Blame the Parents?
How Parental Unemployment Affects Labor Supply and Job Quality for Young Adults*

Andrey Fradkin†, Frédéric Panier‡, Ilan Tojerow§

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Abstract

We study the role of shocks to parental income in determining the labor market outcomes of children entering the labor market. We find that a child whose parent loses a job prior to the child's labor market entry is, on average, induced to work 9 percent more in the 3 years following labor market entry than a child whose parents lose a job after the child's entry. This effect is concentrated on the extensive margin and decreases in magnitude over time. We find no evidence that these shocks affect the quality of the job that entrants find.

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†MIT Sloan School of Management, afradkin@mit.edu.

‡McKinsey&Co, fredpanier@gmail.com.

§SBS-EM (Dulbea, Ceb), Université Libre de Bruxelles and IZA, itojerow@ulb.ac.be.

1 Introduction

Labor force participants with more financial resources can afford to stay unemployed longer without sacrificing consumption. Indeed, many papers have shown that more generous unemployment insurance (UI) leads to increased unemployment spells. UI benefit generosity also has important effects on the quality of subsequent jobs (Nekoei and Weber (2017)). However, relatively little is known about the effects of other, non-UI, support on labor market outcomes. This topic is especially relevant for labor market entrants, who have elevated unemployment rates, typically do not have access to UI, and may rely on parental support, if available, at the beginning of their careers. In this paper, we use a new identification strategy to study the effects of parental job displacements on their children's initial labor market outcomes.

We find that parental employment status does matter for young adults' job search decisions. Young adults whose parents recently lost a job find a first job quicker. As a consequence, they work 9 percent more in the first 12 quarters of their career. However, we find no evidence that parental employment affects the average quality of the job found by young workers. The increase in the amount of days worked appears to be the result of an increase in job search effort and not a decrease in job acceptance standards. The causal mechanism that is most consistent with our evidence is that parental financial resources allow the unemployed to enjoy more leisure before starting a job. We also consider other mechanisms based on child annoyance with parents living at home, family strife, and informational channels.

Before describing our empirical strategy, we discuss the important ways in which our setting differs from existing studies of the effects of financial support on labor market outcomes. We study young adults while the literature on the effects of UI has typically used changes in benefits to experienced and older workers for identification.[1] Therefore, the estimates of the unemployment duration and wage responses to UI may not be applicable to this group. Youth unemployment is also important for policy because it has increased in recent years (e.g. Aguiar et al. (2016)), is the target of numerous government programs (e.g. Schochet, Burghardt and McConnell (2008)), and is a cause of criminal behavior (e.g. Fougére, Kramarz and Pouget (2009)).

The incentives of young adults to find jobs differ in several ways from those of experienced workers. First, labor market entrants have greater human capital accumulation incentives than older workers, and this may reduce short-run labor supply elasticities (e.g. Keane and Rogerson (2012)). Second, labor market entrants may have more financial support from parents but fewer pre-existing assets than older workers, which affects their relative disutility from unemployment. Third, family support may be associated with a different set of obligations and expectations than government financial transfers, which may change the

magnitude of its moral hazard effects relative to UI.

Our estimates demonstrate that parental job-loss shocks can have similar unemployment duration effects as other financial transfers. Furthermore, since we fail to find a large effect on wages or wage growth, it seems that, at least for those induced to find work by the shocks, the intensity of their initial work experience does not meaningfully affect the rate of human capital accumulation. The lack of human capital accumulation motive is consistent with our finding regarding the labor supply responses of children to parental support.

We now discuss our empirical strategy. The main challenge to identification in our setup is that households experiencing a loss of a long-held job differ from other families in a variety of unobservable ways. Simple comparisons between children whose parents suffer from a shock and children whose parents do not are therefore likely to produce biased estimates, even if one controls for a large set of observables. Our empirical strategy avoids this "unobserved heterogeneity" bias by only using data on families who experience a non-temporary and involuntary loss of a long-held job around the time of the child's entry into the labor force. Our identifying assumption, whose plausibility we extensively document, is that parents experiencing this type of job-loss shortly before the child's entry into the labor force do not differ in systematic ways from parents suffering from such a shock shortly after entry. We can therefore identify the causal effect of parental income shocks on initial labor market outcomes by comparing children whose parents suffer from a shock shortly before entry (*treatment group*) with children whose parents experience the shock at a later time and whose initial job search behavior is not affected by a reduction in parental transfers (*control group*). This research design allows us to isolate the effects of job search decisions in the early stages of a career from other medium- and long-term effects of parental job-loss.

We implement our research design using administrative data on Belgian residents. Between 2004 and 2008, we observe over five thousand children whose parents experience the loss of a stable, full-time job in a three year window around the time of the child's entry into the labor force. We identify events where the parent loses a long-held job and show that these events lead to large and persistent income losses. More than 45% of parents are still unemployed 12 quarters after the shock, with both annual compensation and total days worked remaining at less than 50% of their pre-shock level.

Next, turning our attention to the validity of the identifying assumption, we show that parents who experience a shock before their child's entry into the labor force do not systematically differ from parents who suffer from such a shock after entry. After adding appropriate controls, we find minor and mostly insignificant differences between the two groups in demographics and labor market outcomes up to 10 years prior to the shock. Another concern with our identification strategy is that parental income shocks might induce

[1] E.g. Krueger and Meyer (2002), Lalive, Ours and Zweimller (2006), Card, Chetty and Weber (2007), Lalive (2007), Chetty (2008), van Ours and Vodopivec (2008), Nekoei and Weber (2017), and Schmieder, von Wachter and Bender (2016).

children to alter the timing of entry into the labor force. However, our results hold even when looking at the sample of 18 year old entrants, who enter the labor force immediately after the end of compulsory schooling. Furthermore, we find no bunching in the distribution of parental job-loss shocks around the quarter of child entry.

Overall, we find that children whose parents lose a job up to three years prior to entry, work 9% (39 days) more on average in the first 3 years of their career. The increase in labor supply is largest in the first two years and is accounted for by responses along the extensive margin, with a significant increase in average tenure. By contrast, there is no evidence of an increase in days or hours worked per quarter at continuing jobs. We find no evidence of a decrease in job quality as measured by daily wage growth, employer size, or industry wage growth. Lastly, we do not find evidence of an effect on the child's decision to move out of the parental home.

Our results are consistent with a simple model of job search in which labor market entrants who experience a decrease in parental support increase their search effort. Other mechanisms commonly present in the UI literature include changes in reservation wages and duration-dependent wage offers. We do not find statistically significant differences in the accepted wage distributions or wage growth rates between the treatment and control groups. In contrast, if there was a binding reservation wage then we would expect the control group to find jobs with higher wages and higher wage growth. Alternatively, if the negative duration-dependence channel was dominant then we would expect the control group to receive lower wages and experience lower wage growth.

There could be complimentary, non-financial, mechanisms by which parental job-loss affects child outcomes. For example, the presence of a parent in the house could annoy the child or trigger spousal feuding,[2] which could cause the child to seek employment. We do not detect statistically significant or large differences in the treatment effect by whether the young adult resides with the parents, suggesting that these channels do not drive our results. Alternatively, parental job search may help the child's job search either through informational channels or direct parental help. While we cannot completely exclude this explanation, we document evidence that financial support is common, economically significant and is associated with having employed parents.

The closest paper to this one is Hilger (2016). Hilger uses a similar and concurrently developed identification strategy to study the effects of parental shocks on college attendance in the US. He finds a statistically significant, albeit small, effect of parental income shocks on children's college attendance in the US. Our studies differ due to the setting, outcomes, and sample sizes. First, we focus on youth employment outcomes conditional on labor market entry. This allows us to study whether family support has similar effects on labor supply to financial incentives such as UI. In contrast, Hilger's main interest is college attendance and

[2] Charles and Stephens Jr. (2004) and Eliason (2012) show how job loss increases the chance of divorce.

his empirical strategy is designed to study the effect of parental job-loss on this variable. College in the US is typically expensive (although need-based financial aid can be generous for certain families). On the other hand, college tuition in Belgium is highly subsidized for everyone, with tuition fees lower than €1,000 per year. Therefore, the small effects of layoffs on college attendance in the US serve as an upper bound on the effect in Belgium. Hilger also looks at earnings and finds small effects, mainly in the context of the tradeoff between schooling and work, whereas we condition our estimates on a child's entry into the labor market.

Our results relate to a large literature on the relative costs and benefits of social insurance. One potentially important benefit of unemployment insurance is that it allows unemployed individuals to look longer for better matching and riskier jobs. However, most empirical studies have failed to find evidence that UI leads to better matches or higher paying jobs.[3] A possible reason for this negative result is that existing studies focus on experienced workers, for whom the match quality channel might be less important because of their established labor market credentials.[4] Previous research has also found that macroeconomic conditions at the time of graduation have long-lasting effects on workers' entire career outcomes, creating at least suggestive evidence that the "job-quality" channel might be more relevant for first-time job-seekers.[5] However, we find no evidence that reduced family support induces workers to find higher paying or more risky jobs.

Our paper also contributes to literatures on the importance of family insurance and the effects of parental income on child outcomes.[6] We show that, at least for families with young adults, parental income shocks can also affect children's employment outcomes at the beginning of their career and that the labor supply of the young adult can also act as a form of insurance in the household.

2 Data, Institutional Setting, and Sample Selection

2.1 Data

The implementation of our research design requires administrative data to identify the child-parent relationship, the timing of child entry into the labor force, parental employment history, and child labor market outcomes. In Belgium, access to this information is

[3] This is the case for Card, Chetty and Weber (2007), Lalive (2007) and van Ours and Vodopivec (2008). One notable exception is Nekoei and Weber (2017).

[4] One paper that does study young workers is Kaplan (2012). He uses a structural model to show that parental insurance results in a 5% higher wage for young adults at age 23.

[5] See Kahn (2010), Oreopoulos, von Wachter and Heisz (2012), Oyer (2008) and Gervais et al. (2014)

[6] Papers that study the importance of spousal insurance include Blundell, Pistaferri and Saporta-Eksten (2014), Cullen and Gruber (2000), Stephens Jr. (2001), Hyslop (2001) and Tella and MacCulloch (2002). Child labor in developing countries can also be thought of as a form of family insurance (Edmonds (2008)). Papers that study parental effects on child outcomes include Gertler, Levine and Ames (2004), Currie (2009), Dahl and Lochner (2012), and Hoynes, Schanzenbach and Almond (2012).

made possible by the *Labor Market Data Warehouse* (LMDW) of the national *Crossroad Bank for Social Security* (CBSS). Since 1998, this database aggregates data on all Belgian residents from many governmental institutions. For most institutions, data for parents is available from the beginning of 1998 to the end of 2011 and data for kids from at least 12 quarters before entry until the last quarter of 2011. In addition, we have access to parents' employment history for more than 10 years before the job loss shocks. Appendix A.1 provides more details about the sources of our data.

2.2 Sample Selection

Our sample selection proceeds in two steps starting from the universe of Belgian residents. First, we identify the universe of entrants into the labor force between 2004 and 2008 as well as the exact timing of their entry. Second, we identify the parents of the entrants and any parental job loss shocks taking place within a three year window around the child's entry into the labor force.

Step 1: Identifying Entrants. The first step of our selection process is to identify entrants into the labor force. These are children who put an end to their full-time education and either work immediately or start their career with an initial unemployment period.[7] Our criteria for finding labor market entry rely on data from Belgium's family allowances (also called child benefits), which are transfers from the state to families with children, and from the unemployment insurance system.

Family allowances consist of automatic monthly cash payments to parents of dependent children under the age of 25.[8] Eligibility for family allowances is unconditional until the child reaches 18. Between the ages of 18 and 25, benefits are only paid for children who are enrolled in full-time education or apprenticeships.[9] Moreover, and this is an important feature in our set-up, students who finish their full-time education are usually eligible for up to 9 additional months of family benefits, provided that (i) they have completed high school or have obtained a higher education degree, (ii) they are registered with the local public employment agency and (iii) they earn less than €520 per month (in 2014). Since eligibility for family allowances requires the continuation of full-time education, our sample selection will primarily rely on family allowance payment data to identify the timing of entry into the labor force.[10]

[7] Appendix A.2 provides details on the secondary and tertiary education systems in Belgium.

[8] Appendix A.3 discusses details regarding family allowance payment amounts.

[9] Eligibility for family allowances after the age of 18 also requires students to work less than half the normal full-time work hours except during the summer.

[10] People prove their allowance status in the following manner. During the September of the year in which a child turns 18, parents receive a form regarding their child's student status. This form requires a registration document from a college or university and is validated by December. Parents receive payments retroactively (from September) to next September unless a child's status changes. Second, students cannot work for more than 240 hours per semester (except in the summer prior to the last year of schooling). Students who do work more than this amount lose their benefit eligibility.

New labor market entrants in Belgium are eligible for special unemployment benefits ("*allocations d'attente*") after a waiting period which is typically 9 months.[11] During the waiting period, unemployed individuals are expected to rely on the financial support of their parents, who have the legal obligation to support them and typically continue to receive family allowances. Beneficiaries are also required to stay continuously registered as active job-seekers with the public employment agency during the waiting period in order to later benefit from "*allocations d'attente*".[12]

Identification of entrants starts with the selection of individuals younger than 25 who stop receiving family benefits. We then use the following algorithm to determine the quarter of entry Q for all entrants in our sample. We start by identifying the last quarter T for which the child received family benefits. We then look in quarters $T-3$ to $T+2$ and identify the quarter of entry Q as the first of two consecutive quarters for which the child is either (i) not receiving family allowances, (ii) registered as a job-seeker with the public employment agency or (iii) working for more than two-thirds of the quarter.[13]

The rationale for this algorithm can be understood by considering different types of entry into the labor force. First, the third criteria (employment) will correctly identify the timing of entry for individuals who start working full-time directly out of school and keep their initial job for at least two quarters. Second, individuals who leave school without having found a full-time job are required to register with the public unemployment agency in order to keep receiving family allowances during the UI waiting period and to be eligible for subsequent unemployment benefits. The timing of entry for those children will therefore be correctly identified using the second criteria (registration with the public employment agency). Third, individuals who initially find a part-time (less than 66%) job (and therefore do not meet the third criteria) are also required to register with the public employment agency in order to continue receiving family benefits during the UI waiting period (if they make less than 520 euros per month) and be eligible for part-time unemployment benefits at the end of the UI waiting period. In those cases, the second criteria will again correctly identify the timing of their entry into the labor force. Fourth, the first criteria (loss of family benefits) will also correctly identify the timing of entry for individuals who have not directly found a job and fail to register with the public employment agency. These individuals will lose their family benefits as soon as they stop being full-time students.

The choice of the $T-3$ to $T+2$ observation window is motivated by the fact that the maximum UI waiting period is 9 months so that some entrants can be observed as receiving family benefits up to 3 quarters following entry. The rationale for requiring that

[11] See Appendix A.4 describes the exceptions to the 9-month period.

[12] These special benefits were paid, without time limit, at the monthly flat rates of €425 for dependent children and €817 (€493) for individuals above 21 (between 18 and 20) living alone.

[13] Individuals who are registered as unemployed in quarter $T-2$ and are working more than 66% of quarter $T-1$, will be considered as entering in quarter $T-2$ (even if they are not registered as unemployed at any point in $T-1$).

the conditions be met for at least 2 consecutive quarters is that, since students who have passed all their exams in June do not have any coursework between July and the end of September, some of them work during a large share of the summer.[14]

Finally, it should be noted that this method will still lead, in some cases, to a slight (one quarter) mis-measurement of the timing of entry. This is the case, for example, when children enter in the second or third month of the quarter and find a full-time job immediately upon entry. Since they work during less than two-thirds of the quarter, they will only be registered as entering the labor force in the next quarter. We address this problem by excluding from the sample children whose parents suffer from a shock during the identified quarter of entry.

Step 2: Identifying Parents and Job Loss Shocks. We do not have access to a direct measure of biological filiation. Instead, we rely on the household identifier and the position of each individual in that household provided by the National Registry. Individuals who are registered as "head" or "co-head" of the child's household are identified as his parents. We identify parents based on family composition 16 quarters before the loss of family benefits. Note that this occurs before the first date at which we identify a parental job loss.[15]

Next, we identify parents who experience the loss of a stable full-time job in a 3-year window around the child's entry into the labor force. A parent (father or mother) is identified as suffering from such job displacement in quarter T if he or she (i) has been working for the same employer for at least 12 quarters (from $T-11$ to T) and is not working for this employer in quarter $T+1$, (ii) has been registered as having a full-time job for at least 10 out of the last 12 quarters, and (iii) is registered at the end of T or $T+1$ as either (a) receiving unemployment benefits, meaning that the parent did not voluntarily quit and is obligated to look for a job, or (b) in a state of "*unregistered activity*" according to the socio-economic status variable provided by Belgium's *Labour Market Data Warehouse*. An individual is considered in a state of "unregistered activity" if and only if he does not appear in any of the other databases of the Belgian Social Security System.[16]

The motivation for our selection process is the following. First, our definition of a stable job as a job held for at least three years results from the practical consideration that this is the longest time-window for which we observe the uncensored quarterly employment history of all parents in our sample at the time of the shock.[17] Second, we only require the full-time

[14]Family benefits are paid during the summer even if the child earns more than €520 in July, August or September.

[15]Appendix A.6 discusses the validity of this approach.

[16]This means that the person does not have a salaried job, is not registered as self-employed, is not registered as a job-seeker with the public employment agencies and is not receiving any benefit payments from the various unemployment, sickness, invalidity, workers' compensation, pension, family allowances or welfare agencies.

