Parental Job Security and Children's Health

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Abstract

The effect of job security on workers' well-being and health has already been discussed in the literature. Nevertheless, little is known about its impact on family life and children's health. This paper investigates the effect of parental job security on children's physical and mental health. Using data from the Spanish National Health Survey (SNHS), we estimate the causal impact of holding a secure labor contract. To address endogeneity, we rely on the exogenous variation in employment status induced by the 2006 Spanish Labor Reform, which sought to reduce the incidence of temporary employment among female and young workers. Combining Difference-in-Differences and an Instrumental Variable strategy, we find that job security significantly increases children's general health. Moreover, we show that this effect is mainly concentrated in younger children and that job security also has a positive impact on females' mental health.

Keywords — Job Security, Employment Status, Secure Labor Contract, Children's Health, Difference-in-Differences, Instrumental Variable

JEL Codes — C26, I12, J13, J41

1 Introduction

This paper evaluates the impact of parental job security on children's physical and mental health. In the literature, job security has generally been studied through dismissal rates in the worker's reference group. In this document, we measure job insecurity using employment status. In particular, we study the effect of holding a permanent contract in the context of Spain, a country where differences between fixed-term and permanent contracts in employment protection legislation (EPL) are highly salient to workers. Furthermore, we focus on children, for whom there is a gap in the literature on the relationship between parental job insecurity and health.

Job insecurity can be defined as the constant fear or perception of the risk of job loss. It is, therefore, a subjective experience that depends on the person's perception and interpretation of the employment situation and the work environment. In general, however, this subjective perception is often well aligned with the objective probability of job loss. Thus, job security can be understood as the personal reflection of the objective employment situation (De Witte et al., 2015).

Perceived job instability has risen during the past decades in most advanced economies. The introduction of two-tier labor reforms at the end of the last century unintendedly generalized an excessive use of temporary contracts (OECD, 2004, 2014). Thus, the share of temporary employment has continuously grown in the OECD region, reaching its maximum level in 2019 (OECD, 2022).

The worsening of the quality of work has fueled the interest of economists and epidemiologists in the consequences of job instability. Temporary contracts have been found to negatively impact productivity (Dolado et al. 2016), commitment at work (Domfeh & Hunsaker, 2020), and job satisfaction (De Witte et al, 2010). Furthermore, they have been shown to generate long-term career losses, both in terms of employment and labor income (García-Pérez et al. 2018). From a health perspective, job insecurity has traditionally been considered a work stressor in the literature (Ashford, 1989). Thus, it has been proved to be negatively correlated with a large number of physical well-being and mental health outcomes

(see Cheng & Chan, 2008; Sverke & Hellgren, 2002). Numerous studies have related job instability to physical health outcomes such as headaches, infections, or heart diseases; mental health indicators like life satisfaction, anxiety or depression symptoms; and social habits and needs such as medication consumption and the frequency of medical consultations (De Witte et al., 2015).

The majority of this evidence, however, does not properly address the problem of endogeneity. Although some of these documents have investigated potential heterogeneous effects by gender, age, or occupation, the list of potential cofounders is sizeable, and the endogeneity problem remains. Hence, for instance, pessimistic individuals may systematically report lower health and job security levels. Similarly, more employable workers may perceive and report lower levels of job insecurity (Green, 2011). In addition, healthier individuals may be positively selected in permanent positions, proving the existence of reverse causality. Therefore, endogeneity needs to be further addressed, as these considerations strongly compromise OLS results. Caroli & Godard (2016) use data from Europe to explore the effect of perceived job insecurity on self-reported health. To overcome the abovementioned concerns, they instrument job insecurity using country-specific employment protection legislation (EPL) and sector-specific dismissal rates. Results suggest a positive causal effect of job instability on headaches, eyestrain, and skin problems, while no effect is found on depression or anxiety symptoms. On its own, Bratberg & Monstad (2015) draw upon a natural experiment in Norway consisting of a geographically asymmetric financial schok that exogenously induced workforce reductions in the public sector. They find job security to reduce sickness absence. Finally, Reichert et al. (2017) and Le Montagne et a. (2021) rely on panel data models to show an adverse effect of job insecurity on workers' mental health using data from Germany and Australia, respectively.

