0.015)	(0.015)	(0.017)	(0.022)	(0.015)	(0.014)
4	0.001	-0.004	0.024	-0.016	-0.018	-0.011
	(0.014)	(0.014)	(0.017)	(0.021)	(0.014)	(0.014)
5	-0.005	-0.009	0.020	-0.024	-0.021	-0.013
	(0.014)	(0.014)	(0.017)	(0.022)	(0.015)	(0.014)
6	-0.010	-0.013	0.015	-0.029	-0.024	-0.015
	(0.014)	(0.014)	(0.018)	(0.021)	(0.016)	(0.016)
7	-0.009	-0.011	0.012	-0.026	-0.021	-0.014
	(0.014)	(0.013)	(0.018)	(0.020)	(0.014)	(0.014)
8	-0.007	-0.009	0.008	-0.021	-0.019	-0.013
	(0.014)	(0.013)	(0.018)	(0.020)	(0.012)	(0.013)
9	-0.005	-0.006	0.004	-0.014	-0.017	-0.012
	(0.014)	(0.014)	(0.019)	(0.017)	(0.011)	(0.012)
10	-0.009	-0.011	-0.002	-0.017	-0.020	-0.014

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Table S.20 – continued from previous page

		sensitivity tests:				
Potential experience	baseline (1)	education† (2)	national§ (3)	probit‡ (4)	2nd-step OLS (5)	one-step (6)
	(0.014)	(0.014)	(0.020)	(0.017)	(0.009)	(0.011)
11	-0.013	-0.015	-0.008	-0.024	-0.023	-0.017
	(0.014)	(0.014)	(0.022)	(0.021)	(0.009)	(0.010)
12	-0.017	-0.019	-0.014	-0.026	-0.026	-0.020
	(0.014)	(0.014)	(0.024)	(0.019)	(0.010)	(0.011)
Overall-employment						
1	0.018	0.031	0.019	0.021	0.018	0.018
	(0.015)	(0.015)	(0.014)	(0.023)	(0.008)	(0.006)
2	0.010	0.017	0.020	0.016	0.015	0.013
	(0.009)	(0.009)	(0.012)	(0.015)	(0.006)	(0.005)
3	0.002	0.002	0.021	0.009	0.012	0.007
	(0.009)	(0.009)	(0.012)	(0.012)	(0.007)	(0.007)
4	-0.001	0.000	0.013	0.002	0.006	0.003
	(0.007)	(0.007)	(0.011)	(0.010)	(0.006)	(0.006)
5	-0.005	-0.003	0.005	-0.005	0.000	-0.002
	(0.006)	(0.006)	(0.010)	(0.010)	(0.006)	(0.005)
6	-0.008	-0.005	-0.003	-0.011	-0.006	-0.006
	(0.008)	(0.007)	(0.011)	(0.011)	(0.007)	(0.006)
7	-0.007	-0.004	0.001	-0.008	-0.006	-0.007
	(0.006)	(0.006)	(0.010)	(0.009)	(0.006)	(0.006)
8	-0.005	-0.004	0.005	-0.004	-0.006	-0.008
	(0.005)	(0.005)	(0.010)	(0.008)	(0.006)	(0.006)
9	-0.004	-0.003	0.009	-0.001	-0.007	-0.009
	(0.006)	(0.006)	(0.011)	(0.008)	(0.007)	(0.007)
10	-0.006	-0.006	0.011	-0.003	-0.006	-0.007
	(0.005)	(0.005)	(0.011)	(0.007)	(0.005)	(0.005)
11	-0.009	-0.008	0.012	-0.005	-0.005	-0.006
	(0.006)	(0.005)	(0.013)	(0.009)	(0.004)	(0.004)
12	-0.011	-0.010	0.013	-0.007	-0.005	-0.005
	(0.007)	(0.007)	(0.016)	(0.009)	(0.004)	(0.004)

Standard errors between parentheses. Column 1 reports the point estimates of the benchmark model reported in Section 6.1 of the main text. Columns 2-6 report the following sensitivity tests (in order): including completed education fixed effects (FE) as individual control variables in the first step of the two-step approach; national model; estimating the first step by Probit rather than by a Linear Probability Model; estimating the second step by OLS rather than FGLS; estimating the model in a one-step rather than two-step approach. Results in Column 1-4 are obtained from the second step FGLS of the two-step approach procedure explained in the text; Column 5 is obtained from the second step OLS, i.e. neglecting the measurement error introduced by the two-step procedure. Column 6 is estimated in one step. For all columns, salaried and self-employment are estimated jointly by means of a SUR, and the effects of interest on the overall employment rate are obtained as a linear combination of the effects on the first two outcomes, exploiting the adding-up constraint: overall employment=salaried employment+self-employment.

†Completed education is measured as the number of years of education successfully attained from the beginning of secondary education, i.e. from age 12. Therefore, repeated grades are not included.

§In the national model cells need not be dropped, since cells are always sufficiently large (see selection rule in Table A.2 in Appendix A of the main text). In contrast, all other sensitivity analyses (Column 2,4-6), which are all based on the provincial model, rely on the same sub-sample retained for the benchmark and consider the same specification used in the benchmark; in the one-step approach (column 6), this specification is augmented by the individual control variables used in the first step.

‡The table reports the partial effects on the probability of employment for each year of potential experience, where the other aggregate regressors are evaluated at their sample mean.

§§The restrictions listed at the top of the table are imposed on both salaried and self-employment.