[17]The quarterly Social Security Employment Registry data is available starting in 1998. Children in our sample enter the labor force starting in 2004 which means that - given that we select parental shocks in a 3-year time window around entry - the first parental shocks are observed in 2001. This gives us a maximum of 3 years (2001-1998) of uncensored employment history for the first parents getting a shock in our sample. We also have yearly employment history up to 10 years but this data does not allow us to compute the quarter of job loss.

condition (ii) to be met for 10 - rather than 12 - out of the 12 quarters prior to the shock in order to avoid excluding from our sample parents who, at some point in the last three years, have temporarily reduced their working hours for personal reasons or because of a temporary decrease in economic activity at their firm.

Condition (iii) is meant to restrict the sample to involuntary income losses resulting from the dismissal of the worker. It excludes job separations that may be voluntary, such as job-to-job transitions, very short unemployment periods, switches between salaried employment and self-employment, episodes of disability (due to sickness or accident), and retirement decisions. Consequently, condition (iii) restricts our sample to job separations that are followed by a period of insured unemployment or "unregistered inactivity" (as defined above). We include this second category in our sample to cover the case of individuals who are fired without notice by their employer and receive severance pay in compensation for their immediate dismissal. These individuals will not be eligible for unemployment benefits for the period covered by severance compensation and will be recorded in the residual "unregistered inactivity" category.[18]

2.3 The Labor Market Outcomes of Parents After the Shock

Figure 1 presents a graphical description of the consequences of the parental job-loss shocks. This figure confirms that our selection procedure correctly identifies large shocks to employment and labor earnings. It also allows us to quantify the magnitude of income losses suffered by parents.[19]

Both labor supply and income experience a sharp drop around the time of the job-loss shock, with parents working on average less than 20% of what is typically considered full-time employment in the quarter following job loss (Panel B). Furthermore, nearly 60% of parents are receiving unemployment benefits post-shock and 20% are in a state of "unregistered inactivity" (Panel C).[20] Consistent with the idea that individuals in the "unregistered activity" category are mostly workers who have been dismissed without notice, and are not eligible for unemployment benefits during the period covered by severance pay, the proportion of parents in this category quickly drops over the next two quarters as they either find a job or become eligible for unemployment insurance.[21]

[18] One remaining concern is that our procedure may capture some quitters who do not find a job quickly after quitting. Our results are robust to the exclusion of those who enter unregistered activity (see Table A7.

[19] We measure income for all employees, full-time or part-time, that are employed in the private sector or in the public sector. This income is reported by the individual's employer to the social security administration. Self-employed individuals are not included.

[20] The share of individuals receiving UI benefits or in a state of "unregistered inactivity" does not sum up to one in any given quarter because we require each condition to hold either in the quarter of job loss or the next.

[21] Figure A7 shows that even five years after the shock, only about 20% of those we identify as suffering from an involuntary job-loss shock have either retired, registered as self-employed, or received sickness benefits. This suggests that we have correctly identified involuntary job-loss.

Perhaps the most striking feature of these graphs is the persistence of the income shock. The rate of unemployment decreases slowly after the shock and the employment rate never comes close to a full recovery. Three to six years after the shock, only about 50% of parents have a job in any given quarter (panel A) and the average labor supply is still at less than 40% of that of a full-time worker (panel B). Moreover, even those parents who do find a job suffer from a substantial long term decrease in their wage. Panel D shows that the average wage percentile, as measured by dividing earnings by days worked (including partial days),[22] was close to the median for the rest of the salaried population during most of the 12 quarters before the shock. However, after the job displacement, the average wage percentile drops by nearly 10 percentage points and never recovers.

Panel A of Figure 2 provides further insight by displaying total (real) labor earnings by calendar year relative to job loss from 3 years before to 3 years after the shock. This figure reveals that the job displacement shock results in an average drop of yearly labor income of roughly 50% for the parent suffering from the shock (dotted line).[23] The drop in income is also persistent with no sign of recovery in the following years (although this results in part from the progressive retirement decision of parents). There is no sign that this drop in income is compensated by a significant change in the spouse's labor supply (gray line). Combined with the fact that the parent suffering from the shock was usually the household's main wage earner before losing his job, this translates into a persistent drop in salaried income of roughly 35% for both parents together.

Panel B of Figure 2 presents further evidence on the total drop in earned and unearned income resulting from the shock. Data in this figure includes not only salaried income but also all major sources of replacement income provided by the Belgian government and self-employment income.[24] This graph shows that total income drops on average by 35% in the first year after the shock for the parent suffering from that shock while the total drop in income for the family is around 20% in the year following the shock. Compared with a total drop in salaried income of 50%, this implies a replacement rate close to 30% on the job-loser's income. After 3 years, total family income is still around 13% below its pre-shock level[25].

Figure 1 also points to a potential problem for our identification strategy. While there is

[22]The administrative data counts days worked for full days and hours worked for partial days of work. In the case of part-time work, we divide earnings by part-time hours worked and multiply by 7.6 to get a corresponding daily wage measure.

[23]Since this graph is based on data available at the calendar year level, information for year 0 is composed of both pre- and both- shock outcomes, depending on the timing of the shock during the calendar year. This explains that the data point in year zero displays a much smaller drop in income.

[24]It includes unemployment insurance payments, financial aid provided by the residual social safety net, disability benefits, pension benefits as well as family benefits. See subsection A.5 for details on Belgium's Unemployment Insurance System.

[25]Given the absence of recovery in labor supply during that period, as well as the decreasing path of unemployment benefits with the duration of unemployment, this partial recovery in income must be the result of households progressively switching to other, more generous, forms of social insurance (mainly, pension benefits) or receiving some form of self-employment income. See Figure A8.

a drop in labor supply and income at the time of job loss, there is also a decrease in average hours worked and wages starting four quarters before job loss. This means that parents might already have reduced transfers to their child during this period, which would bias our estimates downward. Our results are robust to specifications that exclude observations with job-loss in the year around a child's entry, where anticipation effects are less likely to matter (Table A5).

3 Descriptive Statistics

In this section, we discuss some important descriptive features of our dataset. After briefly discussing summary statistics, sub-section 3.1 presents a quantitative description of children's entry into the labor force.

We were allowed to extract a sample of roughly 70% of entrants entering the Belgian labor market between 2004 and 2008 whose parents suffered from the loss of a stable full-time job in a 3-years around entry. For comparison purposes, we also extracted a representative sample of approximately 6.5% of all labor market entrants identified between 2004 and 2008. Table 1 presents summary statistics for the representative sample of all entrants (Column I) as well as for the samples of entrants whose parents suffer from a job-loss shock in a three or one year window around the child's entry into the labor force (Column II and III respectively).[26] Given the strictness of our selection process, we end up with 5,605 (2,185) entrants whose parents suffer from a shock in a 3 (1) year window around entry.

A few points are worth discussing. First, since we sometimes identify more than one entrant by family, the number of households is smaller than the number of entrants. Second, as a result of the high rate of grade repetition in the Belgian education system, children often enter the labor force at a later age than would be expected based on the normal duration of occupational programs. Fewer than 30% of children enter the labor force before 20 even though more than 50% of individuals in recent cohorts do not graduate from higher education. Third, entrants are frequently not fully employed. On average, they have a job during 8.7 of the 12 quarters after entry and work for an average of 460 days (compared to 700 to 800 days for a continuously held full-time job). Fourth, labor market entrants receive a much lower wage than the average worker: the average wage in our samples is between the 27^{th} and the 30^{th} percentile of the wage distribution.

Finally, the job-loss groups systematically differ from the sample of all entrants. First, children in the job-loss group seem to be selected from less advantaged parts of the distribution: their parents are younger, enter the labor force earlier (indicative of lower levels

[26] The 3 year sample contains all individuals whose parents received a shock between -12 and +12 quarters around the quarter of the child's entry into the labor force. As explained in the previous section, we exclude children whose parents experience a shock during the exact quarter of the child's entry. We also exclude children whose parents are getting more than one job-loss shock in the time window considered (this constitutes a negligible share of all entrants).

of education), are less likely to be Belgian citizens, work less after entry, and have a lower wage and income. Given the well-documented intergenerational correlation in employment outcomes, one should not be surprised that children of parents who suffer from a job-loss shock display lower-than-average employment outcomes.

Other differences between the job-loss group and the sample of all entrants are simply the mechanical consequences of our selection process. The job-loss group has a higher concentration of two-parent families (the likelihood of at least one parent losing his job is higher if there are two parents in the household) and a higher concentration of single fathers among single-parent households (single mothers are more likely to be out of the labor force altogether and, as such, less likely to lose a job). Parents in the job loss group are also much more likely to be employed 16 quarters before entry (losing a stable job in a 3-year window around entry requires one to have had a stable job in the past).

3.1 Children's Entry Into the Labor Force

Figure 3 presents a graphical summary of the transition process from full-time education to active life for children in our representative sample of all entrants. It serves as a validation of our sample selection procedure. This figure is also interesting in its own right since it represents, to our knowledge, the first description of the transition process between full-time education and active life, at least at this level of detail.

Panel A, B and C show that we have succeeded in correctly identifying the timing of children's labor market entry. First, there is a sharp increase in individuals having at least one job around the time of labor market entry (Panel A).[27] Moreover, while there are already around 20% of entrants who have at least one job several quarters before entry, Panel B reveals that these are overwhelmingly part-time jobs, with average days worked at a job of approximately 20 per quarter (less than a third of a full-time job schedule). This result is consistent with the idea that these are mostly student jobs. Panel C shows a jump in the number of individuals receiving unemployment benefits 3 quarters after entry, which is consistent with the regulations described in section 2.2.[28]

On a more substantive note, labor market entrants reach a stable employment level at a quick rate: both labor force participation and total days worked per job more than double between the two quarters around entry. Nearly 80% of all entrants have at least one job in the quarter following their entry. While there is still an increase in the next 3 quarters, there are only limited additional changes afterwards. The same pattern roughly holds for total days worked during the quarter (Panel B) as well as unemployment insurance (Panel

[27] There is already a small jump in labor force participation one quarter before entry consistent with the fact, explained in the previous section, that our procedure can lead to a small (one-quarter) mismeasurement in the timing of entry.

[28] The 9-month UI waiting period can be shortened in some cases (e.g. if the individual has worked on a regular employment contract at some point in the past). This explains why some individuals start receiving unemployment benefits before the third quarter after entry.

C).[29] Furthermore, consistent with existing literature on the returns to experience in the labor market, Panel D shows an increase in wages in the first years of a child's career.

4 Identification Strategy

Our goal is to identify the short- and medium-term effects of parental support on labor market entrants during their initial job search. The ideal experiment would randomly change parental support across labor market entrants. As a substitute for this experiment, we use large and sudden variations in parental income resulting from the unexpected loss of a stable full-time job around the time of the child's entry.

Simple comparisons between children whose parents suffer from a shock and those who do not are likely to result in biased estimates because households who suffer from a job-loss shock are likely to differ in systematic ways from those who do not. Section 3 documented these systematic differences in parental education and age at child birth. It is unlikely that this problem could be solved by explicitly controlling for observable differences between the two groups since many characteristics that influence labor market outcomes are unobservable.

We overcome this challenge by comparing young job-seekers whose parents suffer from an income shock shortly before their initial job search episode (our *treatment group*) and comparing them with children whose parents experience a shock shortly after (our *control group*). Consider two children (A and B) entering the labor market at the same age and presenting similar observable characteristics except for the fact that A's father loses his long-term full-time job three months before A's entry into the labor force while B's father, who had a similar job, is laid-off one year later (nine months after A's and B's entry into the labor force). Despite their similar background, A and B face a different environments at the time of entry into the labor force.

We model the relationship between the timing of the job loss shock and individual labor market outcomes as follows:

$$y_{i,t_E,t_S} = \beta B_i + \epsilon_{i,t_E,t_S} \tag{1}$$

where y_{i,t_E,t_S} is the labor market outcome of interest (e.g. income in the first quarter after entry) for child i, entering in quarter t_E and suffering from a shock in quarter t_S (where t_S quarters are indexed relative to the time of entry), ϵ_{i,t_E,t_S} is an individual random effect, B_i is a dummy equal to one if the income shock takes place before the child's entry into the labor force and β represents the (average) treatment effect of the parental transfers resulting from a job-loss shock. ϵ_{i,t_E,t_S} can therefore be thought of as the labor market outcome that

[29] UI claims likely reach a peak in quarter 4 both because some entrants are only eligible for part of the 3rd quarter and may not file in time and because of a potential 1 quarter classification error.

would have been observed if the parental income shock were perfectly insured and therefore did not impact his or her job-search behavior. Alternatively, ϵ_{i,t_E,t_S} can be viewed as the outcome that would have been observed if the job loss shock suffered by i's parents had taken place after his initial job search episode.

Our initial identifying assumption is:

$$E\left[\epsilon_{i,t_E,t_S}|t_S > 0, t_S < T\right] = E\left[\epsilon_{i,t_E,t_S}|t_S < 0, t_S > -T\right] \quad \forall\, t_E \text{ and } \forall T > 0 \text{ sufficiently small.} \tag{2}$$

This states that apart from the altered incentives, β, resulting from the parental shock there is no (observed or unobserved) heterogeneity between children suffering from a shock before entry ($t_S < 0$) and those suffering from a shock after entry ($t_S > 0$), provided that one focuses on shocks happening in a sufficiently close time window around entry (T small).

One additional complication is that, conditional on the year of entry, parents who lost their job before a child's entry also lost their jobs in different years than parents who lost their job after the child's entry. This may lead to an additional source of unobserved heterogeneity if, for example, parents laid off during times of low unemployment have children with worse labor market prospects than parents laid off during times of high unemployment. Indeed, Hilger (2016), shows that, at least in the US, the year of layoff is an important confound when studying the effects of parental layoffs. Therefore, we include fixed effects for the year of parental shock and the child's year of entry as controls in our preferred specifications (Appendix A.7 discusses the identification in this specification). We also add demographic covariates (age at entry, parental age at shock, gender, nationality, family type, and pre-shock parental income) to improve precision.

5 Assessing the Validity of the Research Design

In this section, we present several tests assessing the validity of our identifying assumption.

A first concern is that parents might voluntarily select into the control or treatment groups. For example, one might expect secondary earners to leave the labor force voluntarily when their children do not need their financial support anymore. In the spirit of the graphical density tests that are common in the regression discontinuity design literature (Imbens and Lemieux, 2008), Figure A5 displays the distribution of the number of parental shocks by quarter in our sample relative to the time of entry. There is no evidence for the bunching of shocks either before or after entry into the labor market.

The fitted line in Figure A5 reveals a slightly negative linear trend in the number of observations per quarter relative to entry for both female and male parents. This trend is explained by the fact that the probability of job-loss shocks decreases with age, at least for parents whose child is entering into the labor force. We show that this trend is not driven

by systematic differences between parents who get a shock before and after entry by testing for such differences in parental characteristics.

An additional concern is that parental job loss shocks might lead certain children to enter the labor force rather than continue their education. If this is the case, our estimates would reflect the joint effects of increased job search and lower levels of human capital. We address this concern in two ways. First, our results are robust to focusing on just the sample of young adults who enter at age 18 (see the next section). Second, Figure 4 directly addresses this concern by plotting the average child's age-at-entry as a function of the timing of the parental shock, for each quarter relative to entry in a 3-year time window. Contrary to what would be expected if parental shocks lead to early entry, age-at-entry is not systematically related to the timing of parental shock. There is no visual or statistical difference in the average age at entry between children suffering from a parental income shock in the 12 quarters prior to entry and children who suffer from a similar shock in the 12 quarters following entry (the difference between the two groups is lower than 0.01 year and insignificant).

Table 2 further confirms the plausibility of our identifying assumption by testing for significant differences between our treatment and control group for a large array of demographic characteristics and labor market outcomes of the parents. Each row of Column I (II) displays the sample average of a variable of interest in the treatment (control) group. Column III displays the simple difference between the treatment and control groups while Column IV adds year-of-shock and parental age-at-shock controls. These controls are important due to the unobserved heterogeneity caused by differing years of layoff between the treatment and control groups. In all but two cases, there is no significant difference between the treatment and control group. The only significant differences concern job tenure at the time of job loss and gender. However, given that we are testing so many (12) parameters, we are likely to witness at least one statistically different outcome. Moreover, there is no significant difference in the number of worked or unemployed days as well as in wage or total compensation in the 10 years prior to the shock.

Table 3 conducts a balance test for the child-related demographics. We detect no systematic differences between the treatment and control groups in age or nationality, and a 2% difference in gender even without adding additional controls. Additional results regarding the validity of the identifying assumptions are presented in Appendix A.8. Overall, our findings support our identifying assumption that there are no economically important unobserved differences between children in the treatment and control groups that affect the validity of our results once appropriate controls are added.

6 The Effects of Parental Job-loss Shocks on Child Outcomes

6.1 Main Results

Having established the plausibility of our research design, we now turn to our central results. Table 4 displays the estimated treatment effects for four employment outcomes in the 12 quarters following entry.[30] The first two rows of the table display results for the total number of days worked and the total number of quarters worked. The last two rows display results for total labor compensation and (median) wage percentile. Column I contains our results without any controls. Each subsequent column adds additional controls building up to the more complex specifications. The final column displays the average of the outcome variable in the control group for comparison purposes.

We find statistically and quantitatively significant evidence that child labor supply increases as a result of parental income shocks that precede the initial job search period. Across all specifications, we find an average increase ranging between 23 and 39 (full-time equivalent) days worked in the 12 quarters following entry. This represents an increase of 5.3% - 9% in total labor supply given a baseline of 430 days worked in the same period for the control group. Adding more controls increases our estimates, with the largest estimates occurring in Columns (VI) and (VII), where we control for the unobserved heterogeneity due to the parental year of shock. Since there are good a priori reasons to think that unobserved heterogeneity due to parental year of shock is important, we prefer these larger estimates. One reassuring feature of our estimates is that the addition of demographic covariates, which should be balanced across treatment and control groups, has a limited impact on the estimated treatment effects. This provides additional validation for our identifying assumption.