Therefore, a wide branch of the literature explores the impact of job security on workers' health. However, there is surprisingly a small body of research on its effect on children, especially children's health. Furthermore, the little evidence we have is often based on cross-sectional data and has usually found weak and/or non-significant effects (Bubonya et al., 2017). Even so, some impacts have been documented on future employment attitudes (Bar-

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ling et al. 1998), school attainment (Barling et al. 1999), and emancipation (Becker et al. 2010). Besides, more recent research has explored the impact of job loss on children's health. In general, the literature seems to agree on a positive impact of job security on children's general health (Liu & Zhao, 2014; Bubanya et al., 2017; Lee, 2019; Schaller & Zerpa, 2019). Nevertheless, children's mental health results are much more heterogeneous across studies. In this sense, for instance, Bubanya et al., (2017) do not find an effect on mental health, while Schaller & Zerpa (2019) and Powdthavee & Vernoit (2013) provide evidence of a solid impact.

The extent to which dismissal rates and job loss are appropriate ways of proxying job security is, however, unclear. Job loss may affect health through channels different than job insecurity, and layoffs may generate spillover effects on the rest of the workforce, violating, in some cases, the stable unit treatment value assumption (SUTVA). Moreover, despite being a highly traumatizing event, job loss is less frequent than job insecurity. Previous research has addressed job security through self-reported perceived job insecurity (Caroli et al. 2016), sectoral or firm-level dismissal rates (Reichert et al, 2017) and employment status (Lee, 2022). This document directly evaluates the effect of job uncertainty on children's health. Specifically, we explore the impact of the type of contract in the context of Spain, a country characterized by an extremely high incidence of temporary employment. As we will see in the next section, differences between permanent and fixed-term contracts in job security in the Spanish labor market are remarkably salient to workers, making this context perfect for our analysis. To the best of our knowledge, Lee (2022) is the only piece of evidence that resembles our research, specifically exploring the relationship between employment status and children's health. Using a panel data model with correlated random effects, he finds that the transition from a permanent to a fixed-term contract significantly reduces children's health in Korea.

Using data from the Spanish National Health Survey (SNHS), we combine a Difference-in-Differences and an Instrumental Variable strategy to isolate the impact of having a permanent contract on child health. To this effect, we draw upon the 2006 Spanish Labor Reform, which sought to expand the coverage of permanent contracts and reduce the incidence of

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temporary employment among female and young workers. In this context, we instrument the employment status using the interaction of being female or young and being surveyed after the implementation of the reform. We find that having a permanent contract significantly increases general self-reported children's health. Furthermore, we show that this effect is mainly concentrated among younger children, and that job security also has a positive impact on girls' mental health. Finally, we study the effects on alternative health outcomes such as sleep, weight, sport and diet habits, medication consumption, and health access to understand the mechanisms through which the impact of job security occurs.

Our paper contributes to the literature on the relationship between job security and health in several ways. First, there are not many papers in this area that convincingly address the problem of endogeneity. Of the few, most use Random (RE) or Fixed Effects (FE) models, with some exceptions like Bratberg & Monstad (2015) and Caroli et al. (2016). We overcome the endogeneity problem in a way not previously seen in the existing literature. Secondly, the little evidence on children's health focuses on the impact of job loss. As aforementioned, despite being especially traumatic, job loss is not as frequent as job insecurity. Moreover, job loss may impact children's health through channels different than job insecurity. Thus, we take advantage of the unique institutional framework of the Spanish labor market and provide compelling evidence on the direct impact of job security.

The remainder of this paper is structured as follows. Section 2 is devoted to presenting the institutional framework. Sections 3 and 4 describe the empirical strategy and the employed dataset, respectively. Next, section 5 shows the general results, and section 6 analyzes the extent to which these vary depending on children's gender or age. Section 7 discusses the mechanisms through which our main results may be driven and, finally, we conclude in section 8.

2   Institutional Framework

The widespread use of the fixed-term contract in Spain began with the approval of the 1984 labor reform, which introduced the so-called *employment-promotion* contract (Bentolila et al.,

2008). This new contract was characterized by a lower severance payment and a maximum duration of three years. It was intended to reduce unemployment, acting as stepping-stones to regular contracts for entrants. However, even though the reform provided the short-run needed flexibility in the context of the second oil price shock, it generated an explosion in the temporary rate, that abruptly rose from 10% before the reform to almost 35% during the 1990s (OCDE, 2022). In a few years, Spain became the country with the highest share of temporary contracts in Europe. As a result, the history of labor reforms in the country can be summarized as a continuous attempt to reduce the incidence of temporary employment (Conde-Ruiz et al., 2010).