††Clustered (conventional) standard errors are reported if the model is (not) rejected on the basis of the χ^2 goodness-of-fit test at the 5% level. In contrast to all provincial models, in the national model the variance of unobserved cluster-time shocks, as calculated by Eq. (5) in the main text is strictly positive for salaried employment (see Section 5.2 of the main text for details). We therefore add the estimated variance of the cluster-time shocks to the diagonal of the variance matrix of the measurement error, and use the inverse of the resulting matrix as weight in the FGLS transformation.

Table S.21: Individual Continuous Labor Market Outcomes: Low Educated

		Sensitivity tests			
	baseline	education[†]	national[§]	2nd-step OLS	one-step
	log hourly wage				
Imposed Restrictions:					
Effect URate at grad. symmetric up/downturn	yes	yes	yes	yes	yes
Effect Current Urate over exp=0	no	no	-	no	no
Spline for calendar year FE	no	no	no	no	no
Effect prov-time trends=0	no	no	-	no	no
Level of clustering[††]	$g*p$	$g*p$	g	$g*p$	$g*p$
Potential experience	(1)	(2)	(3)	(4)	(5)
1	0.005	0.004	-0.008	-0.008	-0.004
	(0.013)	(0.013)	(0.017)	(0.014)	(0.010)
2	-0.001	-0.001	-0.005	-0.008	-0.007
	(0.010)	(0.011)	(0.015)	(0.011)	(0.008)
3	-0.006	-0.006	-0.002	-0.008	-0.010
	(0.009)	(0.010)	(0.015)	(0.010)	(0.008)
4	-0.008	-0.007	0.000	-0.009	-0.012
	(0.008)	(0.009)	(0.015)	(0.009)	(0.007)
5	-0.009	-0.008	0.003	-0.011	-0.014
	(0.008)	(0.008)	(0.015)	(0.008)	(0.006)
6	-0.011	-0.010	0.005	-0.013	-0.016
	(0.007)	(0.008)	(0.016)	(0.007)	(0.006)
7	-0.008	-0.008	0.004	-0.014	-0.015
	(0.007)	(0.008)	(0.016)	(0.007)	(0.005)
8	-0.006	-0.005	0.003	-0.015	-0.014
	(0.007)	(0.008)	(0.017)	(0.006)	(0.006)
9	-0.003	-0.003	0.002	-0.017	-0.014
	(0.008)	(0.009)	(0.017)	(0.007)	(0.006)
10	-0.006	-0.006	0.003	-0.017	-0.016
	(0.008)	(0.009)	(0.018)	(0.006)	(0.005)
11	-0.009	-0.009	0.004	-0.017	-0.018
	(0.009)	(0.009)	(0.019)	(0.007)	(0.005)
12	-0.012	-0.011	0.006	-0.018	-0.021
	(0.010)	(0.010)	(0.022)	(0.008)	(0.006)
	log hours worked				
Imposed Restrictions:[§§]					
Effect URate at grad. symmetric up/downturn	no	no	yes	no	no
Effect Current Urate over exp=0	no	no	-	no	no
Spline for calendar year FE	no	no	no	no	no
Effect prov-time trends=0	no	no	-	no	no
Level of clustering[††]	$g*p$	$g*p$	g	$g*p$	$g*p$
1	-0.044	-0.044	-0.067	-0.021	-0.024
	(0.022)	(0.022)	(0.049)	(0.029)	(0.025)
2	-0.035	-0.036	-0.045	-0.031	-0.033
	(0.020)	(0.019)	(0.043)	(0.024)	(0.022)
3	-0.026	-0.028	-0.023	-0.040	-0.041
	(0.022)	(0.021)	(0.044)	(0.032)	(0.029)
4	-0.026	-0.027	-0.021	-0.040	-0.038
	(0.019)	(0.018)	(0.040)	(0.029)	(0.026)
5	-0.026	-0.026	-0.019	-0.039	-0.035
	(0.016)	(0.015)	(0.037)	(0.026)	(0.023)
6	-0.025	-0.025	-0.017	-0.039	-0.031
	(0.014)	(0.013)	(0.035)	(0.024)	(0.021)
7	-0.025	-0.024	-0.014	-0.039	-0.028
	(0.012)	(0.012)	(0.034)	(0.022)	(0.019)
8	-0.025	-0.023	-0.012	-0.039	-0.025
	(0.012)	(0.012)	(0.035)	(0.022)	(0.019)

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Table S.21 – continued from previous page