The second row provides further confirmation of the previous results and shows that the increase in labor supply is, at least partially, the product of a response along the extensive margin. On average, for our preferred specification (VII), children in the treatment group have .44 more quarters with a job in the 3 years following entry. This corresponds approximately to a 4.8% increase compared to the baseline for the control group (9 out of 12 quarters).

In line with the results for labor supply, the third row shows that the treatment group displays an average increase in total labor compensation of the same magnitude: 4.3% to 7.5% (€1,663 to €2,568) compared to the baseline for the control group (€34,186). By contrast, the fourth row indicates no statistically significant change in the median wage[31] received by workers during the first 12 months of their career. The point estimate varies

[30] The choice of a 12 quarter window of observation is motivated by the practical reason that this is the longest period for which we observe the full post-entry employment history for all children in our sample.

in sign and never exceeds a magnitude of .34 (relative to the baseline rate of 27.12). On a daily basis, this estimate represents approximately €.75 per full day of work compared to a baseline of around €89 (Estimated in 2011 Euros) or less than 1%. We can exclude effects larger than -1.6 percentile points, equivalent to €1.5, with a 95% probability. Therefore, we can reject that there is an economically significant decrease in job quality, as measured by the median wage during the first 12 quarters of a worker's career.

One concern for our empirical strategy is that the timing of entry could be endogenous if children drop out of college after a parental job-loss. In addition to the validity checks in the previous section, we can also estimate the above specifications on a sample where this concern is likely to be minimized — 18 year old entrants. The decision to pursue post-secondary education after the end of mandatory education is less likely to be influenced by parental shocks than the timing of college drop-out. Table 5 displays the results from this specification and demonstrates that, in our preferred specification (VI), the results are qualitatively similar. Table A3 corroborates this result with a specification that excludes observations with parental shocks within a year after entry and pools the sample for additional statistical power.

6.2 The Effect of Parental Shocks on the Dynamics of Labor Outcomes

The previous section looked at aggregate employment outcomes over the 12 quarters following entry. Our setup also allows us to identify the dynamic effects of a parental shock by using the same estimator on quarter-by-quarter outcomes. Let $k = t_O - t_E$ be the number of quarters since entry. For each k, we estimate the effect of experiencing a parental shock before entry using the following equation:

$$y_{i,t_k,t_E,t_S,b} = \beta_{k,b} + \tau_{YE,k} + \tau_{YS,k} + \gamma_{Age,t_E,k} + \Gamma X_i + \gamma_{P,t_s} + \epsilon_{i,t_k,t_E,t_S,b} \tag{3}$$

In the above equation, t_k is the quarter relative to entry at which the outcome is measured and $\beta_{k,b}$ is the time-specific effect of having a shock before entry. Other variables are defined as in Section 4. We are interested in how $\beta_{k,b}$ varies with k. Importantly, we allow the coefficient on all covariates to differ for each quarter k. As seen in sub-section 3.1, average labor market outcomes display changes in the first quarters after entry and there is no reason to expect covariates (e.g. age-at-entry) to have the same effect on total days worked in, for example, the 1st quarter after entry as in the 12th. Therefore, while we estimate equation 3 by pooling together observations for all k ($k = 1, 2, ..., 12$), we interact all covariates with a dummy for each quarter relative to entry k. We also cluster standard errors at the individual level to take into account the correlation between quarterly outcomes for each individual.

[31] Note that we observe wages at a daily rather than hourly level.

Focusing on individuals whose parents suffer from a shock in a three-year window around entry, Figure 5 plots the time-varying treatment effects ($\beta_{k,b}$'s) for days worked (Panel A) and labor compensation received (Panel B) by quarter. The dynamic pattern of the labor supply response is largely consistent with the idea that we are correctly identifying the effects of an increased labor search effort at the beginning of one's career, rather than pre-existing differences between the treatment and control group. Indeed, Panel A makes clear that average labor supply is not distinguishable for the treatment and control group in the two years preceding entry, a moment at which a significant number of individuals already held part-time student jobs. By contrast, the treatment group starts working more around the time of entry with a maximum treatment effect of 7 additional days of work in the second quarter following entry. Although there is a significant amount of quarterly variation, this effect decreases after the initial peak difference in the first two years after entry.[32] Panel B further confirms this result when looking at labor compensation, indicating an increase in total earnings in the first quarters after entry.

Together with the previous results, Figure 5 paints a picture that is consistent with a simple job-search model. Children whose parents are subject to an income shock shortly before entry look harder for a job at the end of their full-time education. As a result, they find a job a little earlier and work a bit more than children who are not under the same financial pressure. As time passes, this effect diminishes as members of the control group progressively find a job.[33]

6.3 Evidence Regarding the Mechanisms Driving Our Results

In this section we explore the mechanisms behind our main finding that parental unemployment shocks cause labor market entrants to work more but don't have a statistically significant effect on wages. We divide potential mechanisms into those associated with changes in parental financial assistance and those associated with changes in family interactions. We argue that our results are most consistent with a simple model where parental assistance allows entrants to consume more leisure prior to finding a job.

A limitation of this study is that we can't observe financial transfers in our administrative data. We use the Survey of Health, Ageing and Retirement in Europe (SHARE) to document that transfers of at least €250 a year occur 38% of the time for children aged 17 to 35 with employed parents. The probability of transfers is 14 percentage points lower for children with unemployed parents (see Table A2). Furthermore, because parental resources serve as a source of insurance and parental pressure to find a job may change with parents' employment status, children may adjust their job search even in the absence of financial transfers.

[32] The increase in standard errors over time, resulting in a wider confidence set, is explained by the reduced number of children for which we observe the full employment history in the 24 quarters following entry

[33] See Figure A9 for the time-varying effect on work in a quarter and wages.

There are three standard mechanisms present in the literature on labor supply responses to changes in financial resources: the search response, the reservation wage response, and negative duration-dependence. First, financial resources reduce children's returns to finding a job because they increase the utility from unemployment. If this were the only mechanism operating, then we would expect entrants with earlier parental shocks to increase their job search effort, to find jobs faster and to work more. Indeed, this is what we find in our baseline results. Furthermore, consistent with this effect, Table 6, Panel A documents that treated entrants stay longer at their job.

The second search related mechanism is that additional assistance can allow workers to increase their reservation job quality or wage. If this were to be the case, then we would expect entrants with later parental shocks to find higher paying jobs. However, we fail to find an effect of the parental shock on the wage percentile (Table 4, row 4). We explore the effects of shocks on additional outcomes in Table 6. We don't find statistically significant effects on proxies for job quality including first wage, last wage, wage growth, employer size, mean industry wage, and mean industry wage growth. Furthermore, contrary to the reservation wage theory, we find that earlier entrants are actually more likely to have higher quality white collar jobs. The third financial mechanism, negative duration dependence, occurs if longer unemployment spells decrease the labor market prospects of workers, thus reducing their job quality. We also fail to find evidence of this effect although it is possible that the effects of higher reservation wages cancel out the effects of negative duration dependence.

There are also family related mechanisms which may explain our results. For example, if unemployed parents spend their time at home and annoy their children, then their children may wish to find a job faster. Parents with more free time may also help their kids find a job by giving them information or helping them with applications. We test whether these mechanisms are driving our results by taking advantage of the fact that we observe whether the child lives with their parents in each quarter. First, Table 6 (Panel B, last row) shows that having an earlier shock does not affect whether children live with their parents 8 quarters after entry. This means that the annoyance channel does not induce many children to move out of the home. Second, we test for heterogeneity in the treatment effect by whether the children live at home at the time of entry. Table 7 presents results for specifications where we interact the living at home variable with the treatment.[34] We find no statistically significant differences in the treatment effect and the coefficients on the interaction are an order of magnitude smaller than the baseline coefficient for total days worked in the specifications with the proper controls. These results show that the effect is not driven by parent child interaction within the home. We can't exclude other mechanisms that operate through parental assistance in job search, but we are not aware of any evidence that these mechanisms become more important when a parent loses a job.

In conclusion, we don't find evidence that our main results are caused by reservation

wages, negative duration-dependence, or family related mechanisms. Consequently, we favor the simplest explanation, that children increase their job search effort because their parents can no longer provide them as much financial support.

6.4 Robustness

In this section we show that our results are robust to alternative specifications of our main estimating equation including varying the job-loss sample, adding a 'super-control' group of entrants without a job-loss, and changing the definition of a job loss.

We first discuss robustness with respect to the sample window. In general, the difference between child entry and the year of shock could affect the outcomes. For example, children whose parents receive a shock 2 quarters after entry are exposed longer than children whose parents receive a shock 2 years after entry. Furthermore, even with controls, individuals whose parents lose their jobs 3 years before entry may be different than those whose parents lose their job 3 years after entry. Alternatively, there may be anticipation effects, in which case entrants whose parents receive a shock soon after entry may have preemptively adjusted their labor supply.

To address the above concerns, we look at two specifications, one where only shocks within a year of entry are included and another where only shocks further than a year from entry are included. Table A4 displays the results of a set of specifications where we use a one year window around entry. Columns (1) - (5) progressively add additional controls to the specification, mirroring our baseline setup. The results from these regressions are both qualitatively and quantitatively similar. Parental job loss affects the labor supply but not the job quality.[35]

Table A5 displays the results for the specification excluding entrants with shocks within a year of entry. The estimated effects in these specifications are qualitatively similar but larger in magnitude. This could be due to several factors. First, there could have been anticipation effects. Second, the effect of a job-loss two years before entry could be larger than the effect of a more immediate job-loss due to the accumulated financial burden. Third, the job-loss of a parent in the year after entry could result in a faster labor supply response than a job-loss two years after entry.

Next, recall that our dataset also includes a 6.5% random sample of entrants whose parents did not experience a job-loss shock. In Table A6 we include these observations in our estimation. The addition of these observations help us to identify the coefficients on

[34] Kaplan (2012) has documented that children sometimes move in with their parents as a form of insurance.

[35] The only major differences between these results and our baseline results are explained as follows. First, due to the lower sample size, the effect on labor earnings is not statistically significant in these specifications. Second, the effects on labor supply are smaller than in the baseline specifications where we include the year of parental shock. However, the treatment effect is not identified with just a one year window if we include a parental year of shock fixed effect, so we cannot replicate those specifications.

controls unrelated to the job-loss, such as the age at entry. Furthermore, these observations increase the statistical precision of our estimates. The results from these specifications are not quantitatively or qualitatively different form the baseline specifications.

Lastly, as discussed in section 2.2, our definition of the job-loss shock includes parents who lose a stable full-time job and transition either to unemployment insurance or to a state of "unregistered activity". Therefore, our sample might contain some voluntary job quitters. To test whether this is indeed the case, we estimate our preferred specification and interact the treatment effect with the job-loss type. The first and second row of Table A7 indeed show that most of the effect that we identify is concentrated on individuals who transition to unemployment insurance. Moreover, the last two rows further demonstrate that the increase in labor supply is concentrated on parents who do not receive any severance pay and who, as a consequence, receive a more direct reduction in disposable income. Therefore, our benchmark estimates are probably a lower bound on the true treatment effect of involuntary job-loss shocks.

7 Interpretation and Conclusion

We have shown that children whose parents lose a job prior to their child's labor market entry are, on average, induced to work 9% more in the 3 years following labor market entry. We find no evidence that parental shocks affect the quality of the initial job that entrants find. Our results suggest that children are able to use parental support to take additional leisure time prior to taking a job without a penalty to long-run earnings.

If we assume that our estimates are completely driven by the parental support channel, then we can compute a back-of-the-envelope estimate of the effect of parental financial support on child labor supply and compare it to the corresponding parameter in the UI literature. There are several complications which we must overcome in making this comparison. First, while we do observe the magnitude of parental income shocks, we do not directly observe the level of parental transfers to the child. For example, if parents over-insure their child's consumption compared to their own (i.e. they reduce their level of support less than proportionally with the drop in income), this would imply a much larger elasticity of unemployment duration for a given reduction in parental income. Second, we do not measure the level of self-insurance by parents: higher levels of self-insurance will result in a less-than-proportional drop in parental support and would therefore imply a higher elasticity of unemployment duration for a given reduction in parental income.

We make five assumptions. First, consistent with evidence shown in section 2.3, we assume that a parental shock results, on average, in a one-time reduction in parental labor income of 50%. Second, we assume that this drop is insured at 60% in the long-term.[36]

[36]This is close to the 57% long-term net replacement rate provided by the OECD for single-earner couples

Third, we consider the case of a single-earner family. The three previous assumptions imply a drop in available income of $(1 - .6) * 50\% = 20\%$. Fourth, we assume that the drop in parental income results in a proportional drop in parental transfers to the child. Finally, we need to make an assumption about the benchmark number of unemployed days for children. We do so by using the maximum total number of days worked by a full-time worker during the first twelve quarters after entry. Since a full-time quarter of work is equivalent (on average) to 66 days of work in our data, maximum labor supply over 12 quarters is 792 days. This compares to an average of 429.7 days effectively worked by the control group in our data over the same period. Therefore, 39 additional days of work for the treatment group (benchmark result, Table 4) correspond to a $\frac{39}{792-429.7} = 11\%$ decrease in unemployed days. This implies an elasticity of unemployment duration with respect to parental transfers of $11/20 = .55$, close to the benchmark estimate of .5 reported by Krueger and Meyer (2002). If we instead assume that only the short-run drop in parental income is relevant for transfers, then the elasticity would be $11/50 = .22$, much lower than the benchmark from UI.

Lastly, Appendix A.9 presents suggestive evidence regarding substantial differences in labor supply responses based on the child's age and parental income. We leave investigation of this heterogeneity for future work.

at the average wage, with 2 children.

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Tables

Table 1: Summary Statistics

Panel A. Child characteristics and outcomes	All entrants	Job Loss Group		Panel B. Household and parental characteristics	All entrants	Job Loss Group	
		3 Years Window	1 Year Window			3 Years Window	1 Year Window
	(I)	(II)	(III)		(I)	(II)	(III)
# of entrants	56,913	5,605	2,185	*# of parents*	99,251	9,920	3,998
Males	50.2%	50.5%	49.4%	*# of households*	43,794	4,700	1,893
Belgian citizen	97.2%	95.9%	95.5%	*Two parents family*	78.8%	89.2%	89.0%
Age at Entry				*Single parent family*	21.2%	10.8%	11.0%
18-19	26.3%	33.1%	32.4%	*Single Father*	18.5%	36.1%	36.1%
20-21	28.1%	29.3%	29.5%	*Single Mother*	81.5%	63.9%	63.9%
22-23	29.0%	24.8%	25.5%	*Father age at birth*	29.36	28.18	28.16
24-25	16.5%	12.9%	12.6%		(5.62)	(5.03)	(4.96)
Labour market outcomes in 12 quarters after entry				*Mother age at birth*	26.89	25.91	26.00
Days worked	460.1	441.4	440.0		(4.65)	(4.46)	(4.45)
	(252.1)	(245.2)	(250.7)	*Number of children in parental household*			
Quarters with a job	8.70	8.64	8.61	*1*	20.1%	22.5%	20.9%
	(3.51)	(3.44)	(3.49)	*2*	41.9%	40.2%	40.3%
Total salary (in euros)	37,868	35,020	34,719	*3 or more*	38.1%	37.3%	38.9%
	(24,027)	(22,689)	(22,953)	*Working 16 Q. before entry*			
Wage Percentile	29.79	27.22	27.20	*Father*	84.8%	94.9%	95.6%
	(18.08)	(17.07)	(17.00)	*Mother*	57.8%	80.3%	83.7%

Notes: This table displays summary statistics for the samples used in the paper. All percentages represent the share of individuals in the sample that present the considered characteristic. Other statistics are averages taken over all individuals in the sample. The standard deviation is displayed in parentheses when relevant. Column I displays statistics for a representative sample of entrants in the Belgian population between 2004 and 2008. Column II (III) displays statistics for the sample of children whose parents experience a job-loss shock in a three (one) year window around the child's entry into the labor force. Labor market outcomes for the child are measured from the quarter of entry Q to $Q+11$. *Days worked* is the sum of all full-time equivalent days worked as a salaried employee in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid, net of all (employer and employee) social security contributions. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the same quarter. Third, a single wage percentile for each individual is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. All variables relating to family composition are measured 16 quarters before the end of family allowances payments. Father's and mother's age-at-birth refer to the age of the parent at the time of birth of the child. *Working 16 Q. before entry* is a dummy equal to one if the parent had at least one job on the 16^{th} quarter before the child's entry into the labor force.