The excessive incidence of fixed-term contracts comes at a high cost. There is a broad consensus in the literature regarding the negative relationship between unemployment protection legislation (EPL), and labor market flows (Boeri & van Ours, 2013). In this sense, the case of Spain is especially striking. The dual institutional framework of the labor market has generated a disproportionate labor turnover (García-Serrano, 1998) and excessive employment volatility (Felgueroso et al., 2017), which are notably stronger in those occupations and sectors most affected by temporary employment. Furthermore, temporary workers have also been shown to significantly receive less training than permanent employees (Felgueroso et al., 2017) and suffer lifetime losses in terms of labor intensity and earnings (García-Pérez et al., 2018). Therefore, temporary contracts are negatively related to job security as a fundamental indicator of employment status, generating lifetime losses, reducing workers' labor opportunities, and increasing the threat of job loss. Hence, we consider the Spanish labor market the ideal context to analyze the impact of job insecurity and the type of contract the perfect metric in this regard, as the incidence of temporary employment is strikingly high, and differences in job security among contracts are highly salient to workers.

After the 1984 labor reform, new attempts to reduce the rate of temporary employment would take the form of new labor reforms. Our empirical setting draws upon the labor reform approved in 2006, which sought to promote the use of permanent contracts and improve job stability. The reform was first enshrined in the Royal-Decree Law 5/2006 of June 9, and

later in Law 43/2006 of December 26[1]. Its two fundamental pillars were the new payroll tax discount program and the extraordinary plan to convert temporary into permanent employment. The change in legislation established new incentives for the conversion and creation of permanent contracts for female and young (under 30) workers by reducing the payroll tax paid by employers. In this context, we exploit the exogenous variation in the use of regular contracts induced by the reform to instrument the type of contract.

Figure 1 offers a first look at the effectiveness of the 2006 reform on the use of permanent contracts among female and young workers. Using administrative data from the Public Service of State Employment (SEPE), we trace the evolution of permanent contracts for these workers. As seen, the behavior of the number of permanent contracts for the treated group is relatively better after the reform. Of course, no causal inference can be made from this preliminary piece of evidence. Even so, it serves the purpose of illustrating the variation in the use of permanent contracts that we intend to exploit. In line with the conclusions reached out in Conde-Ruiz et al. (2010), the reform seems to have initially boosted the use of permanent contracts to finally converge to an equilibrium level above the previous one.

3   Empirical Strategy

We investigate the impact of having a permanent contract on health outcomes. As a first step, we propose the following linear regression model:

$$Health_{i,t} = \beta_0 + \beta_1 Secure_{i,t} + \beta_2 Female_i + \beta_3 D(Age)_{i,t} + \beta_4 D(Period)_t + \delta X_{i,t} + \epsilon_{i,t} \quad (1)$$

where $Health_{i,t}$ is the chosen measure of health for individual i's child at period t,[2] and $Secure_{i,t}$ is a dummy for individual i's type of contract at t. In addition, $Female_{i,t}$ denotes individual's gender (Female=1) and $D(Age)_{i,t}$ and $D(Period)_t$ are age and period dummies, respectively. Finally, in some specifications we control for $X_{i,t}$, a vector of the fol-

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[1]A detailed summary and evaluation of the reform can be found in Beyneto Calabuig (2006) and Arranz et al. 2008.

[2]$t \in \{2003{:}2, 2003{:}3, 2003{:}4, 2005{:}1, 2006{:}2, 2006{:}3, 2006{:}4, 2007{:}1, 2007{:}2, 2011, 2017\}$, where the four digits prior to colon refer to the year and the one after stands for the quarter.
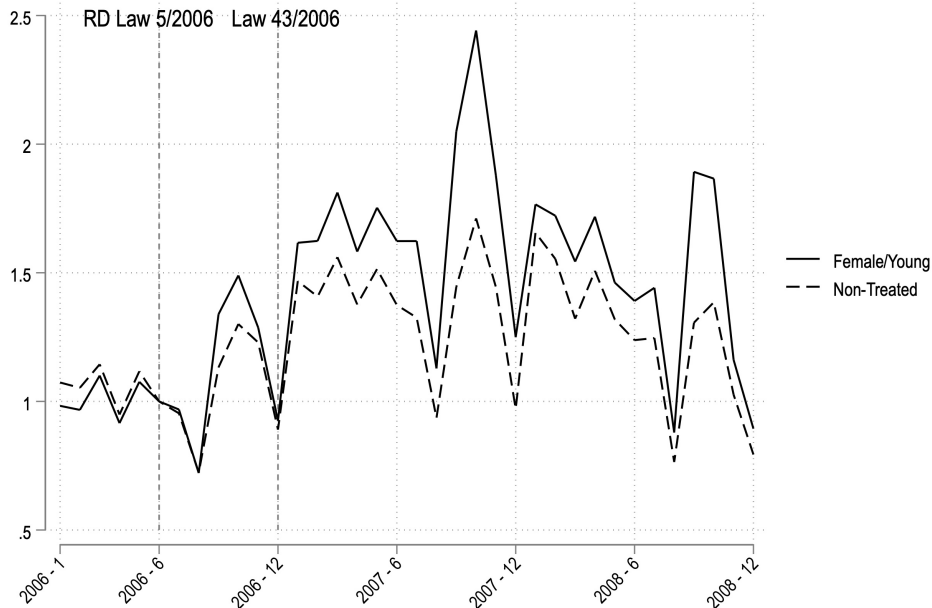
Figure 1: Number of Secure Labor Contracts