		sensitivity tests:			
Potential experience	baseline (1)	education† (2)	national§ (3)	2nd-step OLS (4)	one-step (5)
9	-0.025	-0.021	-0.010	-0.038	-0.022
	(0.013)	(0.013)	(0.036)	(0.022)	(0.020)
10	-0.027	-0.023	-0.007	-0.037	-0.023
	(0.010)	(0.011)	(0.039)	(0.021)	(0.020)
11	-0.030	-0.026	-0.004	-0.036	-0.023
	(0.010)	(0.010)	(0.049)	(0.022)	(0.021)
12	-0.033	-0.028	-0.001	-0.035	-0.024
	(0.012)	(0.012)	(0.063)	(0.024)	(0.023)
	log earnings				
1	-0.039	-0.040	-0.075	-0.029	-0.028
	(0.026)	(0.026)	(0.052)	(0.034)	(0.029)
2	-0.036	-0.037	-0.050	-0.038	-0.040
	(0.023)	(0.021)	(0.046)	(0.028)	(0.025)
3	-0.033	-0.034	-0.025	-0.048	-0.051
	(0.022)	(0.021)	(0.048)	(0.032)	(0.030)
4	-0.034	-0.034	-0.021	-0.049	-0.050
	(0.019)	(0.019)	(0.045)	(0.029)	(0.027)
5	-0.035	-0.034	-0.016	-0.050	-0.048
	(0.017)	(0.017)	(0.043)	(0.027)	(0.024)
6	-0.036	-0.035	-0.011	-0.052	-0.047
	(0.015)	(0.015)	(0.041)	(0.025)	(0.022)
7	-0.033	-0.031	-0.010	-0.053	-0.043
	(0.014)	(0.015)	(0.040)	(0.023)	(0.021)
8	-0.031	-0.028	-0.009	-0.054	-0.039
	(0.014)	(0.016)	(0.040)	(0.023)	(0.021)
9	-0.028	-0.024	-0.008	-0.055	-0.035
	(0.016)	(0.017)	(0.042)	(0.024)	(0.022)
10	-0.033	-0.029	-0.004	-0.054	-0.039
	(0.014)	(0.016)	(0.044)	(0.022)	(0.021)
11	-0.039	-0.034	0.000	-0.054	-0.042
	(0.014)	(0.016)	(0.052)	(0.023)	(0.022)
12	-0.045	-0.039	0.004	-0.053	-0.045
	(0.017)	(0.018)	(0.065)	(0.024)	(0.024)

Standard errors between parentheses. Column 1 reports the point estimates of the benchmark model reported in Section 6.1 of the main text. Columns 2-5 report the following sensitivity tests (in order): including completed education fixed effects (FE) as individual control variables in the first step of the two-step approach; national model; estimating the second step by OLS rather than FGLS; estimating the model in a one-step rather than two-step approach. Results in Column 1-3 are obtained from the second step FGLS of the two-step approach procedure explained in the text; Column 4 is obtained from the second step OLS, i.e. neglecting the measurement error introduced by the two-step procedure. Column 5 is estimated in one step. For all columns, log hourly wage and log hours worked are estimated jointly by means of a SUR, and the effects of interest on the log earnings are obtained as a linear combination of the effects on the first two outcomes, exploiting the adding-up constraint: log earnings=log hourly wage+log hours worked.

†Completed education is measured as the number of years of education successfully attained from the beginning of secondary education, i.e. from age 12. Therefore, repeated grades are not included.

§In the national model cells need not be dropped, since cells are always sufficiently large (see selection rule in Table A.2 in Appendix A of the main text). In contrast, all other sensitivity analyses (Column 2,4-5), which are all based on the provincial model, rely on the same sub-sample retained for the benchmark and consider the same specification used in the benchmark; in the one-step approach (column 5), this specification is augmented by the individual control variables used in the first step.

††Clustered (conventional) standard errors are reported if the model is (not) rejected on the basis of the χ^2 test at the 5% level.

§§For log hours worked the following additional restriction (not mentioned in the table) is also imposed: $\beta_{g2} = 0$, i.e. the slope of the linear spline remains fixed after 6 years of experience. This restriction cannot be rejected.

Table S.22: Individual Discrete Labor Market Outcomes: High Educated

		sensitivity tests:				
	baseline	education[†]	national[§]	probit[‡]	2nd-step OLS	one-step
Imposed Restrictions:[§§]						
Effect URate at grad. symmetric up/downturn	yes	yes	yes	yes	yes	yes
Effect Current Urate over exp=0	yes	yes	-	yes	yes	yes
Spline for calendar year FE	yes	yes	yes	yes	yes	yes
Effect prov-time trends=0	yes	yes	-	yes	yes	yes
Level of clustering[††]	no	no	no	no	$g*p$	$g*p$
	Salaried employment					
Potential experience	(1)	(2)	(3)	(4)	(5)	(6)
1	-0.016	-0.021	-0.012	-0.011	-0.026	-0.021
	(0.015)	(0.015)	(0.013)	(0.023)	(0.014)	(0.013)
2	-0.006	-0.012	-0.010	0.001	-0.009	-0.007
	(0.013	(0.013	(0.011	(0.022	(0.011	(0.011)
3	0.003	-0.004	-0.009	0.012	0.008	0.008
	(0.014)	(0.013)	(0.013)	(0.019)	(0.010)	(0.011)
4	0.004	-0.003	-0.003	0.008	0.004	0.004
	(0.013)	(0.013)	(0.012)	(0.017)	(0.009)	(0.011)
5	0.005	-0.002	0.003	0.005	0.000	-0.001
	(0.013)	(0.013)	(0.012)	(0.019)	(0.009)	(0.012)
6	0.005	-0.002	0.009	0.002	-0.004	-0.005
	(0.014)	(0.013)	(0.013)	(0.022)	(0.011)	(0.014)
7	0.002	-0.004	0.000	0.000	-0.002	-0.004
	(0.013)	(0.013)	(0.012)	(0.016)	(0.009)	(0.013)
8	-0.001	-0.005	-0.009	-0.001	0.000	-0.003
	(0.014)	(0.013)	(0.012)	(0.017)	(0.010)	(0.013)
9	-0.005	-0.007	-0.018	-0.002	0.002	-0.003
	(0.014)	(0.013)	(0.014)	(0.016)	(0.012)	(0.015)
10	-0.008	-0.009	-0.027	-0.003	0.004	-0.002
	(0.015)	(0.014)	(0.016)	(0.015)	(0.014)	(0.017)
	self-employment					
1	0.001	0.007	0.007	-0.013	0.021	0.017
	(0.014)	(0.014)	(0.009)	(0.026)	(0.015)	(0.015)
2	-0.007	-0.001	0.005	-0.020	0.006	0.007
	(0.013)	(0.013)	(0.009)	(0.023)	(0.011)	(0.012)
3	-0.014	-0.008	0.003	-0.025	-0.008	-0.003
	(0.014)	(0.013)	(0.010)	(0.021)	(0.011)	(0.011)
4	-0.011	-0.005	0.002	-0.018	-0.003	0.002
	(0.013)	(0.013)	(0.010)	(0.019)	(0.010)	(0.011)
5	-0.009	-0.002	0.002	-0.014	0.003	0.006
	(0.013)	(0.013)	(0.010)	(0.021)	(0.010)	(0.012)
6	-0.006	0.001	0.001	-0.010	0.008	0.011
	(0.014)	(0.013)	(0.011)	(0.023)	(0.010)	(0.013)
7	-0.003	0.002	0.008	-0.006	0.005	0.010
	(0.013)	(0.013)	(0.011)	(0.018)	(0.009)	(0.012)
8	0.000	0.003	0.016	-0.004	0.002	0.008
	(0.014)	(0.013)	(0.011)	(0.019)	(0.009)	(0.012)
9	0.002	0.004	0.023	-0.002	-0.001	0.006
	(0.014)	(0.013)	(0.012)	(0.018)	(0.011)	(0.013)
10	0.005	0.005	0.031	0.001	-0.004	0.004
	(0.015)	(0.015)	(0.013)	(0.017)	(0.013)	(0.015)
	overall employment					
1	-0.015	-0.014	-0.005	-0.025	-0.005	-0.004
	(0.006)	(0.006)	(0.009)	(0.011)	(0.008)	(0.008)
2	-0.013	-0.013	-0.005	-0.020	-0.002	0.000
	(0.004)	(0.004)	(0.007)	(0.006)	(0.006)	(0.005)