Table 2: Balance Tests - Parental Demographics and Employment History

	Average by shock time		Before/After Difference	
	Treatment group	Control group	Simple difference	Year-of-shock and Age-at-shock controls
	(I)	(II)	(III)	(IV)
Age at shock	44.686	44.156	0.521***	
	(0.107)	(0.103)	(0.142)	
Single parent	0.100	0.097	0.002	0.000
	(0.006)	(0.006)	(0.008)	(0.011)
Head of household	0.754	0.763	-0.011	-0.022
	(0.008)	(0.008)	(0.011)	(0.014)
Number of kids	2.384	2.401	-0.021	0.022
	(0.024)	(0.026)	(0.034)	(0.044)
Female (%)	0.291	0.267	0.020*	0.028*
	(0.009)	(0.009)	(0.012)	(0.016)
Median wage in last 3 years	9.834	9.999	-0.121	-0.209
	(0.096)	(0.096)	(0.130)	(0.162)
Employer size	4.805	4.950	-0.130*	0.042
	(0.051)	(0.051)	(0.068)	(0.090)
Blue Collar job	0.665	0.658	0.004	-0.016
	(0.009)	(0.009)	(0.013)	(0.016)
Tenure (in years)	7.644	8.203	-0.557***	-0.375***
	(0.054)	(0.051)	(0.071)	(0.094)
Days worked in last 10 years (percentile)	73.869	74.178	-0.271	-0.577
	(0.267)	(0.267)	(0.360)	(0.453)
Days receiving unemployment benefits in last 10 years (percentile)	78.284	78.995	-0.699***	-0.268
	(0.154)	(0.145)	(0.202)	(0.259)
Median wage in last 10 year (percentile)	52.434	54.339	-1.716***	-0.777
	(0.468)	(0.451)	(0.624)	(0.767)
Total compensation in last 10 year (percentile)	75.369	75.974	-0.559	-0.362
	(0.258)	(0.256)	(0.347)	(0.432)

Notes: This table tests for differences in average demographic characteristics and employment history between parents in the treatment and control groups. The treatment group includes parents experiencing the loss of a stable full-time job in the 12 quarters prior to their child's entry into the labor force. The control group includes parents experiencing a similar shock in the 12 quarters after entry. Each row of Column I (II) displays the sample average of the variable of interest in the treatment (control) group. Column III displays the simple difference between the treatment and control groups while column IV presents the coefficients on a dummy equal to one for the treatment group from a regression of the variable of interest that controls for a full set of year-of-shock and age-at-shock dummies. Demographic characteristics are measured 16 quarters before the child's entry into the labor force. *Number of kids* refers to the number of children living in the parental household including the child identified as entering the labor force. *Employer size* and *Blue Collar jobs* are measured two quarters before job loss. All other employment variables are measured in the 10 calendar years prior to the job-loss shock and, except for tenure, are expressed in percentiles of the distribution of the relevant variable in the same year for parents in our representative sample of all entrants (see Table 1, Column I). *Tenure* is measured using the unique employer identifier provided by the pension registry and is censored at a maximum of 10 years. *Median wage in last 10 years* is obtained by dividing total compensation by total days worked for each year and taking the median over the last 10 years for each parent. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table 3: Balance Tests - Child Demographics

	Average by shock time		Before/After Difference
	Treatment group (I)	Control group (II)	Simple difference (III)
Males	0.516	0.494	0.022*
	(0.010)	(0.009)	(0.013)
Belgian citizen	0.956	0.961	-0.005
	(0.004)	(0.004)	(0.005)
18-19	0.330	0.331	-0.001
	(0.009)	(0.009)	(0.013)
20-21	0.293	0.293	0.000
	(0.009)	(0.008)	(0.012)
22-23	0.247	0.249	-0.002
	(0.008)	(0.008)	(0.012)
24-25	0.130	0.128	0.002
	(0.006)	(0.006)	(0.009)
Age at Entry	20.837	20.816	0.021
	(0.040)	(0.039)	(0.056)

Notes: This table tests for differences in the average demographic characteristics of young adults across the treatment and control groups. The treatment group includes children with a parent experiencing the loss of a stable full-time job in the 12 quarters prior to their child's entry into the labor force. The control group includes children with a parent experiencing a similar shock in the 12 quarters after entry. Each row of Column I (II) displays the sample average of the variable of interest in the treatment (control) group. Column III displays the simple difference between the treatment and control groups. *p<0.1; **p<0.05; ***p<0.01

Table 4: Main Results

	Estimated treatment effect for main outcome variables							Baseline Average
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	
Dependent variable								
Total Days Worked	23.422 ***	22.746 ***	28.023 ***	30.576 ***	27.861 ***	38.631 ***	38.763 ***	429.702
	(6.542)	(6.370)	(6.572)	(6.554)	(6.571)	(12.750)	(12.671)	(4.617)
Quarters with a job	0.245 **	0.242 **	0.316 ***	0.349 ***	0.309 ***	0.434 **	0.439 **	9.068
	(0.098)	(0.097)	(0.100)	(0.100)	(0.101)	(0.195)	(0.194)	(0.069)
Total Salary	1,663 ***	1,469 ***	2,023 ***	2,077 ***	1,810 ***	2,555 **	2,568 **	34,186
	(605)	(565)	(583)	(583)	(581)	(1,135)	(1,121)	(427)
Wage percentile	0.193	-0.116	0.242	0.314	0.285	-0.339	-0.236	27.120
	(0.469)	(0.433)	(0.448)	(0.448)	(0.444)	(0.873)	(0.857)	(0.331)
# of observations	5,605	5,605	5,605	5,605	5,532	5,605	5,532	
Controls								
Age at entry		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Parental age at shock			*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Year of entry				*Yes*	*Yes*	*Yes*	*Yes*	
Year of parental shock						*Yes*	*Yes*	
Family and Demographic controls					*Yes*		*Yes*	

Notes: The table displays our benchmark estimates for the treatment effect of a parental job-loss shock before entry on the employment outcomes of children in the 12 quarters following entry. Each entry in Columns (1) - (7) displays the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force. The last Column (*Baseline Average*) displays the average of the variable for the sample of children whose parents suffer from the shock in the 12 quarters following entry. All regressions are estimated on the sample of labor market entrants whose parents experience the loss of a stable full-time job in the 12 quarters before or after entry. We exclude those children whose parents lose their job during the quarter of entry. We also exclude the (few) cases where parents get more than one shock in the three-year window around entry. *Days worked* is the sum of all full-time equivalent days worked as an employee of a firm in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid during the quarter, net of all (employer and employee) social security contributions paid during the same quarter. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the current quarter. Third, a single wage percentile for each child is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. Note, in some cases, individuals never earn a daily wage and are excluded from row 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other U.E., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table 5: Effect for Entrants at Age 18

	Estimated treatment effect for main outcome variables						Baseline Average
	(I)	(II)	(III)	(IV)	(V)	(VI)	
Dependent variable							
Total Days Worked	27.880 *	36.127 **	42.830 **	41.708 **	46.093	56.678 *	338.749
	(16.529)	(17.629)	(17.447)	(17.461)	(33.130)	(32.800)	(11.801)
Quarters with a job	0.110	0.238	0.321	0.286	0.295	0.470	8.303
	(0.279)	(0.296)	(0.294)	(0.295)	(0.560)	(0.556)	(0.199)
Total Salary	1,458	2,073	2,357 *	2,208 *	2,276	3,259	23,078
	(1,248)	(1,330)	(1,325)	(1,307)	(2,519)	(2,458)	(891)
Wage percentile	-1.754 *	-1.708	-1.518	-1.296	-1.625	-0.338	21.303
	(1.013)	(1.080)	(1.083)	(1.010)	(2.066)	(1.897)	(0.718)
# of observations	822	822	822	812	822	812	
Controls							
Parental age at shock		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Year of entry			*Yes*	*Yes*	*Yes*	*Yes*	
Year of parental shock					*Yes*	*Yes*	
controls						*Yes*	

Notes: The table displays estimates for the treatment effect of a parental job-loss shock before entry on the employment outcomes of children in the 12 quarters following entry. Each entry in Columns (I) - (VII) displays the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force. The last column (*Baseline Average*) displays the average of the variable for the sample of children whose parents suffer from the shock in the 12 quarters following entry. All regressions are estimated on the sample of labor market entrants that entered at 18 and whose parents experience the loss of a stable full-time job in the 12 quarters before or after entry. We exclude those children whose parents lose their job during the quarter of entry. We also exclude the (few) cases where parents get more than one shock in the one-year window around entry. *Days worked* is the sum of all full-time equivalent days worked as an employee of a firm in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid during the quarter, net of all (employer and employee) social security contributions paid during the same quarter. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the current quarter. Third, a single wage percentile for each child is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. Note, in some cases, individuals never earn a daily wage and are excluded from row 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other U.E., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table 6: Effect on Additional Labor Market Outcomes

Panel A	**No covariates**	**With covariates**	**Baseline average**	***Panel B***	**No covariates**	**With covariates**	**Baseline average**	**# of obs**
	(I)	(II)	(III)		(I)	(II)	(III)	(IV)
Quarterly days worked at employer	*0.734*	*0.817*	*50.726*	*Quaterly wage growth (in perc.)*	*-0.110* **	*-0.027*	*1.211*	*4,241*
	(0.452)	*(0.895)*	*(0.321)*		*(0.054)*	*(0.107)*	*(0.039)*	
# of employers	*-0.014*	*-0.082*	*2.882*	*Quarters with white collar job (%)*	*0.028* **	*0.036* *	*0.558*	*5,282*
	(0.053)	*(0.106)*	*(0.038)*		*(0.013)*	*(0.020)*	*(0.009)*	
# of employers in first 2 Q.	*0.018*	*0.045*	*1.407*	*Quarters with blue collar job (%)*	*-0.024* *	*-0.038* *	*0.456*	*5,282*
	(0.022)	*(0.044)*	*(0.015)*		*(0.013)*	*(0.020)*	*(0.009)*	
# of employers in first 4 Q.	*0.002*	*-0.037*	*1.809*	*First employer size*	*-0.832*	*-55.654*	*893.020*	*5,308*
	(0.030)	*(0.061)*	*(0.022)*		*(25.561)*	*(51.401)*	*(18.026)*	
Maximum tenure	*0.328* ***	*0.573* ***	*7.316*	*Average industry wage (perc.)*	*0.003*	*0.163*	*28.929*	*5,308*
	(0.091)	*(0.179)*	*(0.064)*		*(0.238)*	*(0.468)*	*(0.168)*	
First wage (percentile)	*0.345*	*1.216*	*23.518*	*Mean industry wage growth*	*0.000*	*-0.008*	*0.857*	*5,308*
	(0.475)	*(0.907)*	*(0.335)*		*(0.007)*	*(0.013)*	*(0.005)*	
Last wage (percentile)	*0.231*	*-0.028*	*31.508*	*Live with parents 8 Q after entry*	*-0.009*	*-0.000*	*0.488*	*5,605*
	(0.552)	*(1.013)*	*(0.389)*		*(0.013)*	*(0.026)*	*(0.009)*	

Notes: The table displays our estimates of the treatment effect of a parental job-loss shock before entry for a larger set of child outcomes after entry. All regressions are estimated on the sample of labor market entrants whose parents experience the loss of a stable full-time job in the 12 quarters before or after entry. We exclude those children whose parents lose their job on the quarter of entry or get more than one job-loss shock in the 12 quarters around entry. Columns I and II display the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before entry into the labor force. Column I does not include any controls (i.e. the coefficient is equal to the difference in sample average between the treatment and control group). Column II adds controls for age-at-entry, parental age-at-shock, year of parental shock, year-of-entry and demographic controls. Column III displays the baseline average of the variable for the sample of children whose parents suffer from the shock in the 12 quarters following entry. Except when otherwise mentioned, all dependent variables are computed using data from the first 12 quarters after the child's entry in the labor force. *Quarterly days worked at employer* measures the number of days worked by quarter at continuing jobs. It is computed by (i) looking only at continuing employer-employee relationships (i.e. jobs that exist both in the previous and the next quarter) and (ii) taking the individual average over all job-quarter observations if the individual has more than one such job. *# of employers* is the total number of different employers for which an individual has worked, even for as little as an hour (variable is set to missing for individuals that have zero employers). *Maximum tenure* is the maximum number of quarters for which the individual has worked for a given employer during the 12 quarters after entry (variable is set to missing for individuals that have zero employers).*First (Last) wage* is the first (last) wage observed in the 12 quarters following entry. *Wage growth* is the average difference in wage between the current and the previous quarter in the 12 quarters following entry. Wages are expressed in percentiles and computed as explained in the notes to Table 4. *Quarters with a white (blue) collar job* is the number of quarters during which the individual had a least one white (blue) collar job. *Employer size* is the number of different workers who worked for the employer in the current quarter, as indicated by the full set of records in the social security employment registry. Industry level variables are computed by taking the sample average of each variable at the NACE 3-digit level on the representative sample of all labor market entrants between 2004 and 2008 described in column I of Table 1. *Live with parents 8 Q after entry* is an indicator variable equal to one if the child is still registered as living with his first parent in Belgium's national registry 8 quarters after entry. The first parent is the parent that was registered as head of the family 16 quarters before the child's entry into the labor force. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

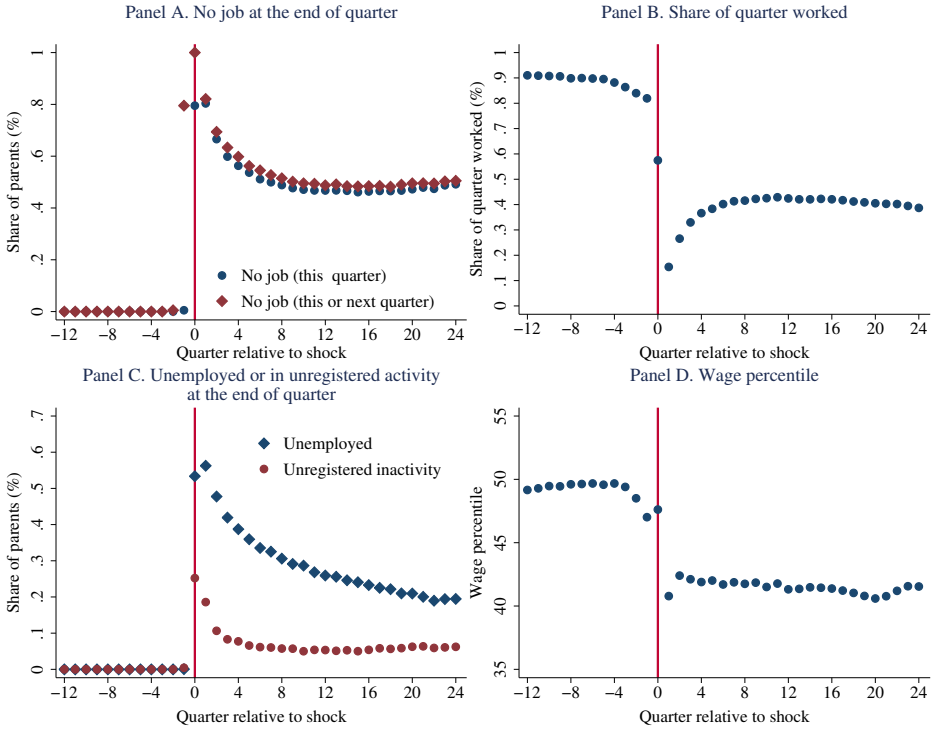
Table 7: Heterogeneity by Residential Status

		(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)
Dependent variable								
Total Days Worked	Before	15.519	17.753	22.920 *	26.452 **	27.478 **	34.127 **	37.788 **
		(13.641)	(13.281)	(13.415)	(13.352)	(13.382)	(17.085)	(17.037)
	Before * Living with Parents	10.946	7.114	6.011	4.862	0.292	4.809	0.206
		(15.536)	(15.129)	(15.176)	(15.094)	(15.112)	(15.114)	(15.131)
Quarters with a job	Before	0.237	0.246	0.321	0.364 *	0.374 *	0.437 *	0.487 *
		(0.204)	(0.203)	(0.205)	(0.204)	(0.205)	(0.261)	(0.261)
	Before * Living with Parents	0.022	0.004	-0.015	-0.027	-0.087	-0.020	-0.082
		(0.233)	(0.231)	(0.232)	(0.231)	(0.231)	(0.231)	(0.232)
Total Salary	Before	963	1,288	1,885	1,968 *	2,079 *	2,399	2,777 *
		(1,263)	(1,179)	(1,191)	(1,189)	(1,184)	(1,521)	(1,508)
	Before * Living with Parents	962	286	130	104	-364	118	-352
		(1,439)	(1,343)	(1,347)	(1,344)	(1,337)	(1,346)	(1,339)
Wage percentile	Before	-0.406	-0.345	0.100	0.187	0.193	-0.469	-0.337
		(0.988)	(0.913)	(0.924)	(0.923)	(0.913)	(1.178)	(1.159)
	Before * Living with Parents	0.787	0.314	0.165	0.148	0.117	0.146	0.127
		(1.122)	(1.037)	(1.042)	(1.040)	(1.028)	(1.041)	(1.029)
# of observations		*5,605*	*5,605*	*5,605*	*5,605*	*5,532*	*5,605*	*5,532*
Controls								
Age at entry			*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Parental age at shock				*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year of entry					*Yes*	*Yes*	*Yes*	*Yes*
Year of parental shock							*Yes*	*Yes*
Demographic controls						*Yes*		*Yes*

Notes: This table investigates how the treatment effect of parental job-loss before entry varies with the child's residential status. The baseline treatment is the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force (Before). Living with Parents at Entry is equal to 1 if the child still lives with his/her parents at the time of entry. The heterogeneous effects are identified by interacting the Before dummy with the Living with Parents dummy. All regressions include controls for year of entry, parental age at job-loss, year of parental job-loss and demographic controls. We exclude those children whose parents lose their job in the quarter of entry or get more than one job-loss shock in the 12 quarters around entry. Dependent variables are defined as in Table 4. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