Notes: The graph depicts the evolution of the number of Secure Labour Contracts in Spain for female and young workers versus the rest of the labor force. Base Period June 2006. Monthly data prior to the 1st quarter of 2006 is not available.
Source: Public Service of State Employment (SEPE), Spain — Own Elaboration

lowing covariates: $D(ChildAge)_{i,t}$, $D(ChildGender)_i$, $D(ChildAge)_{i,t} * D(ChildGender)_i$, $D(ParentAge)_{i,t}$, $D(ParentEducation)_{i,t}$, $D(ParentCivilStatus)_{i,t}$, $D(Region)_{i,t}$ and $Foreign_{i,t}$. The reason for including child dummies is to accommodate the possibility of health and employment status being conditioned by the gender or age of the child, as parenthood has traditionally been shown to report significant labor costs in terms of employability, labor intensity, and earnings, especially for women. The rest of controls are the classical ones in a standard wage equation, accounting for differences in the treatment or dependent variable that may arise because of age, level of education, civil status, or nationality. Finally, including regional dummies is crucial in this specification, as the Spanish Public Health System is completely decentralized.

As aforementioned, our parameter of interest β_1 is likely to be biased. We require that the exploited variation in employment status is not systematically related to changes in health outcomes. However, we are probably omitting important covariates that mediate the relationship between employment status and health and, in any case, not considering reverse

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causality. Numerous hypotheses can be made about the nature and sign of this bias. The most intuitive conjecture is related to reverse causality, as healthier workers seem more likely to have better employment conditions, which would upwards bias our estimation. However, there are also credible postulates that would imply a bias in the opposite direction. For instance, more employable workers may perceive lower levels of job insecurity despite having similar employment conditions. In this case, the simple OLS estimation of equation (1) would underestimate the true impact of having a regular contract. It is, therefore, impossible to predict the sign of the bias. In addition, differences between self-reported and objective health and the degree of subjectivity involved in ranking health on a 5-point scale surely enhance this bias, as these measurement errors are not likely to be random.

We combine a Difference-in-Differences and an Instrumental Variable strategy to address the problem of endogeneity. As explained, our empirical approach relies on the 2006 Spanish labor reform, that increased the coverage of secure labor contracts among female and young workers. We require that the exploited variation in employment status is not systematically related to the variation in health outcomes by other channels different from the causal impact. Our policy generates the necessary exogenous variation in the type of contract to infer causality. Figure 1 provides a first glance at the intuition behind our empirical approach. Using administrative data, it separately depicts the evolution of the number of permanent contracts for female or young workers and the rest of the labor force. The reform seems to have exogenously increased the probability of holding a permanent contract for female and young workers. We later verify this fact in Figure 2 and Figure A2. This allows us to instrument employment status by the interaction between female or young (Treated) and being surveyed after the reform (Post) if we separately control for these. This way, the first-stage regression becomes a classical Difference-in-Differences, and the treatment effect befits the excluded instrument in the second stage:

First-Stage:

$$Secure_{i,t} = \gamma_0 + \gamma_1 Treated * Post_i + \gamma_2 Treated_i + \gamma_3 D(Period)_t + \delta X_{i,t} + \epsilon_{i,t} \qquad (2)$$

Second Stage:

$$Health_{i,t} = \phi_0 + \phi_1 Secure_{i,t} + \phi_2 Treated_i + \phi_3 D(Age)_{i,t} + \phi_4 D(Period)_t + \delta X_{i,t} + \epsilon_{i,t} \quad (3)$$