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Table S.22 – continued from previous page

		sensitivity tests:				
	baseline	education†	national§	probit‡	2nd-step OLS	one-step
Potential experience	(1)	(2)	(3)	(4)	(5)	(6)
3	-0.011	-0.012	-0.005	-0.013	0.000	0.004
	(0.004)	(0.004)	(0.008)	(0.006)	(0.006)	(0.006)
4	-0.007	-0.008	0.000	-0.010	0.002	0.005
	(0.003)	(0.003)	(0.006)	(0.004)	(0.005)	(0.005)
5	-0.004	-0.004	0.005	-0.009	0.003	0.006
	(0.002)	(0.002)	(0.006)	(0.003)	(0.004)	(0.004)
6	0.000	-0.001	0.010	-0.008	0.004	0.007
	(0.003)	(0.003)	(0.008)	(0.005)	(0.004)	(0.004)
7	-0.001	-0.002	0.008	-0.006	0.003	0.006
	(0.002)	(0.002)	(0.006)	(0.003)	(0.004)	(0.004)
8	-0.002	-0.002	0.007	-0.005	0.002	0.004
	(0.002)	(0.002)	(0.006)	(0.003)	(0.004)	(0.004)
9	-0.002	-0.003	0.006	-0.004	0.001	0.003
	(0.003)	(0.003)	(0.007)	(0.004)	(0.004)	(0.004)
10	-0.003	-0.004	0.004	-0.003	0.000	0.002
	(0.005)	(0.005)	(0.010)	(0.005)	(0.004)	(0.004)

Standard errors between parentheses. Column 1 reports the point estimates of the benchmark model reported in Section 6.2 of the main text. Columns 2-6 report the following sensitivity tests (in order): including completed education fixed effects (FE) as individual control variables in the first step of the two-step approach; national model; estimating the first step by Probit rather than by a Linear Probability Model; estimating the second step by OLS rather than FGLS; estimating the model in a one-step rather than two-step approach. Results in Column 1-4 are obtained from the second step FGLS of the two-step approach procedure explained in the text; Column 5 is obtained from the second step OLS, i.e. neglecting the measurement error introduced by the two-step procedure. Column 6 is estimated in one step. For all columns, salaried and self-employment are estimated jointly by means of a SUR, and the effects of interest on the overall employment rate are obtained as a linear combination of the effects on the first two outcomes, exploiting the adding-up constraint: overall employment=salaried employment+self-employment.

†Completed education is measured as the number of years of education successfully attained from the beginning of secondary education, i.e. from age 12. Therefore, repeated grades are not included.

§In the national model cells need not be dropped, since cells are always sufficiently large (see selection rule in Table A.2 in Appendix A of the main text). In contrast, all other sensitivity analyses (Column 2,4-6), which are all based on the provincial model, rely on the same sub-sample retained for the benchmark and consider the same specification used in the benchmark; in the one-step approach (column 6), this specification is augmented by the individual control variables used in the first step.

‡The table reports the partial effects on the probability of employment for each year of potential experience, where the other aggregate regressors are evaluated at their sample mean.

§§The restrictions listed at the top of the table are imposed on both salaried and self-employment.

††Clustered (conventional) standard errors are reported if the model is (not) rejected on the basis of the χ^2 goodness-of-fit test at the 5% level. In contrast to all provincial models, in the national model the variance of unobserved cluster-time shocks, as calculated by Eq. (5) in the main text is strictly positive for salaried employment (see Section 5.2 for details). We therefore add the estimated variance of the cluster-time shocks to the diagonal of the variance matrix of the measurement error, and use the inverse of the resulting matrix as weight in the FGLS transformation.