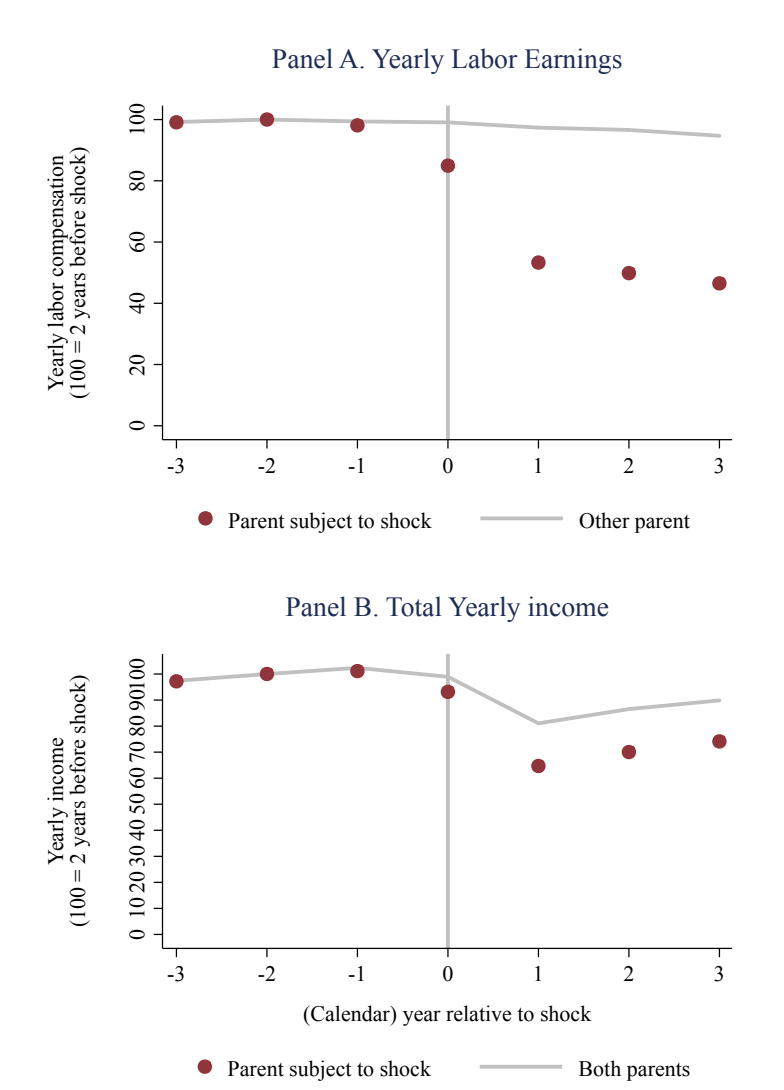
Figures

Figure 1: Description of Parental Job-loss Shocks



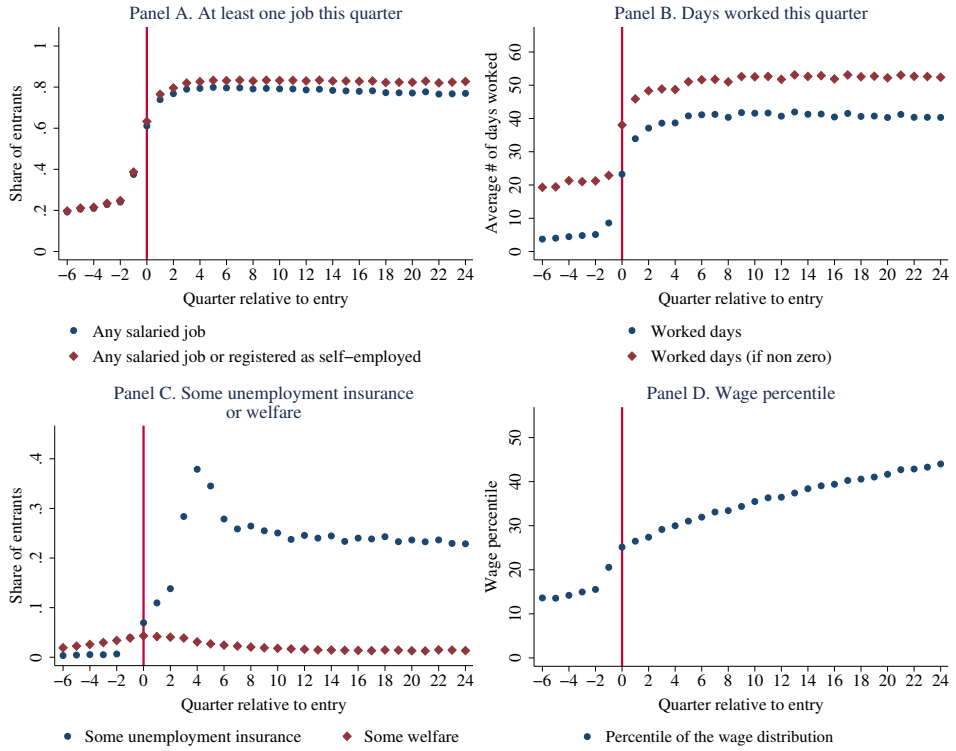
Notes: Each panel of this figure displays the evolution of different labor market outcomes by quarter relative to job loss for the sample of parents suffering from the loss of a stable full-time job as defined in section 2.2. Quarter 0 refers to the quarter of job loss as defined in the same section. Individual labor market outcomes are observed until the last quarter of 2011: therefore, this pooled sample is unbalanced because some outcomes are not observed for the full 24 quarters after job loss. Using a balanced sample brings similar, albeit noisier, results (see Figure A4 in Appendix). The *share of quarter worked* in Panel B is computed as the total amount of time worked during the quarter divided by the maximum total amount of time legally worked by a full-time worker during the same quarter. Individuals in Panel C are considered as unemployed or in unregistered activity based on the end of quarter socio-economic status variable, as explained in section **??**. The wage percentile in Panel D is obtained by dividing total labor compensation by total days worked at each job during the quarter and taking the median for each individual if he has more than one job during the quarter. Panel D displays the average wage percentile in the sample.

Figure 2: Average Labor Earnings of Parents
by Year Relative to Job-loss Shock



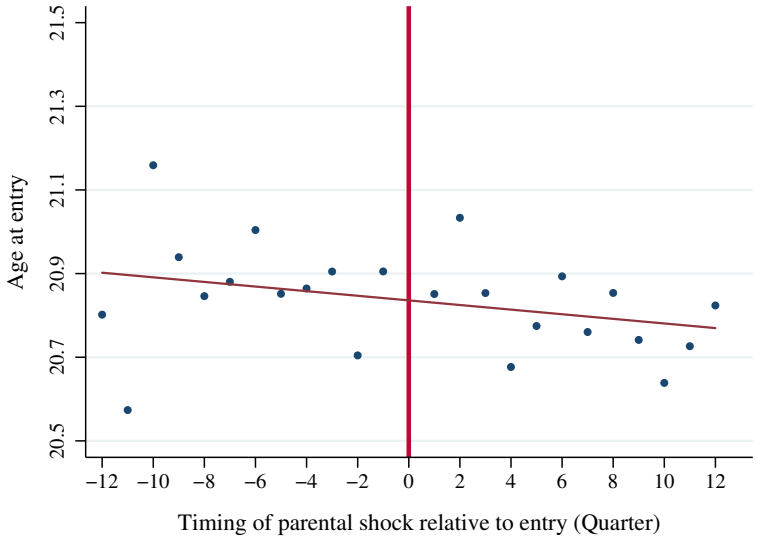
Notes: Panel A of this figure shows the sum of all (pre-tax) labor compensation by calendar year relative to the shock for parents suffering from the loss of a stable full-time job, as defined in section 2.2, as well as for their spouse (grey line). Year 0 refers to the calendar year of job loss as defined in the same section. Parental shocks are observed between 2003 and 2011 and income data between 1990 and 2011. Therefore, this pooled sample is unbalanced because some outcomes are not observed for the full 3 years after job loss. Using a balanced sample brings similar, albeit noisier, results. Yearly labor compensation data is from the employment registry of Belgium's public pension administration for private sector workers. This data includes all private sector employees as well as contractual employees from the federal government and employees from local public authorities (i.e. it does not include labor income for the self-employed or statutory civil servants). Yearly income is normalized to 100, two years before the job loss shock and is winsorized at the 99^{th} percentile. Panel B displays data for the sum of all types of income registered in the social security database, including both labor market income and replacement income, for the parent suffering from the shock (dots), as well as for the entire household (grey line). Each point represents the average percentile of the parent (household) suffering from the shock, in the distribution of total income for all individuals (households) in the Belgian resident population.

Figure 3: Transition from Full-time Education to Working Life



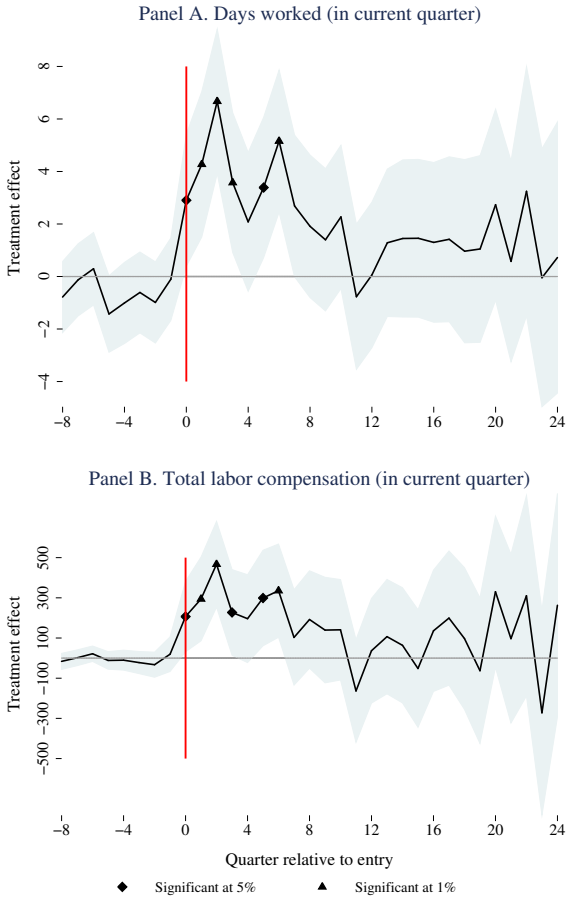
Notes: Each panel of this figure displays the evolution of a different labor market outcome by quarter relative to labor force entry for the representative sample of labor market entrants in Belgium between 2004 and 2008. Individual labor market outcomes are observed until the last quarter of 2011. As a consequence, our sample is not balanced because some outcomes are not observed for the full 24 quarters after job loss (labor market entrants progressively disappear from our sample from the 12^{th} quarter following entry. Using a balanced sample of the earliest entrants brings similar results (See Figure A2 in Appendix). Quarter 0 is defined as the first of two consecutive quarters for which the entrant is either (i) not receiving family allowances, (ii) registered as a job-seeker with the public employment agency or (iii) working for more than two thirds of the quarter as described in section 2.2. Individuals in Panel A are considered as having a job if they work at any point during the quarter. *Days worked* in Panel B represent the sum of all full-time equivalent days worked as an employee of a firm at all jobs during the 12 quarters after entry. An individual is considered as receiving unemployment or welfare benefits in Panel C if he receives such benefits at any point during the quarter. The wage percentile is obtained by dividing total (pre-tax) labor earnings by days worked at each job and taking the median for each individual if he has more than one job during the quarter. Panel D displays the average wage percentile for individuals in our sample.

Figure 4: Average Child Age at Entry
by Year of Parental Shock Relative to Entry



Notes: This figure displays the average child's age at entry, as a function of the timing of parental income shocks relative to entry. Each point is the average age-at-entry for the subsample of children whose parents suffer from a parental job-loss shock in the specified time window. Shocks are defined as in section 2.2 and are observed in a 3-year window around entry for the sample of children entering the labor force between 2004 and 2008. We exclude children whose parents experience more than one shock in the 3-year window around entry. None of the pairwise comparisons between averages for the different time windows considered in this graph come close to being statistically significant at conventional levels.

Figure 5: Dynamic Effects of Job-Loss Shocks



Notes: This figure plots the estimated effects of parental job-loss shocks on days worked and labor compensation by quarter from two years before to six years after entry. Each line represents the estimated coefficient for an indicator variable equal to one for children whose parents experience a job-loss shock in the 12 quarters prior to entry. The regression is estimated on the sample of children entering the labor market between 2004 and 2008 whose parents suffer from a job loss shock in the 12 quarters prior to (treatment group) or following (control group) the child's entry into the labor force. Labor market outcomes are observed for all children from 2 years before entry up to the last quarter of 2011. Therefore, while the sample is balanced up to 12 quarters after entry, later outcomes are only available for earlier entrants (e.g. outcomes up to 24 quarters are estimated on individuals entering in 2004 and 2005). The estimated treatment effects come from a regression that includes controls for the child's age-at-entry, year of entry, parental age-at-shock, and year of shock. The shaded area plots the 95% confidence interval and markers indicate statistical significance at 1 and 5%. Coefficients are estimated by pooling all quarterly observations and interacting regressors with dummies for each quarter relative to entry (i.e. point estimates are equivalent to separate quarter-by-quarter regressions). Standard errors are clustered at the individual level.

A Appendix

A.1 Data sources

As shown in figure A1, data for this project comes from a variety of Belgian governmental institutions. This data is merged into the *Labour Market Data Warehouse* (LMDW) using the unique personal identifier assigned to any Belgian citizen or resident. Below, we provide more information on each source of data used in this paper.

National Registry. National registry data allows us to identify child-parent relationships and household characteristics. Belgium's national registry provides basic demographic information about all Belgian citizens and residents. In particular, the place of residence, household membership and the status of each individual in the household (dependent child, head, spouse) are required by law to be recorded and each change is subject to an individual control by a member of the police forces. In addition to this information, we also use this database for personal information on gender, age, citizenship, and the number of children in the household.

Family Allowances. Belgium's National Office of Family Allowances for Salaried[37] Workers (*ONAFTS : Office National des Allocations Familiales pour Travailleurs Salariés*) provides quarterly data on family allowance payments. Specifically, we extract a dummy variable indicating, for each quarter, whether family allowances have been paid for each child in our sample.

The Social Security Employment Registry. The employment database of Belgium's National Social Security Office (*ONSS : Office National de la Securite Sociale*) contains quarterly data on each salaried employment relationship in Belgium. The database relies primarily on mandatory forms filed quarterly by employers in order to compute social security contributions and tax withholdings. It is also used by the tax administration to determine taxable labor income. This data is therefore subject to extensive verification and little measurement error.

The employment registry provides information on days and hours worked, earnings, the type of job (e.g. blue- or white-collar), employment contract (regular contract, student contract, low-status job subject to specific regulations,...), and eligibility for social security contributions reductions. The database also contains a unique employer identifier, which allows us to construct a measure of firm's size, as well as the employer's industry code. The Social Security Employment Registry covers all private sector employees as well as contractual public sector workers and tenured civil servants.[38] We use this database as our primary source of data on employment outcomes for children as well as to identify parental job loss shocks.

Employment Registry of the Pension Administration. We obtain additional information on parental employment history from the Employment Registry of Belgium's public Pension Administration (*SIGEDIS*). It contains yearly data on sick and unemployed days for each year as well as, for each employer-employee relationship, yearly worked days, labor earnings and basic job information. This database covers all private-sector salaried workers as well as contractual employees

[37] The term 'salaried' in the name of the agency refers to all labor earnings from an employment relationship with a firm.

[38] Data on employees of local public authorities is technically provided by a separate database (*ONSS-APL*) which contains similar information and which we easily merge with the ONSS data to build a single database.

from the public sector (i.e. it does not include tenured civil servants and self-employed individuals). This is not a significant limitation given that tenured civil servants are rarely, if ever, dismissed and will seldom be subject to a job loss shock. The advantage of this database is that it contains at least 10 years of employment history before job loss for every parent in our sample while the Social Security Employment Registry only provides up to 4 years of history for the earliest shocks in our data (2003). We use this additional employment data to test the credibility of our identifying assumption.

Unemployment Insurance Agency. Belgium's National Unemployment Insurance Agency (*ONEM - Office National de l'Emploi*) is responsible for the administration of unemployment benefits which includes the payment of benefits as well as enforcement of eligibility rules (including job search requirements). This database provides us with data on the number of days during which parents and children receive unemployment benefits for each month in our sample.

Public Job Placement Agencies. Public job assistance for the unemployed in Belgium is the responsibility of separate agencies for each of Belgium's three regions (respectively, *VDAB* for Flanders, *Actiris* for Brussels and *Forem* for Wallonia). In order to be eligible for unemployment benefits, new labor market entrants are required to be continuously registered with their respective local agency not only when they receive benefits but also throughout the entire 9-month waiting period during which they are not yet eligible for benefits after the end of their studies (see section 2.2). For each month, we extract from these databases a monthly dummy variable indicating whether the individual was registered with the agency. This information is used to identify the timing of the child's entry into the labor force.

Welfare Payments. Belgium's residual social safety net (under the authority of the *S.P.F. Intégration Sociale*) provides means-tested benefits to individuals who have no other source of income (such as jobless individuals who are not eligible for unemployment insurance). For each month, we extract a variable indicating whether each child in our sample is receiving welfare payments. This information is used to analyze the process of entry into the labor force.

Pension Benefits and Disability Insurance. The pension database of the National Pension Office (*Office National Des Pensions*) provides information on each public pension payment received by retired workers. We use this information to verify that the job-loss shocks are not the result of a voluntary retirement decision. We also use data from Belgium's short- and long-term sickness insurance databases to extract information on receipt of sickness benefits. This also allows us to verify that the parental income shocks that we use are not the result of a sickness episode.

Socio-economic Status. In addition to variables that are directly extracted from each institution's database, the *Labor Market Data Warehouse* also contains variables that summarize the information contained in all the available databases. In particular, we use the "*socio-economic status*" variable that provides summary information on the socio-economic situation of the individual at the end of the quarter (e.g. employed, insured unemployed, uninsured unemployed, sick, retired, dependent inactive children,...). This information is used in the identification of job loss shocks in order to differentiate involuntary job separations leading to unemployment from other types of job separations (such as job-to-job transitions).

A.2 More Details on Secondary and Tertiary Education

Between 12 and 18, high school students are progressively sorted into technical, professional or general programs. Technical and professional education is usually associated with lower-ability students who typically enter the labor market directly out of high school or enroll in shorter tertiary programs with a vocational focus. By contrast, students who have followed the general high school program most often try to acquire a regular tertiary education. Available data from the Dutch-speaking part of the country indicate that 45% (55%) of high school graduates obtain a general (technical or professional) degree with 87.3% (46.7%) of general (technical or professional) high school graduates enrolling in higher education (this can be deducted from Table 2 of Declercq and Verboven (2014)). Given that education systems are administered separately by Belgium's linguistic communities (Dutch, French and German), aggregate statistics for the entire country are hard to obtain. Nonetheless, since the overall structure of the education system remains similar across the communities, these numbers still provide a broadly accurate picture for the entire country.