To the extent that the effect on the type of contract in the first stage is exogenous to the corresponding variation in children's health outcomes, this approach captures the causal impact of employment status on children's health. Therefore, the exogeneity of our instrument is crucial. To increase the likelihood that this is fulfilled and the precision of our estimates, we include the complete vector of covariates $X_{i,t}$. Nevertheless, the critical aspect in this regard is the parallel trends assumption. In the absence of the policy, we require the difference in employment status between female and young workers and the rest of the labor force to be constant over time. The violation of this assumption would imply a biased estimation of the causal impact of the policy on the use of permanent contracts, which would violate the exogeneity condition and invalidate the use of our instrument. Although there is not a statistical test to provide evidence on the fulfillment of the parallel test assumption, visual inspection is often helpful when several periods are available (Figure 1). Furthermore, an event study specification is commonly used in this regard, as the non-statistically significance of the estimates corresponding to the pre-treatment periods (λ_j) verifies this assumption. We propose an event study specification of our first-stage to analyze the extent to which the parallel trends assumption holds:

$$
\begin{aligned}
Secure_{i,t} = \gamma_0 + \sum_{j=2003:2}^{2006:2} \lambda_j * Year_{j=t} * Treated * Post_{it} + \\
\sum_{j=2006:4}^{2017} \gamma_j * Year_{j=t} * Treated * Post_{it} + \rho_2 Treated_i + \\
\rho_3 D(Age)_{i,t} + \rho_4 D(Period)_t + \delta X_{i,t} + \epsilon_{i,t}
\end{aligned}
\quad (4)
$$

Angrist & Pischke (2009)'s heterogeneous effects framework is crucial in our setting, as we can precisely identify our compliers. The 2006 labor reform specifically focused on female and young workers; therefore, these are the subsample of workers whose treatment status is affected by the instrument. In this context, our parameter of interest ϕ_1 is not the average

treatment effect (ATE) but the local average treatment effect (LATE).

The correct causal inference in our first-stage regression guarantees the fulfillment of the instrumental variable's independence assumption (1). Furthermore, as long as the first-stage DID identifies an impact of the policy on the probability of holding a permanent contract, the relevance condition (2) would be satisfied. Two additional assumptions must be further considered: the monotonicity condition (3) and the exclusion restriction (4). The latter requires that any effect of the policy on our health outcomes must be via the impact of the policy on parents' employment status. Since the reform is essentially focused on improving employment quality and stability among female and young workers, we do not find any reasons to believe that the exclusion restriction does not hold. Similarly, the fulfillment of the monotonicity condition seems arguably robust. In this sense, the primary threat would be that the reform had caused a within-firm substitution effect among non-treated and treated workers. The Spanish labor market conditions make this hypothesis hard to believe, as female and young workers' unemployment and job insecurity levels have traditionally been huge and hard to revert. Furthermore, evidence from the employment share of female and young workers does not support this hypothesis (Figure A1). In any case, as aforementioned, several studies have documented a positive effect of the reform on the aggregate level of employment (Arranz et al., 2008; Conde-Ruiz et al., 2010), which ensures the dominance of the displacement effect over the substitution effect.

4   Data

4.1   The Spanish National Health Survey (SNHS)

The Spanish National Health Survey (SNHS) is a serial set of nationally-representative surveys that constitutes the country's primary source of self-reported health information. It is periodically carried out by the Ministry of Health and Consumption, collaborating with the Spanish National Statistics Institute, and provides information about socio-demographics, self-reported health, use and health access, and health determinants.

Every edition since 2001 has been structured in three questionnaires: Household, Adult,

and Minor. The survey follows a three-stage stratified sampling, where the first stage unit is the census section and the second stage unit is the household. Within each family, an adult is selected to complete the Adult questionnaire, and if there are minors (from 0 to 14 years of age), one is chosen for the Minor questionnaire. These questionnaires can be linked using the assigned household code, relating parents' employment status, socio-demographic, and children's self-reported health information.

The SNHS has traditionally been published every three years. However, since 2009, it alternates with the European Health Survey in Spain (EHS, 2009, 2014). Unfortunately, European editions do not contain information on children's health, so using them has not been possible. Furthermore, the 2001 edition presents problems linking the Adult and the Minor questionnaires, so our database excludes it. This document uses 2003, 2006, 2011, and 2017 editions of the survey, containing information for 2003, 2004, 2006, 2007, 2011, and 2017.

4.2   Sample Selection

The original sample includes a total of 95.224 adults. We firstly restrict our sample to 16 to 65 adults who are parents and for whom the Minor questionnaire is available. The total number of children whose parents meet these restrictions is 24.568. Secondly, we restrict the sample to salaried workers, approximately 66% of the children's sample (16.311). From these, 16.723 observations provide consistent information on children's general health and 16.720 on mental health. These, therefore, constitute our final estimation sample.