Table S.23: Individual Continuous Labor Market Outcomes: High educated

		Sensitivity tests			
	baseline	education†	national§	2nd-step OLS	one-step
	log hourly wage				
Imposed Restrictions:					
Effect URate at grad. symmetric up/downturn	yes	yes	yes	yes	yes
Effect Current Urate over exp=0	yes	yes	-	yes	yes
Spline for calendar year FE	no	no	no	no	no
Effect prov-time trends=0	no	no	-	no	no
Level of clustering††	$g*p$	$g*p$	g	$g*p$	$g*p$
Potential experience	(1)	(2)	(3)	(4)	(5)
1	-0.023	-0.019	-0.013	-0.011	-0.009

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Table S.23 – continued from previous page

Potential experience	baseline (1)	sensitivity tests: education† (2)	national§ (3)	2nd-step OLS (4)	one-step (5)
	(0.010)	(0.009)	(0.011)	(0.009)	(0.008)
2	-0.028	-0.023	-0.022	-0.014	-0.013
	(0.009)	(0.009)	(0.010)	(0.008)	(0.007)
3	-0.032	-0.027	-0.031	-0.017	-0.017
	(0.009)	(0.009)	(0.010)	(0.008)	(0.007)
4	-0.033	-0.027	-0.023	-0.016	-0.016
	(0.008)	(0.009)	(0.014)	(0.007)	(0.007)
5	-0.033	-0.026	-0.015	-0.014	-0.014
	(0.008)	(0.009)	(0.018)	(0.008)	(0.007)
6	-0.033	-0.026	-0.007	-0.013	-0.012
	(0.009)	(0.009)	(0.022)	(0.008)	(0.008)
7	-0.036	-0.028	-0.008	-0.010	-0.010
	(0.009)	(0.010)	(0.020)	(0.009)	(0.009)
8	-0.039	-0.029	-0.010	-0.007	-0.007
	(0.010)	(0.010)	(0.018)	(0.010)	(0.010)
9	-0.042	-0.031	-0.012	-0.004	-0.004
	(0.010)	(0.011)	(0.017)	(0.012)	(0.012)
10	-0.044	-0.032	-0.013	-0.001	-0.001
	(0.011)	(0.012)	(0.015)	(0.014)	(0.014)
	log hours worked				
Imposed Restrictions:					
Effect URate at grad. symmetric up/downturn	no	no	yes	no	no
Effect Current Urate over exp=0	yes	yes	-	yes	yes
Spline for calendar year FE	no	no	no	no	no
Effect prov-time trends=0	no	no	-	no	no
Level of clustering††	$g*p$	$g*p$	g	$g*p$	$g*p$
1	-0.035	-0.025	-0.120	-0.052	-0.055
	(0.015)	(0.014)	(0.035)	(0.039)	(0.035)
2	-0.014	-0.007	-0.049	-0.021	-0.026
	(0.011)	(0.010)	(0.027)	(0.028)	(0.024)
3	0.008	0.012	0.023	0.010	0.004
	(0.009)	(0.010)	(0.027)	(0.024)	(0.020)
4	0.004	0.009	0.019	0.019	0.014
	(0.009)	(0.009)	(0.019)	(0.018)	(0.015)
5	0.001	0.005	0.014	0.028	0.025
	(0.009)	(0.009)	(0.013)	(0.015)	(0.012)
6	-0.003	0.002	0.010	0.038	0.035
	(0.011)	(0.011)	(0.010)	(0.014)	(0.013)
7	-0.002	0.003	-0.005	0.025	0.020
	(0.009)	(0.009)	(0.009)	(0.013)	(0.012)
8	-0.001	0.005	-0.020	0.012	0.004
	(0.008)	(0.008)	(0.011)	(0.014)	(0.013)
9	0.001	0.006	-0.035	-0.001	-0.011
	(0.009)	(0.009)	(0.015)	(0.016)	(0.015)
10	0.002	0.007	-0.050	-0.014	-0.027
	(0.011)	(0.012)	(0.019)	(0.020)	(0.017)
	log earnings				
1	-0.058	-0.044	-0.133	-0.064	-0.065
	(0.019)	(0.018)	(0.034)	(0.038)	(0.036)
2	-0.041	-0.029	-0.071	-0.035	-0.039
	(0.015)	(0.014)	(0.027)	(0.028)	(0.025)
3	-0.025	-0.015	-0.008	-0.007	-0.013
	(0.013)	(0.014)	(0.026)	(0.024)	(0.021)
4	-0.029	-0.018	-0.004	0.003	-0.001
	(0.012)	(0.013)	(0.021)	(0.020)	(0.017)

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Table S.23 – continued from previous page

		sensitivity tests:			
Potential experience	baseline (1)	education† (2)	national§ (3)	2nd-step OLS (4)	one-step (5)
5	-0.032	-0.021	-0.001	0.014	0.011
	(0.013)	(0.013)	(0.021)	(0.017)	(0.016)
6	-0.036	-0.024	0.003	0.025	0.023
	(0.014)	(0.014)	(0.026)	(0.018)	(0.017)
7	-0.038	-0.024	-0.013	0.014	0.010
	(0.012)	(0.013)	(0.025)	(0.018)	(0.017)
8	-0.040	-0.025	-0.030	0.004	-0.003
	(0.011)	(0.012)	(0.024)	(0.019)	(0.018)
9	-0.041	-0.025	-0.047	-0.006	-0.015
	(0.012)	(0.012)	(0.024)	(0.022)	(0.021)
10	-0.043	-0.025	-0.064	-0.016	-0.028
	(0.014)	(0.013)	(0.025)	(0.026)	(0.024)