There are two types of higher education institutions in Belgium: universities and colleges. Universities provide a more academic education lasting 4 to 5 years and usually leading to higher paying jobs. Colleges provide a more vocational and technical training in programs lasting 3 to 5 years. With a few exceptions, the only admission condition to both types of education is a high school degree of any sort: institutions are not allowed to set other admission standards. As a consequence, while a large share of each cohort registers for higher education, continuation rates after the first year are low. Around two-thirds of students either drop out of higher education, repeat their first year, or switch to another form of education (Declercq and Verboven (2014)). Overall, this translates into a graduation rate from tertiary education of 44% in the 30-34 age group, with approximately equal share of college and university graduates (OECD (2014)).

A.3 More Details on Family Benefit Amounts

Family allowances are not generally means-tested, although payments do increase with a child's age and the number of children in the household. Baseline benefits are also increased for families with unemployed, retired, sick or single working parents. Monthly payments for full-time students who are older than 17 range from €118 for one-child families without increased benefits to €401 per child for orphaned children. Specifically, baseline monthly payments (in 2014 Euros) are 90, 167 and 249 for the first, second and third (or more) child respectively (all amounts have been rounded to the nearest integer). The baseline amounts are higher (varying from 136 to 272) for unemployed, retired, sick or single working parents earning less than €2,310 per month (2,386 for two-parents households). Baseline amounts are further increased by €24 per month for kids above 12 and by 28 for kids above 18 in families receiving normal benefits.

The benefit amounts detailed above are modified for certain family situations. Orphans with a single or no surviving parent receive an even higher monthly base benefit of €346.92. Allowances are usually paid to parents but can be paid directly to orphans or children who are estranged from their parents. For families with more than one child or those benefiting from increased baseline payments, the supplements are €48 and €61 respectively. There is also a special regime for disabled children. Historically, family allowances for self-employed parents were significantly lower but since

we focus on parents who hold and lose a full-time salaried job, this is irrelevant in our case. In 2012, 84.1% of children were receiving regular benefits, there was on average 1.72 children per family and the average monthly payment was around €173.[39] This compares with an average gross monthly labor earnings of around €3,350, corresponding to roughly €2,050 (€2,350) after tax for a two-earner (one-earner) family with two dependent children.[40]

Overall, family allowances typically represent a small but significant share of the household budget. Family benefits do not, however, cover the full cost of maintaining a child. While there is no official estimate of child-rearing costs, welfare benefits paid by the Belgium's residual social safety net provide a good comparison point: as of 2013, these benefits stood at €545 per month for dependent members of a household.[41]

A.4 More Details on Unemployment Assistance for New Labor Market Entrants

The waiting period. The time between labor market entry and eligibility for unemployment benefits is typically 9 months. It is extended to 12 months for graduates over the age of 25. The waiting period is shortened by the number of days previously worked. For example, a young graduate who worked on a regular employment contract for 2 months during his higher education, would be eligible for the "*allocations d'attente*" 7 months after graduation. By contrast, the waiting period would not be extended if the graduate worked part-time during these 7 months, since all days (whether employed or unemployed) are taken into account during the waiting period. Note, however, that Belgian students often work under a special contract with reduced social security contributions: days worked under such contract are not taken into account to shorten the waiting period. Eligibility for special unemployment benefits also requires the unemployed to have obtained a regular high school diploma or a lower-secondary diploma from a technical high school.

"*Allocations d'attente*". Labor market entrants who are not eligible for "*allocations d'attente*", as well as children of parents who cannot provide them with sufficient support, can turn to the residual social safety net which provides welfare payments to individuals who have no other sources of revenue. In 2014, maximum monthly payments are €545 for a dependent, €817 for singles and €1,090 for heads of households. These payments are fully means-tested: except for a small exempt amount,[42] welfare agencies only pay the difference between the maximum amount and all other financial resources of the beneficiary. For children still living with their parents, this includes both their own as well as their parents' income. Therefore, as long as they do not formally leave the parental home, new labor market entrants are eligible for welfare payments only if they live in very

[39] These statistics are from Belgium's family allowances administration (ONAFT). The first number comes from ONAFT (2013*a*), the second from ONAFT (2013*b*) and the third is taken from ONAFT (2011) and is expressed in 2014 euros.

[40] Source: 2012 official statistics from Belgium's Ministry of the Economy (*SPF Economie*) expressed in 2014 euros. We rely on a popular simulator from an private HR company (*Parthena*) to compute the after-tax income.

[41] Another useful point of comparison is the method most commonly used by civil courts to determine child support payments (*Méthode Rénard*). According to this method, the cost of maintaining an 18 year old child in high school is equal to 27% of total family income. For a single-earner family, using the above-mentioned average net-of-tax labor income of €2,050, this method implies a monthly cost of around €553.

[42] €155 per month for a dependent.

low income families.

A.5 More Details on Unemployment Insurance for Experienced Workers

Experienced workers who suffer from an involuntary job loss are eligible for unemployment benefits without any time limit, a unique feature of Belgium's unemployment insurance. Benefits are not available for workers who quit. Benefits are computed as a percentage of the last job's gross labor earnings, subject to minimum and maximum amounts that depend on individual characteristics. The generosity of employment benefits decreases with the duration of unemployment because of lower replacement rates as well as lower minima and maxima. Based on these different factors, in 2010, net replacement rates varied between 37% and 84% in Belgium.

The evolution of benefits over time depends on the family situation with heads of household entitled to the highest benefits, followed by single job-seekers, and finally non-head members of households. For example, during the period covered by our data, newly unemployed heads of household received between €1,135 and €1,603 while non-head household members were initially subject to the same maximum but benefited from a much lower minimum of €715. The evolution of unemployment benefits over the unemployment spell also depends on the beneficiary's employment history: workers with a longer employment history benefit from a slower decline in replacement rates over time.[43]

As a result of those rules, OECD data indicates that, in 2010, net replacement rates during the first 6 months of unemployment varied between 73% and 84% for workers who have lost a minimum wage job and between 42% to 62% for workers at 150% of the average wage. After 60 months of unemployment, these replacement rates dropped to between 64% and 80% for minimum wage workers and 37% and 56% for workers at 150% of the average wage. Overall, while Belgium's unemployment insurance system appears generous compared to the US, it does not come close to fully insuring workers against the risk of unemployment. At all levels of the wage distribution, unemployment - in particular, long-term unemployment - still translates into a substantial loss of income.

A.6 More Details on Identifying Parents

While we identify parents based on household composition data rather than direct information on filiation, the age of parents in our sample suggests that we have mostly identified biological parents. The average age for mothers at a child's birth in the sample is close to 27, which is around the average mother's age at birth as reported by official Belgian population statistics. While we do not have similar official data for fathers, the average age at birth for fathers in the sample of all entrants (29.36) is consistent with the idea that males usually partner with slightly younger women. More convincingly, Figure A2 displays the distribution of fathers' and mothers' age at birth in our data. For mothers, the figure also displays the empirical distribution of mothers' age-at-birth from official

[43] Table A1 provides a more detailed summary of the rules applicable to the computation of unemployment benefits as a function of the claimant's demographic situation and the duration of the current unemployment spell.

statistics based on the universe of births in Belgium in 1985 (the average year of birth for children in our sample). Both distributions are consistent with the hypothesis that we mostly identify biological parents: strikingly, the age distribution for mothers in our data is visually indistinguishable from the official birth statistics.

A.7 Identification of Causal Effects in the Presence of Year of Layoff Fixed Effects

In this section we discuss the identification of the effect of a parental layoff before labor market entry in the presence of year of layoff heterogeneity. Suppose there are two cohorts, born in 1985 and 1986. The outcome variable, d (days worked), is observed for kids entering at age 19 and follows the following form:

$$d_{sy,by,i} = \alpha b + \gamma_{sy} + \beta_{by} + \epsilon_{sy,by,b,i} \tag{4}$$

where b is an indicator for the early shock, γ_{sy} is a shock-year fixed effect, β_{by} is a birth-year fixed effect, and ϵ_i is a child specific error.

Consider the estimator formed by the difference in means within cohort, which can be computed using a sample selected for parents having a shock within a one year window of child entry:

$$E[d_{2002,1986} - d_{2003,1986}] = \alpha + \gamma_{2002} - \gamma_{2003} \tag{5}$$

The year of shock fixed effect confounds the estimate. Now suppose that we have the 2003 and 2002 observations for the 1985 cohort. Because both observations are cases of a shock after entry, the difference in outcomes identifies the difference in year effects.

$$E[d_{2002,1985} - d_{2003,1985}] = \gamma_{2002} - \gamma_{2003} \tag{6}$$

Taking the difference of the two estimators identifies the treatment effect:

$$E(d_{2002,1986} - d_{2003,1986}) - E(d_{2002,1985} - d_{2003,1985}) = \alpha \tag{7}$$

Consequently, we need to include observations with parental shocks at least two years after child entry in order to identify the treatment effect in the presence of year of layoff heterogeneity.

A.8 More Results Regarding Identifying Assumptions

Our findings on the validity of the identifying assumption are further strengthened by Figure A6, which displays the sample average of the same variables as a function of the timing of the shock relative to entry in a 3-year time window around entry. For all four variables, as was the case for the child age-at-entry, there is little difference in parental labor market history across shocks that occurred 3 years before or after the child's entry.

A.9 Heterogeneous Effects

This section investigates how the average treatment effect that we have identified varies as a function of entrant characteristics. Table A8 shows results for our main variables of interest, broken down along age, parental income, and gender. Each column represents a regression outcome and each row represents a coefficient type, with the coefficients on 'Before *' representing treatment effect heterogeneity. The regression specification used is analogous to the regression in column (VII) of table 4.

We first discuss the general variation in the data. Males tend to work more than females in the sample while younger entrants and those with poorer parents work less. Next, we turn to the treatment effects. The baseline treatment effects for the excluded category (female, over 19 years at entry with parents in the upper tercile of income) are not statistically significant and close to 0 in magnitude. Entrants whose parents have wages in the lowest tercile of income before job-loss experience the largest effect of parental job-loss (35 days). Entrants with middle-wage parents also experience an economically large effect of parental job-loss but this effect is not statically significant. Another dimension of heterogeneity is also statistically significant, the age at entry. Young adults who enter at 18 or 19 years old work 33 days more as a result of a parental job-loss shock. We should caution that these results are merely suggestive given our statistical power.

A.10 Additional Tables and Figures

Table A1: Schedule of unemployment insurance benefits for experienced workers

	Replacement rate	Minimum benefits	Maximum benefits	Average benefits	Share of beneficiaries
Head of household				1,074	33.8%
1 to 6 month	60%	1,008	1,324	1,212	5.2%
7 to 12 month	60%	1,008	1,234	1,134	2.3%
Second period	60%	1,008	1,154	1,050	26.3%
Single				973	26.2%
1 to 6 month	60%	847	1,324	1,153	3.6%
7 to 12 month	60%	847	1,234	1,125	2.7%
Second period	54%	847	1,034	924	19.9%
Dependent				806	40.1%
1 to 6 month	60%	634	1,324	1,156	10.4%
7 to 12 month	60%	634	1,234	1,126	6.9%
Second	40%	634	769	725	9.2%
Flat rate				467	15.6%
Normal		447			
Special rate		587			

Notes: This table summarizes the rules applicable to the computation of monthly unemployment insurance benefits for experienced workers in Belgium (as of 2010). As indicated in the rows of this table, unemployment benefits are a function of the demographic situation of the benefits' claimant and the duration of the current jobless spell. The first Column presents the normal replacement rate while the second (third) Column presents the minimum (maximum) benefits that is applicable when the benefits payments computed using the replacement rate method are lower (higher) than the minimum (maximum) amount. For dependents, the *flat rate period* starts after 15 month of unemployment plus three additional months for each year of work experience. For other beneficiaries, the second period extends without specified time limit. The *special rate* applicable to dependents in the flat rate period is applicable to households for whom social insurance is the only source of revenue and only when benefits received by the other spouse total less than €769. The fourth Column presents the average benefits actually received for each category between January and April 2010. The last Column presents the proportion of beneficiaries in each category during the same period. All amounts are expressed in 2010 euros and rounded to the nearest integer. Source: Table 2-1 of Conseil central de l'économie (2011).

Table A2: Descriptive Statistics Regarding Parental Transfers and Help to their Children (Age 17 - 35)

% of parents who	Help or Transfer (yes)	Transfer (yes)	Help (yes)
Overall	59.5%	32.8%	47.2%
Employment status			
Employed	64.0%	38.3%	49.6%
Unemployed	51.7%	24.7%	43.6%
# of Observations	4373	5116	5648

Notes: Data from Wave 1, 2, 4 and 5 (2004, 2007, 2011, 2013) of the Survey of Health, Ageing and Retirement in Europe (SHARE). Descriptive statistics are based on a subsample of Belgian respondents with kids between the age of 17 and 35 years old. *Transfer* is a dummy equal to 1 if any financial or material gift or support was given to any person inside or outside this household amounting to 250 Euro (in local currency) or more. A financial gift in this context means the transfer of money, or payment for costs such as medical care, insurance, schooling, or a down payment for a home. This does not include loans, only gifts and support. *Help* is a dummy equal to 1 if, in the last twelve months, any kind of help (personal care, practical household help, help with paperwork, etc.) have personally been given to a family member from outside the household, a friend or neighbor. *Transfer* or *Help* is a dummy equal to 1 if *Help* or *Transfer* as defined above is equal to 1.

Table A3: Robustness: Effect Heterogeneity by Age at Entry: Excluding Children With Parental Shocks up to 1 Year After Entry.

		(I)	(II)	(III)	(IV)	(V)	(VI)
Dependent variable							
Total Days Worked	Before	22.534 ***	33.547 ***	35.168 ***	31.472 ***	35.612 *	38.854 **
		(7.864)	(8.049)	(8.021)	(8.084)	(18.184)	(18.048)
	Before * Entry at 18	0.244	8.075	9.348	2.218	8.918	1.436
		(20.586)	(20.702)	(20.616)	(20.711)	(20.665)	(20.761)
Quarters with a job	Before	0.260 **	0.358 ***	0.380 ***	0.341 ***	0.362	0.413
		(0.118)	(0.121)	(0.121)	(0.122)	(0.275)	(0.273)
	Before * Entry at 18	-0.233	-0.123	-0.105	-0.246	-0.111	-0.257
		(0.310)	(0.312)	(0.311)	(0.314)	(0.312)	(0.314)
Total Salary	Before	1,818 **	3,431 ***	3,487 ***	3,084 ***	2,833 *	3,163 *
		(719)	(732)	(731)	(730)	(1,657)	(1,629)
	Before * Entry at 18	-497	241	247	-581	172	-672
		(1,882)	(1,882)	(1,879)	(1,869)	(1,883)	(1,874)
Wage percentile	Before	0.873	2.255 ***	2.334 ***	2.245 ***	1.084	1.479
		(0.564)	(0.573)	(0.573)	(0.569)	(1.302)	(1.274)
	Before * Entry at 18	-2.044	-1.688	-1.619	-1.978	-1.596	-1.934
		(1.494)	(1.494)	(1.492)	(1.477)	(1.495)	(1.480)
# of observations		4,599	4,599	4,599	4,526	4,599	4,526
Controls							
Parental age at shock			*Yes*	*Yes*	*Yes*	*Yes*	*Yes*
Year of entry				*Yes*	*Yes*	*Yes*	*Yes*
Year of parental shock						*Yes*	*Yes*
Family and Demographic controls					*Yes*		*Yes*

Notes: The table investigates how the treatment effect of parental job-loss before entry varies with the child's age at entry. Columns (I) - (VI) display "Before", the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force and "Before * Entry at 18", the interaction between an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force (Before) and a dummy equal to one for child entering the labor market at the age of 18 (Entry at 18). We exclude those children whose parents lose their job during the quarter of entry and in the year that follows entry. We also exclude the (few) cases where parents get more than one shock in the one-year window around entry. Dependent variables are defined as in Table 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other E.U., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table A4: Robustness: Sample Window - Only 1 Year Around Entry

	Estimated treatment effect for main outcome variables					Baseline Average
	(I)	(II)	(III)	(IV)	(V)	
Dependent variable						
Total Days Worked	24.476 **	25.358 **	26.299 **	25.562 **	24.205 **	427.067
	(10.736)	(10.420)	(10.567)	(10.487)	(10.462)	(7.812)
Quarters with a job	0.318 **	0.322 **	0.355 **	0.342 **	0.316 **	9.015
	(0.160)	(0.158)	(0.160)	(0.159)	(0.159)	(0.116)
Total Salary	1,128	1,254	1,392	1,412	1,260	34,117
	(983)	(912)	(926)	(924)	(918)	(715)
Wage percentile	-0.782	-0.696	-0.605	-0.582	-0.566	27.617
	(0.750)	(0.690)	(0.699)	(0.697)	(0.686)	(0.547)
# of observations	2,185	2,185	2,185	2,185	2,185	
Controls						
Age at entry		*Yes*	*Yes*	*Yes*	*Yes*	
Parental age at shock			*Yes*	*Yes*	*Yes*	
Year of entry				*Yes*	*Yes*	
Demographic controls					*Yes*	

Notes: The table displays estimates for the treatment effect of a parental job-loss shock before entry on the employment outcomes of children in the 12 quarters following entry. Each entry in Columns (I) - (V) displays the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 4 quarters before their entry into the labor force. The last Column (*Baseline Average*) displays the average of the variable for the sample of children whose parents suffer from the shock in the 4 quarters following entry. All regressions are estimated on the sample of labor market entrants whose parents experience the loss of a stable full-time job in the 4 quarters before or after entry. We exclude those children whose parents lose their job during the quarter of entry. We also exclude the (few) cases where parents get more than one shock in the one-year window around entry. *Days worked* is the sum of all full-time equivalent days worked as an employee in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid during the quarter, net of all (employer and employee) social security contributions paid during the same quarter. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the current quarter. Third, a single wage percentile for each child is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. Note, in some cases, individuals never earn a daily wage and are excluded from row 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other E.U., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table A5: Robustness: Sample Window - Exclude 1 Year Window

	Estimated treatment effect for main outcome variables							Baseline Average
	(I)	(II)	(III)	(IV)	(V)	(VI)	(VII)	
Dependent variable								
Total Days Worked	24.089 ***	22.507 ***	31.920 ***	36.615 ***	32.044 ***	74.207 ***	76.205 ***	431.241
	(8.201)	(8.011)	(8.483)	(8.546)	(8.610)	(26.430)	(26.250)	(5.679)
Quarters with a job	0.218 *	0.216 *	0.317 **	0.376 ***	0.314 **	0.800 **	0.826 **	9.094
	(0.123)	(0.123)	(0.130)	(0.131)	(0.132)	(0.405)	(0.403)	(0.085)
Total Salary	2,134 ***	1,757 **	2,696 ***	2,763 ***	2,400 ***	5,964 **	6,222 ***	34,191
	(763)	(716)	(759)	(766)	(766)	(2,368)	(2,335)	(529)
Wage percentile	0.851	0.330	0.880	1.115 *	1.087 *	1.974	2.214	26.763
	(0.595)	(0.552)	(0.588)	(0.594)	(0.592)	(1.828)	(1.794)	(0.411)
# of observations	3,472	3,472	3,472	3,472	3,399	3,472	3,399	
Controls								
Age at entry		*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Parental age at shock			*Yes*	*Yes*	*Yes*	*Yes*	*Yes*	
Year of entry				*Yes*	*Yes*	*Yes*	*Yes*	
Year of parental shock						*Yes*	*Yes*	
Family and Demographic controls					*Yes*		*Yes*	

Notes: The table displays estimates for the treatment effect of a parental job-loss shock before entry on the employment outcomes of children in the 12 quarters following entry. Each entry in Columns (I) - (VII) displays the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 5-12 quarters before their entry into the labor force (Hence, we exclude the cases where parents get a shock in the one-year window around entry). We exclude those children whose parents lose their job in the year proceeding or subsequent to a child's entry. We also exclude the (few) cases where parents get more than one shock. *Days worked* is the sum of all full-time equivalent days worked as an employee in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid during the quarter, net of all (employer and employee) social security contributions paid during the same quarter. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the current quarter. Third, a single wage percentile for each child is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. Note, in some cases, individuals never earn a daily wage and are excluded from row 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other U.E., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table A6: Robustness: Difference-in-Difference-in-Difference (Using Non-Shocked Entrants as Controls)

	Estimated treatment effect for main outcome variables					Baseline Average
	(I)	(II)	(III)	(IV)	(V)	
Dependent variable						
Total Days Worked	23.483 ***	23.098 ***	23.832 ***	25.497 ***	24.892 ***	449.606
	(6.785)	(6.582)	(6.498)	(6.475)	(6.476)	(0.246)
Quarters with a job	0.246 **	0.248 **	0.261 ***	0.279 ***	0.265 ***	9.143
	(0.102)	(0.101)	(0.099)	(0.099)	(0.099)	(0.004)
Total Salary	1,667 ***	1,500 **	1,560 ***	1,561 ***	1,525 ***	36,564
	(638)	(595)	(587)	(584)	(582)	(23)
Wage percentile	0.193	-0.120	-0.108	-0.083	-0.016	29.015
	(0.490)	(0.449)	(0.446)	(0.445)	(0.442)	(0.018)
# of observations	2,054,677	2,054,677	2,054,677	2,054,677	2,011,592	
Controls						
Age at entry		*Yes*	*Yes*	*Yes*	*Yes*	
Parental age at birth			*Yes*	*Yes*	*Yes*	
Year of entry				*Yes*	*Yes*	
Family and Demographic controls					*Yes*	

Notes: The table displays estimates for the treatment effect of a parental job-loss shock before entry on the employment outcomes of children in the 12 quarters following entry. In addition to entrants with a parental job-loss shock, the sample for this table includes labor market entrants whose parents did not experience a job loss event in the 12 quarters proceeding or following entry. Each entry in Columns (I) - (V) displays the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force. All specifications include an indicator variable for whether an entrant received a parental shock (regardless of timing). *Days worked* is the sum of all full-time equivalent days worked as an employee in the 12 quarters after entry. *Quarters with a job* is the number of quarters during which the individual had at least one job. *Total salary* is equal to the sum of all pre-tax compensation paid during the quarter, net of all (employer and employee) social security contributions paid during the same quarter. *Wage percentile* is measured in three steps. First, the wage for each job is measured each quarter by dividing total compensation by the number of days worked at that job during the quarter. Second, the wage percentile for each job and quarter is computed based on the wage distribution for all individuals in the Social Security Employment Registry for the current quarter. Third, a single wage percentile for each child is computed as the median wage percentile for the individual for all jobs held in the 12 quarters after entry. Note, in some cases, individuals never earn a daily wage and are excluded from row 4. All controls include a full set of dummy variables for each value of the covariate. Family and demographic controls are gender, nationality (Belgium, E.U. 15, Other U.E., Other countries, unknown), family type (married two-parents, non-married two-parents, single parent), and tercile of parental income before the job-loss. Family type is measured 16 quarters before the loss of family benefits. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Table A7: Heterogeneity by Job-loss Type

	Dependent variable				
	Total Days Worked	Quarters with a job	Total Salary	Wage percentile	# of obs.
	(I)	(II)	(III)	(IV)	
To Unemployment Insurance (U.I.)	*45.692* ***	*0.599* **	*3,045* **	*0.101*	*4,028*
	(15.118)	*(0.235)*	*(1,315)*	*(1.008)*	
To unregistered activity	*21.804*	*-0.040*	*1,396*	*-0.864*	*1,504*
	(23.951)	*(0.343)*	*(2,218)*	*(1.746)*	
Receives severance pay	*31.716*	*0.341*	*1,730*	*-1.435*	*2,044*
	(21.256)	*(0.328)*	*(1,850)*	*(1.413)*	
To U.I., no severance pay	*49.148* ***	*0.612* **	*3,522* **	*0.995*	*2,815*
	(17.991)	*(0.276)*	*(1,606)*	*(1.242)*	

Notes: This table investigates how the treatment effect of parental job-loss before entry varies with the type of job-loss. Each estimate above corresponds with a coefficient on the interaction of the 'Before' dummy with the job-loss type in a regression that includes all of the observations used in our main results. All regressions include controls for year of entry, parental age at job-loss, year of parental job-loss and demographic controls. We exclude those children whose parents lose their job in the quarter of entry or get more than one job-loss shock in the 12 quarters around entry. Dependent variables are defined as in Table 4. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01.

Table A8: Heterogeneous Treatment Effects: Multivariate Regressions

	Days Worked	Quarters with Job	Total Salary	Daily Salary
	(1)	(2)	(3)	(4)
Shock Before Entry	−4.914	−0.012	−187.6	0.544
	(14.315)	(0.218)	(1,291.45)	(0.998)
Male	13.793	−0.007	1,326.2	3.889***
	(9.014)	(0.137)	(813.19)	(0.631)
Low Wage Parental Job	−78.416***	−0.736***	−9,397.6***	−6.311***
	(12.914)	(0.197)	(1,165.05)	(0.9)
Medium Wage Parental Job	−53.761***	−0.411**	−6,374.3***	−4.061***
	(11.562)	(0.176)	(1,043.14)	(0.805)
Entry Age < 20	−95.149***	−0.889***	−11,414.3***	−6.435***
	(10.088)	(0.154)	(910.14)	(0.708)
Before * Male	7.147	0.013	1,401.6	1.436
	(12.776)	(0.195)	(1,152.63)	(0.895)
Before * Low Wage	35.778**	0.4	2,550.8	0.821
	(17.888)	(0.273)	(1,613.86)	(1.251)
Before * Medium Wage	25.168	0.222	1,312.8	−0.271
	(16.191)	(0.247)	(1,460.76)	(1.131)
Before * < 20	33.758**	0.391*	2,081.1	−1.028
	(14.055)	(0.214)	(1,268.05)	(0.988)
Observations	5,605	5,605	5,605	5,306

Notes: This table investigates how the treatment effect of parental job-loss before entry varies with the parent's age at birth and wage level of the lost job as well as the child's gender. The baseline treatment is the coefficient on an indicator variable equal to one for entrants experiencing a parental job-loss shock in the 12 quarters before their entry into the labor force (*Before*). Across specifications, the non-interacted treatment effect is for female children entering between 20 and 25 years old and whose parents lose a job for which they received a wage in the top third of the wage distribution. The heterogeneous effects are identified by interacting the *Before* dummy with indicator variables for child characteristics. The wage of the lost job is measured two quarters before the job-loss shock according to the procedure described in Table 1. All regressions include controls for year of entry, parental age at job-loss, and year of parental job-loss. We exclude those children whose parents lose their job in the quarter of entry or get more than one job-loss shock in the 12 quarters around entry. Dependent variables are defined as in Table 4. Standard errors are in parentheses. *p<0.1; **p<0.05; ***p<0.01

Figure A1: Sources of our data

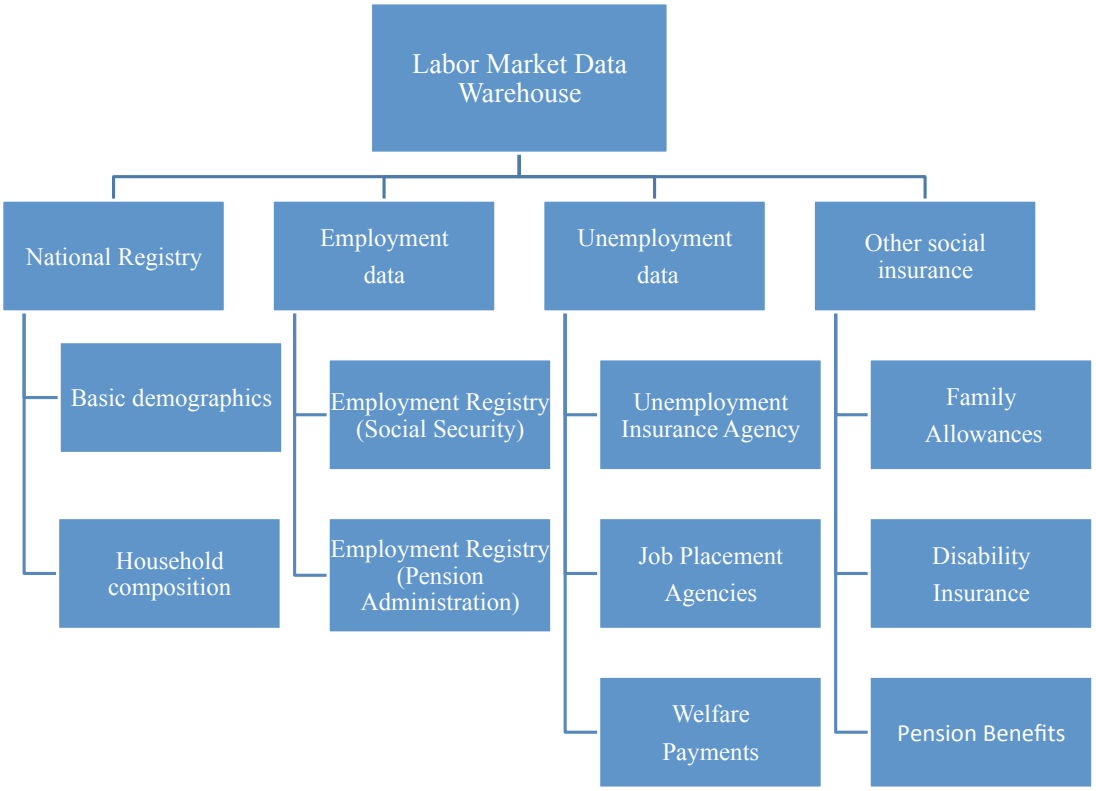
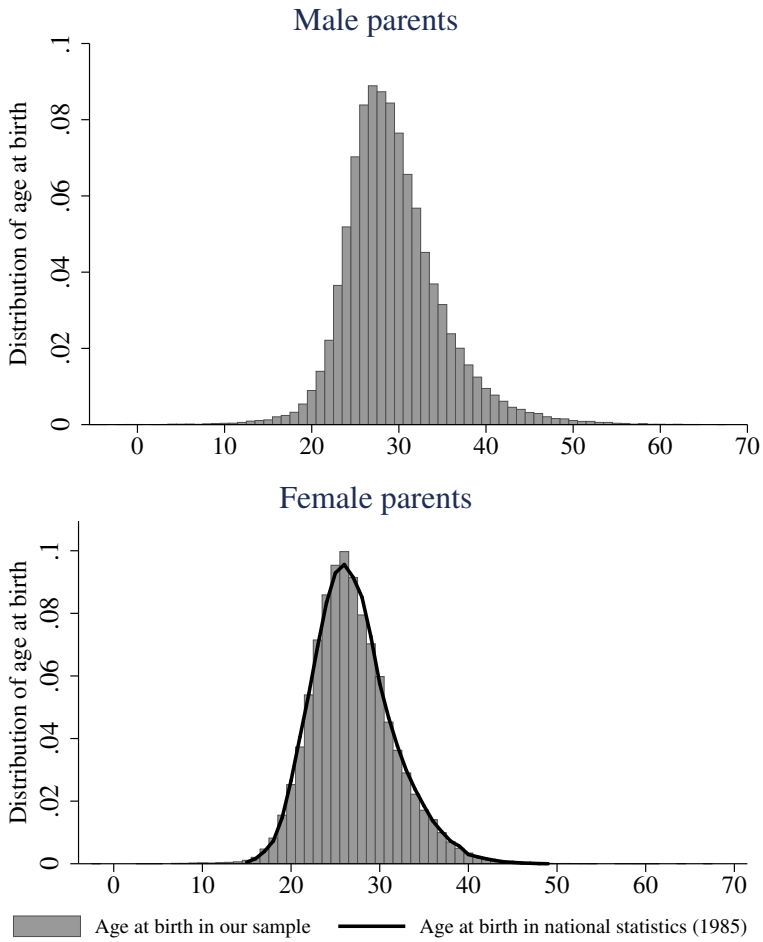
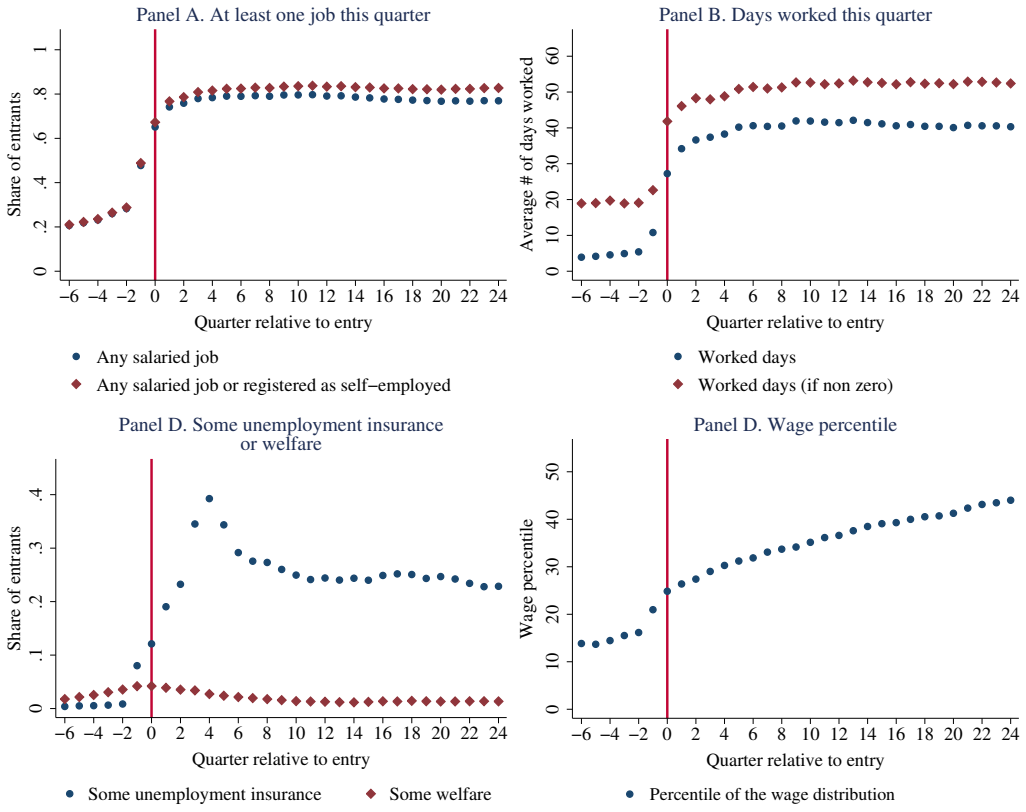


Figure A2: Parental Age at Birth



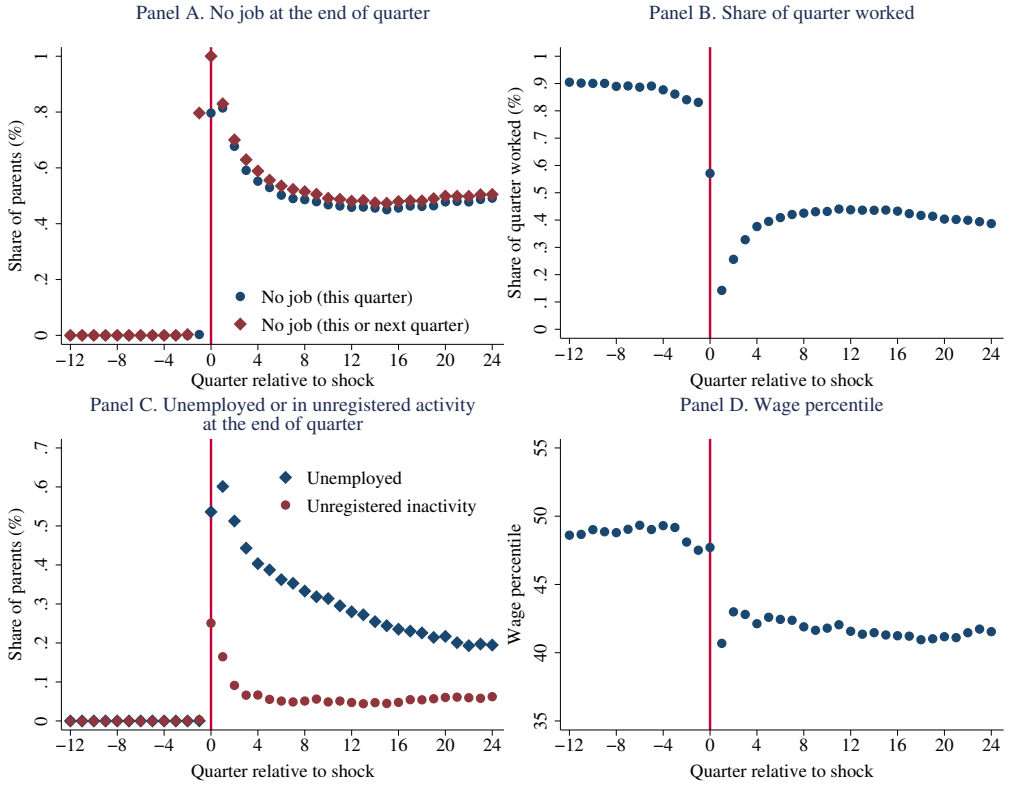
Notes: This figure displays the distribution of parental age at birth for male and female parents in our data. Age at birth is computed as the age of the parent on the 31th December of the child's year of birth. The average year of birth in our data is 1985. For comparison purposes, the graph for female parents includes the distribution of parental age at birth in 1985 from Belgium's official statistics on population and birth (no such data is published for male parents). This graph is constructed by multiplying the size of the female population at each age by the rate of birth at the same age.