Standard errors between parentheses. Column 1 reports the point estimates of the benchmark model reported in Section 6.2 of the main text. Columns 2-5 report the following sensitivity tests (in order): including completed education fixed effects (FE) as individual control variables in the first step of the two-step approach; national model; estimating the second step by OLS rather than FGLS; estimating the model in a one-step rather than two-step approach. Results in Column 1-3 are obtained from the second step FGLS of the two-step approach procedure explained in the text; Column 4 is obtained from the second step OLS, i.e. neglecting the measurement error introduced by the two-step procedure. Column 5 is estimated in one step. For all columns, log hourly wage and log hours worked are estimated jointly by means of a SUR, and the effects of interest on the log earnings are obtained as a linear combination of the effects on the first two outcomes, exploiting the adding-up constraint: log earnings=log hourly wage+log hours worked.

†Completed education is measured as the number of years of education successfully attained from the beginning of secondary education, i.e. from age 12. Therefore, repeated grades are not included.

§In the national model cells need not be dropped, since cells are always sufficiently large (see selection rule in Table A.2 in Appendix A of the main text). In contrast, all other sensitivity analyses (Column 2,4-5), which are all based on the provincial model, rely on the same sub-sample retained for the benchmark and consider the same specification used in the benchmark; in the one-step approach (column 5), this specification is augmented by the individual control variables used in the first step.

††Clustered (conventional) standard errors are reported if the model is (not) rejected on the basis of the χ^2 test at the 5% level.

S.10 Additional Sensitivity on the Specification

This section shows that the main results reported in Figure 1 and 2 of the main text are robust to alternative specifications. In particular, we report comparable Figures obtained from estimating a more restricted specification than Eq. (4) in the main text. This restricted specification is as follows:

$$y_{igpt} = f_g(e)u_{gp} + \theta_e + \phi_t + \eta_p + \omega_p t + f_0(g) + x_i'\delta + \varepsilon_{igpt} \tag{S.4}$$

where:

- y_{igpt} represents the alternative benchmark dichotomous and continuous labor market outcomes in calendar year t for individual i who graduated in year g while living in province p at the start of graduation year g.[15]
- u_{gp} is the unemployment rate in province p and graduation year g and $f_g(e)$ is a linear spline in potential experience, so that the interaction between the two represent the effects of interest.
- θ_e is a fixed effect for potential experience ($e \equiv t - g$).
- $f_0(g)$ is a linear spline in graduation year.
- ϕ_t is a calendar year fixed effect.
- x_i are individual control variables measured at age 17, which are reported in Table A.1 of the main text.
- η_p is a fixed effect for the province of residence at graduation.
- $\omega_p t$ is a province-specific linear time trend. Note that we keep provincial specific time trends also in this restricted specification because the unemployment rates exhibit differential downward time trends (see Figure 1b in the main text).

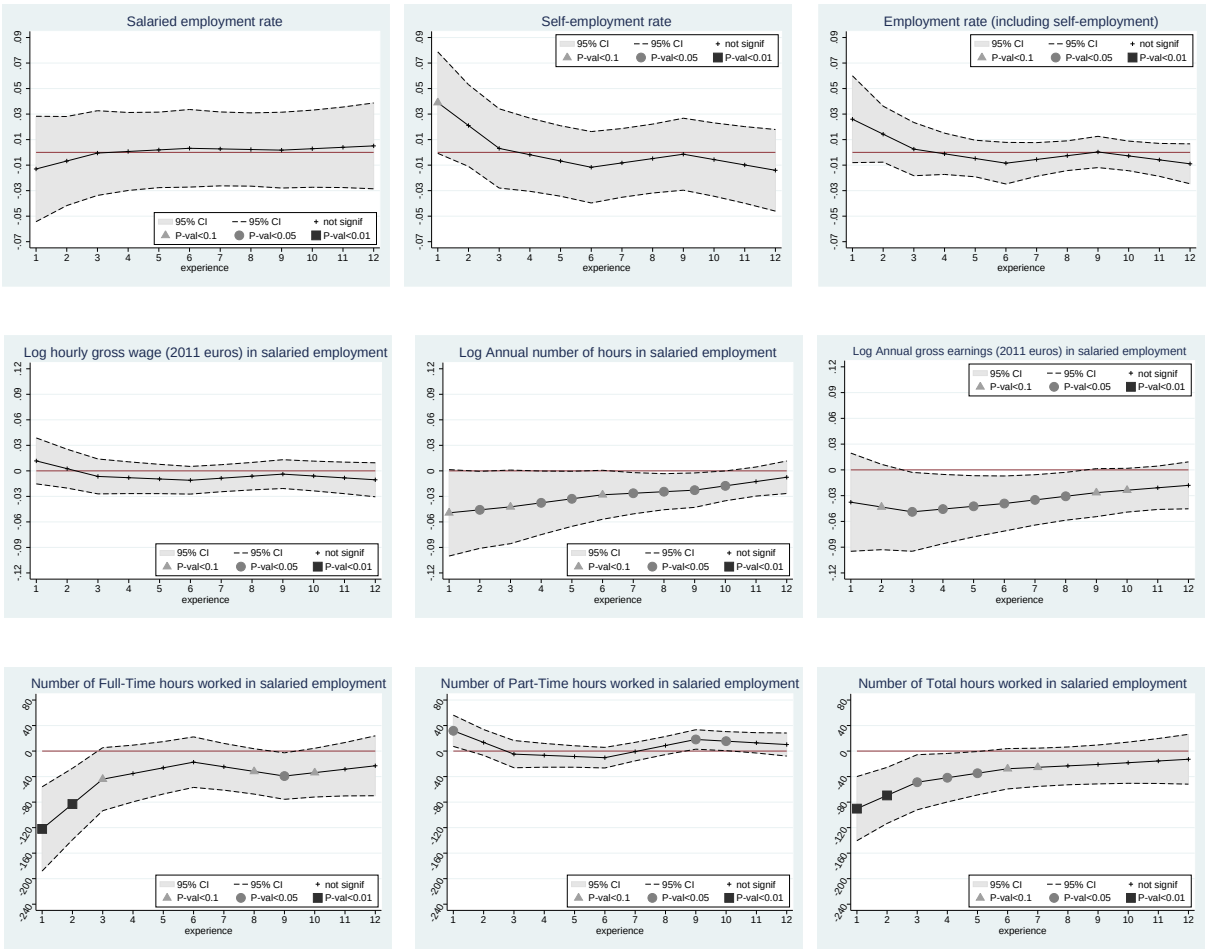
Compared to Eq. (4) of the main text, in Eq. (S.4) above we exclude (i) the term capturing differential effects of interest when graduation occurs in an upturn ($f_{gu}(e)u_{gp}\mathbf{1}[u_{gp} < u_{(g-1)p}]$ in Eq. (4) of the main text) and (ii) the current unemployment rate interacted with the experience spline ($f_t(e)u_{pt}$ in Eq. (4) of the main text). Note that in the main text we started by estimating Eq. (4) for each outcome, but then imposed each time specific restrictions which could not be jointly rejected. Hence, the actual specification estimated to get Figure 1 and 2 in the main text differed according to the outcome. By contrast, in this exercise we estimate specification (S.4) on all outcomes.[16]

[15] To avoid cumbersome notation, we ignore the subscript in p_g.

[16] Specification (S.4) is more restricted than the specifications used for continuous outcomes in the main text, but richer than the specifications used for discrete outcomes. See the main text for details.

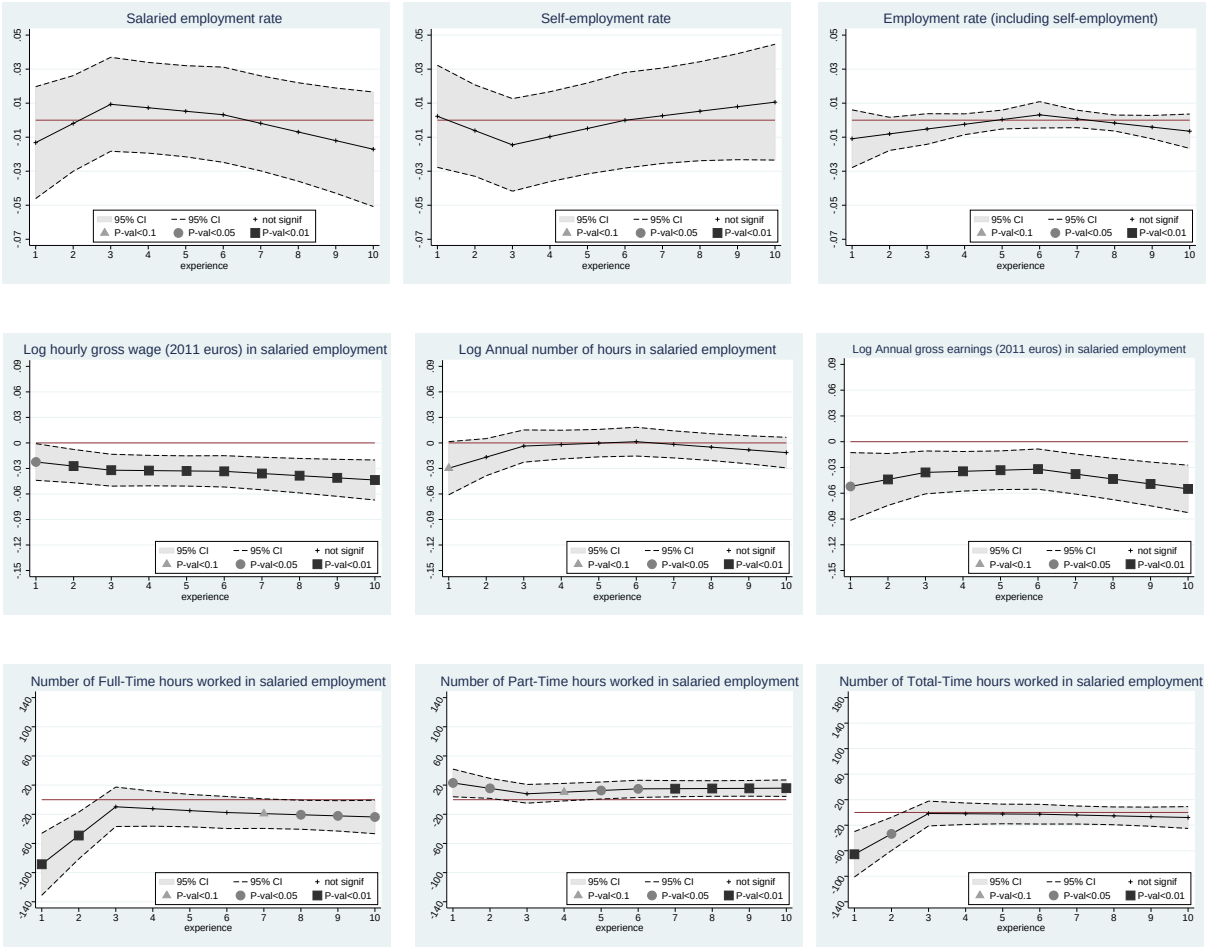
A comparison of the results in Figure S.1 and S.2 with those of Figure 1 and 2 in the main text reveals that our findings are robust to alternative specifications. This confirms that our results are (i) not due to a too complex specification, and that (ii) they remain stable even with a more general specification that includes additional factors discussed in the literature.