Figure A3: Transition from Full-time Education to Working Life: Balanced Sample of Entrants (children entering in 2004 and 2005)



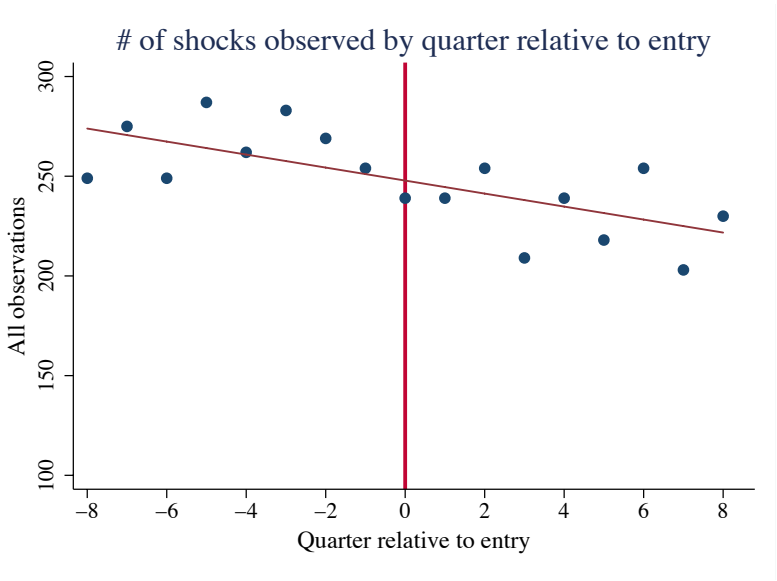
Notes: Each panel of this figure displays the evolution of a different labor market outcome variables by quarter relative to the quarter of labor force entry for the pooled sample of entrants in Belgium between 2004 and 2005. Individual labor market outcomes are observed until the last quarter of 2011 (the sample if strongly balanced across all quarters). Quarter 0 is defined as the first of two consecutive quarters for which the entrant is either (i) not receiving family allowances, (ii) registered as a job-seeker with the public employment agency or (iii) working for more than two thirds of the quarter as described in section 2.2. Individuals in Panel A are considered as having a job if they work at any point during the quarter. *Days worked* in Panel B represent the sum of all full-time equivalent days worked as an employee at all jobs during the 12 quarters after entry. An individual is considered as receiving unemployment or welfare benefits in Panel C if he receives such benefits at any point during the quarter. The wage percentile is obtained by dividing total labor earning by days worked at each job and taking the median for each individual if he has more than one job during the quarter. Panel D displays the average of the individual wage percentile for individuals in our sample.

Figure A4: Description of Parental Job-loss Shocks :
Balanced Sample of Entrants (shocks between 2003 and 2005)



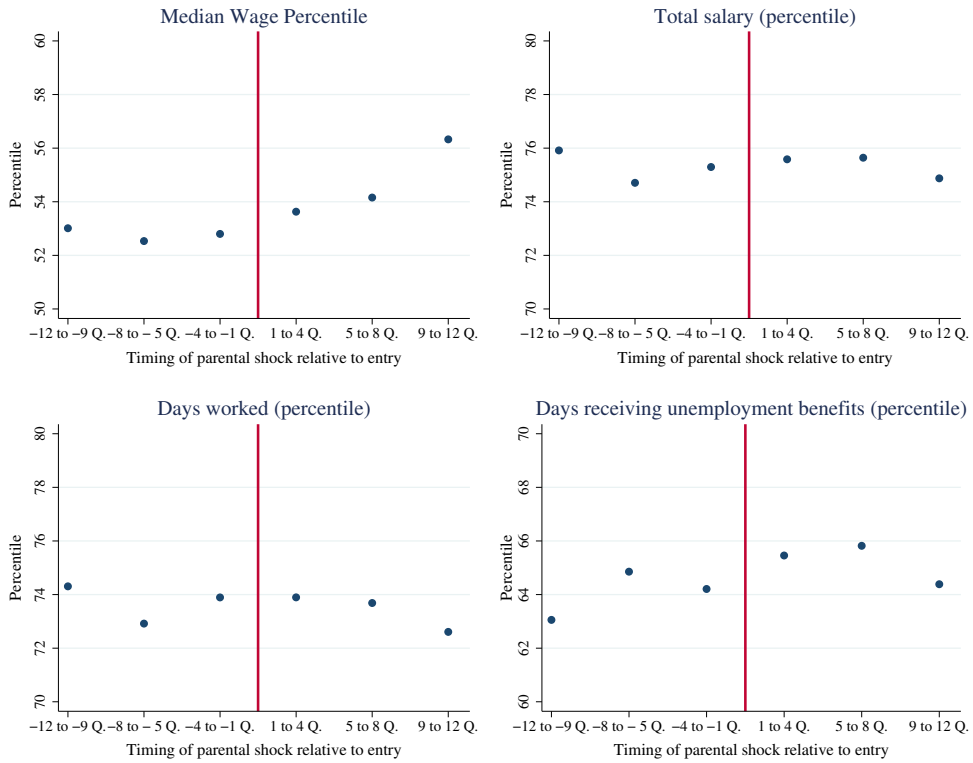
Notes: Each panel of this figure displays the evolution of different labor market outcomes by quarter relative to job loss for the sample of parents suffering from the loss of a stable full-time job as defined in section 2.2. Quarter 0 refers to the quarter of job loss as defined in the same section. Individual labor market outcomes are observed until the last quarter of 2011. The sample is limited to parents suffering from a shock between 2003 and 2005; therefore, the sample is balanced for the full period of observation displayed. The share of quarter worked in Panel B is computed as the total amount of time worked during the quarter divided by the total amount of time legally worked by a full-time worker during the same quarter. Individuals in panel C are considered as unemployed or in unregistered activity based on the end of quarter socio-economic status variable, as explained in section 2.3. The wage percentile in Panel D is obtained by dividing total labor compensation by total days worked at each job during the quarter and taking the median for each individual if he has more than one job during the quarter. Panel D displays the average wage percentile in the sample.

Figure A5: Distribution of the Number of Parental Shocks
by Quarter Relative to Entry



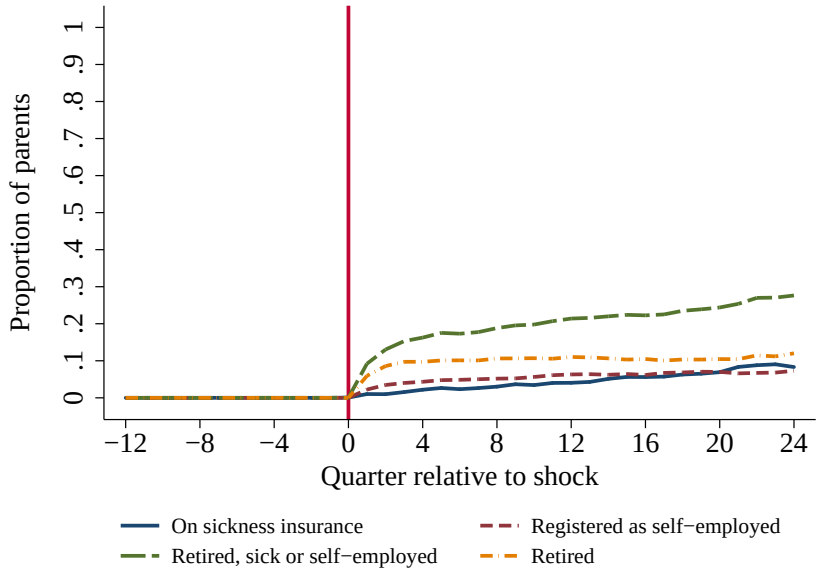
Notes: This figure displays the number of parental job loss shocks in our data relative to entry. Shocks are defined as in section 2.2 and are observed between 2003 and 2011 for the sample of children entering the labor force between 2004 and 2008. The fitted line is the predicted value from a simple linear regression of the number of shocks observed in each quarter on the quarter relative to entry (0 being the quarter of entry).

Figure A6: Balance Tests: Parental Employment History by Year of Shock Relative to Entry



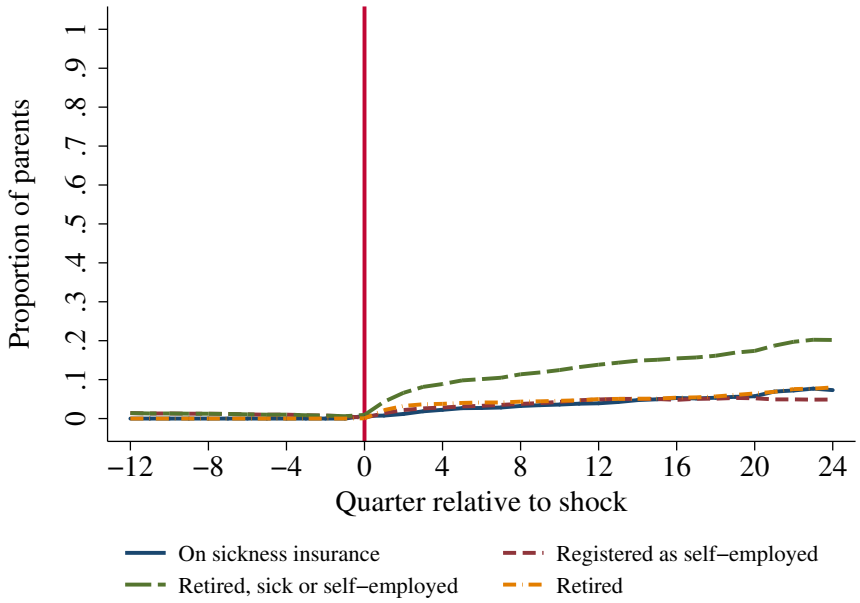
Notes: Each panel of this figure displays the average value of the corresponding variable, as a function of the timing of the parental job-loss shock relative to the child's entry into the labor force. Each point is the average of the indicated variable for the subsample of children whose parents suffer from a parental job-loss shock in the specified time-window around entry. Shocks are defined as in section 2.2 and are observed in a 3-years window around entry, between 2003 and 2011, for the sample of children entering the labor force between 2004 and 2008. We exclude cases of children whose parents experience more than one shock in the 3-years window around entry. All variables in this figure are computed using data for 10 calendar years prior to the job loss shock. The *median wage percentile* is obtained by (i) first, dividing total labor compensation for each year by the total number of days worked during the same year to obtain the daily wage for the current year, (ii) second, computing the percentile of this value in the distribution of wages for the same year, and (iii) third, computing the median wage percentile for each individual for the last 10 years. For all variables, percentiles are computed using the distribution of the relevant variable for parents whose child enter in the same year in the representative sample of all entrants. Data is from the Employment Registry of Belgium's public pension administration for private sector workers.

Figure A7: Percentage of Retired, Sick or Self-employment Parents Following Transition from Job-Loss to Unregistered Activity by Quarter Relative to Shock



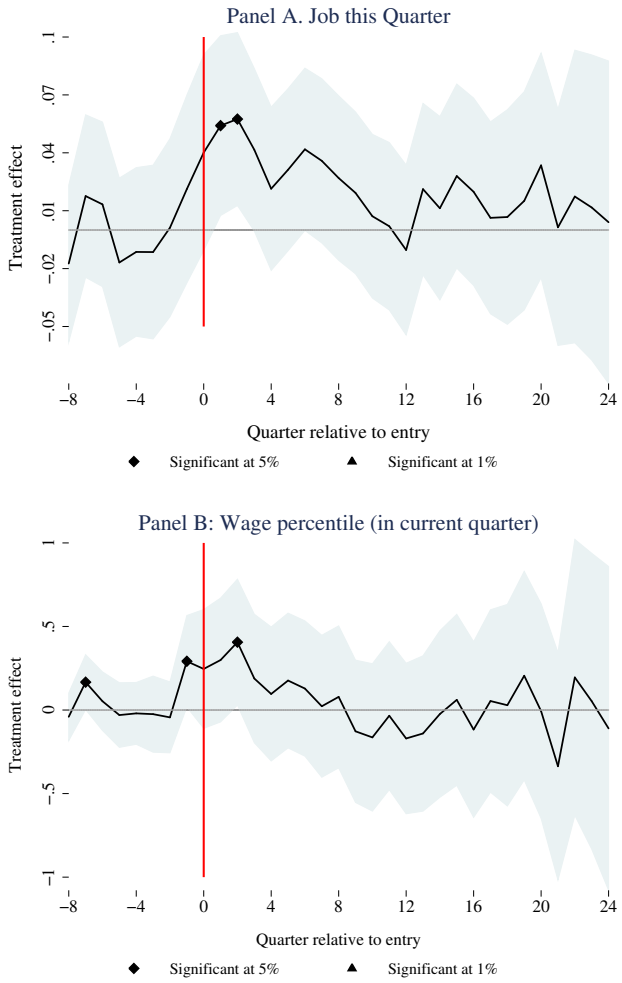
Notes: This figure displays the evolution of the percentage of retired, sick or self-employment parents by quarter relative to job loss for the sample of parents suffering from the loss of a stable full-time job as defined in section 2.2 and initially transitioning to unregistered activity. Quarter 0 refers to the quarter of job loss as defined in the same section. Individual labor market outcomes are observed until the last quarter of 2011: therefore, this pooled sample is unbalanced because some outcomes are not observed for the full 24 quarters after job loss. Using a balanced sample (with parents getting the shock before 2005) brings similar, albeit noisier, results. Individuals are considered as (i) retired if they are receiving public pension benefits at the end of the quarter, (ii) sick if they are receiving sickness benefits at the end of the quarter, (iii) Self-employed if they are registered with the self-employment social security agency at the end of the quarter.

Figure A8: Percentage of Retired, Sick or Self-employment Parents Following Job-Loss Shock.
by Quarter Relative to Shock



Notes: This figure displays the evolution of the percentage of retired, sick or self-employment parents by quarter relative to job loss for the sample of parents suffering from the loss of a stable full-time job as defined in section 2.2. Quarter 0 refers to the quarter of job loss as defined in the same section. Individual labor market outcomes are observed until the last quarter of 2011: therefore, this pooled sample is unbalanced because some outcomes are not observed for the full 24 quarters after job loss. Using a balanced sample (with parents getting the shock before 2005) brings similar, albeit noisier, results. Individuals are considered as (i) retired if they are receiving public pension benefits at the end of the quarter, (ii) sick if they are receiving sickness benefits at the end of the quarter, (iii) Self-employed if they are registered with the self-employment social security agency at the end of the quarter.

Figure A9: Dynamic Effects of Job Loss Shocks on Having a Job and Wages



Notes: This figure plots the estimated effects of parental job-loss shocks on total salary and wage percentile by quarter from two years before to six years after entry. Both panels present results estimated on the sample of children entering the labor market between 2004 and 2008 and whose parents suffer from a job loss shock in the 12 (4) quarters prior to (treatment group) or following (control group) the child's entry into the labor force. The wage percentile for each quarter is computed according to the method explained in the notes of Table 4 and includes missing values as zeros for the quarters in which the child did not work. Wages are observed for all children from 2 years before entry up to the last quarter of 2011. Therefore, while the sample is balanced up to 12 quarters after entry, later outcomes are only available for earlier entrants (e.g. outcomes up to 24 quarters are estimated on individuals entering in 2004 and 2005). The treatment effect is calculated from a regression that includes controls for the child's age-at-entry, parental age-at-birth, and year of shock. The shaded area plots the 95% confidence interval and markers indicate statistical significance at 1 and 5%. Coefficients are estimated by pooling all quarterly observations and interacting regressors with dummies for each quarter relative to entry (i.e. point estimates are equivalent to separate quarter-by-quarter regressions). Standard errors are clustered at the individual level.