Figure S.1: The Effect of a One Percentage Point (pp) Increase in the Provincial Unemployment Rate at Graduation using a Restricted Specification: Low Educated



The figure displays for the low educated the effect of increasing the provincial unemployment rate at graduation by one pp on the main outcomes of interest. For each case the restricted specification in Eq.(S.4) is used. The effects reported in top, middle and bottom panel result each time from two-step FGLS estimates of a SUR model on the first two outcomes described in detail in Section 5.2 of the main text. The effects for the third outcome are obtained from the following adding up constraints: salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked.The corresponding table with the point estimates is not displayed (available upon request).

Figure S.2: The Effect of a One Percentage Point (pp) Increase in the Provincial Unemployment Rate at Graduation using a Restricted Specification: High Educated



The figure displays for the low educated the effect of increasing the provincial unemployment rate at graduation by one pp on the main outcomes of interest. For each case the restricted specification in Eq.(S.4) is used. The effects reported in top, middle and bottom panel result each time from two-step FGLS estimates of a SUR model on the first two outcomes described in detail in Section 5.2 of the main text. The effects for the third outcome are obtained from the following adding up constraints: salaried employment+self-employment=overall employment; log hourly wage+log hours worked=log earnings; FT hours worked+PT hours worked=total hours worked.The corresponding table with the point estimates is not displayed (available upon request).

References

Black, S. E., P. J. Devereux, and K. G. Salvanes (2005). Why the Apple Doesn't Fall Far: Understanding Intergenerational Transmission of Human Capital. *The American Economic Review 95*(1), 437–449.

Card, D. and T. Lemieux (2001). Dropout and Enrollment Trends in the Postwar Period: What Went Wrong in the 1970s? In J. Gruber (Ed.), *Risky Behavior among Youths: An Economic Analysis*, Chapter 9, pp. 439–482. University of Chicago Press.

Clark, D. (2011). Do Recessions Keep Students in School? The Impact of Youth Unemployment on Enrolment in Post-compulsory Education in England. *Economica 78*(311), 523–545.

Cochran, W. G. (1954). Some methods for strengthening the common χ^2 tests. *Biometrics 10*(4), 417–451.

Frick, J. R. and M. M. Grabka (2003). Missing income data in the German SOEP: incidence, imputation and its impact on the income distribution. Discussion Paper 376, German Institute for Economic Research (DIW Berlin).

Jenkins, S. P. (1995). Easy Estimation Methods for Discrete-Time Duration Models. *Oxford Bulletin of Economics and Statistics 57*(1), 129–136.

Kalwij, A. and A. van Soest (2005). Item Non-Response and Alternative Imputation Procedures. In A. Börsch-Supan and H. Jürges (Eds.), *The Survey of Health, Ageing and Retirement in Europe - Methodology*, pp. 128–150. Mannheim: MEA.

Kiefer, N. M. (1988). Analysis of Grouped Duration Data. In N. U. Prabhu (Ed.), *Statistical Inference from Stochastic Processes*. American Mathematical Society, Providence.

Micklewright, J., M. Pearson, and S. Smith (1990). Unemployment and Early School Leaving. *The Economic Journal 100*(400), 163–169.

Moulaert, T. and J. Verly (2006). Belgique. Le revenu minimum mensuel moyen garanti. *Chronique internationale de l'IRES 103*(no. november), 57–68.

Oreopoulos, P., T. von Wachter, and A. Heisz (2012). The Short– and Long–Term Career Effects of Graduating in a Recession. *American Economic Journal: Applied Economics 4*(1), 1–29.

Petrongolo, B. and M. J. San Segundo (2002). Staying–on at school at 16: the impact of labor market conditions in Spain. *Economics of Education Review 21*(4), 353–365.

Särndal, C.-E. and S. Lundström (2005). Imputation. In *Estimation in Surveys with Nonresponse*, pp. 153–165. John Wiley and Sons, Ltd, Chichester, UK.

SONAR (2003). Hoe maken de jongeren de overgang van school naar werk? Basisrapportering Cohorte 1978 (eerste golf). Technical report, Leuven: Steunpunt WAV.

SONAR (2004a). Hoe maken de jongeren de overgang van school naar werk? Basisrapportering Cohorte 1976 (tweede golf). Technical report, Leuven: Steunpunt WAV.

SONAR (2004b). Hoe maken de jongeren de overgang van school naar werk? Cohorte 1980 (eerste golf). Technisch rapport. Technical report, Leuven: Steunpunt WAV.

Tumino, A. and M. Taylor (2013). The impact of local labour market conditions on school leaving decisions. Mimeo, ISER, University of Essex.

Wooldridge, J. M. (2006). Cluster-Sample Methods in Applied Econometrics: An Extended Analysis. Mimeo, Department of Economics, Michigan State University.

Wooldridge, J. M. (2010). *Econometric Analysis of Cross Section And Panel Data (second ed.)*. The MIT Press, Cambridge, MA.