The SNHS includes a wide range of questions and information about respondents' socio-demographic, economic, and health conditions. As mentioned, the survey is divided into three different questionnaires. Depending on the edition, socio-demographic and economic information such as the level of education or the type of contract is extracted from the Household or Adult questionnaire, while children's health outcomes are always designed using data from the Minor questionnaire. One of the essential questions in both the Adult and Minor files is about self-reported general health. Thus, participants are asked to rate their health (or their child's) on a 5-point scale: (1) very good, (2) good, (3) normal, (4) bad,

or (5) very bad. We create two dummies, *Good Health* and *Bad Health*, dichotomizing this 1 to 5 index into good (1-2) and bad health (3-5), and not bad (1-3) and bad (4-5), respectively. Moreover, depending on the edition, participants are asked if they have suffered from any listed symptoms or illnesses and/or if these have limited their main or leisure activity. Based on this information, we construct a mental health dummy that takes value one if a child has suffered from mental health issues such as mental disorders, depression, or anxiety during the last 12 months. These three variables will be the base of our analysis.

Table 1: Descriptive Statistics

	Obs.	Mean	SD	Min	Max
Good Health (Yes=1)	16273	0.90	0.30	0	1
Bad Health (Yes=1)	16273	0.01	0.10	0	1
Good Mental Health (Yes=1)	16270	0.98	0.15	0	1
Secure Labour Contract	16273	0.68	0.46	0	1
Treated	16273	0.58	0.49	0	1
Post-Policy	16273	0.70	0.46	0	1
Female	16273	0.54	0.50	0	1
Young	16273	0.12	0.32	0	1
Parent's Age	16273	39.04	7.60	16	65
Child's Gender (Male=1)	16273	0.52	0.50	0	1
Child's Age	16273	7.44	4.63	0	15
Parent's Education					
Secondary	16273	0.21	0.40	0	1
High-School	16273	0.14	0.35	0	1
Vocational Education	16273	0.20	0.40	0	1
University	16273	0.24	0.43	0	1

Table 1 shows the descriptive statistics of these measures, together with the most important elements and controls involved in our econometric analysis. They refer to the final estimation sample. The average child is reported to have good general (90%) and mental (98%) health. Furthermore, she is 7.5 years old, and 48% of them are girls. On the other hand, the average parents' age is 39 years old, and the group of treated individuals — Female (54%) and Young (12%) — comprises a 58% of the sample. In addition, 68% of workers hold a permanent contract, and 70% of the observations correspond to post-policy periods. Lastly, the share of secondary, high-school, and university workers is 21%, 14%, and 24%, respectively.

Finally, alternative health measures have been constructed to further understand the mechanisms underlying our main results. These indicators provide information on sleep, sport, weight, diet habits, accidents, health access, and medication consumption. In the Appendix, Table A1 provides a summary of descriptive statistics for these measures and details of how they have been constructed.

5   Main Results

Figure 2 graphically reports the results for equation (4). As mentioned, the validity of our instrumental variable approach crucially depends on the parallel trends assumption in our first stage Difference-in-Differences. Since there is no statistical test to ensure the validity of this assumption, the event study specification of our first stage intends to provide evidence in this regard. Pre-policy parameters are not significant nor seem to show a worrying behavior, which supports the validity of our instrument. In addition, we see that the reform progressively ascended the probability of holding a permanent contract. Figure A2 compares the estimates of equation (4) with and without the vector of controls $X_{i,t}$. As seen, both estimations report similar parameters, which further supports the robustness of our results.

The main results of the paper are presented in Table 2. We first show the results for the naïve OLS estimation, which serves the purpose of being a reference for the causal estimates. We then present the first stage's estimation to check our instrument's validity. Finally, we show the results of the second stage equation, which provides a causal estimate of the effect of job security on children's health.

Columns 1, 3, 5, and 7 include the estimation results of equation (1). As seen, estimates are non-significant and close to zero, suggesting a null impact of the type of contract on children's physical and mental health. These results are in line with the existing cross-sectional literature, which often finds non-significant effects (Bubonya et al., 2017). Columns 2, 4, 6, and 8 show the results for the instrumental variables strategy. In particular, we first show the results for the estimation of equation (2), our first stage. Since the four equations are almost equivalent, except for small differences in the estimation sample, estimates barely
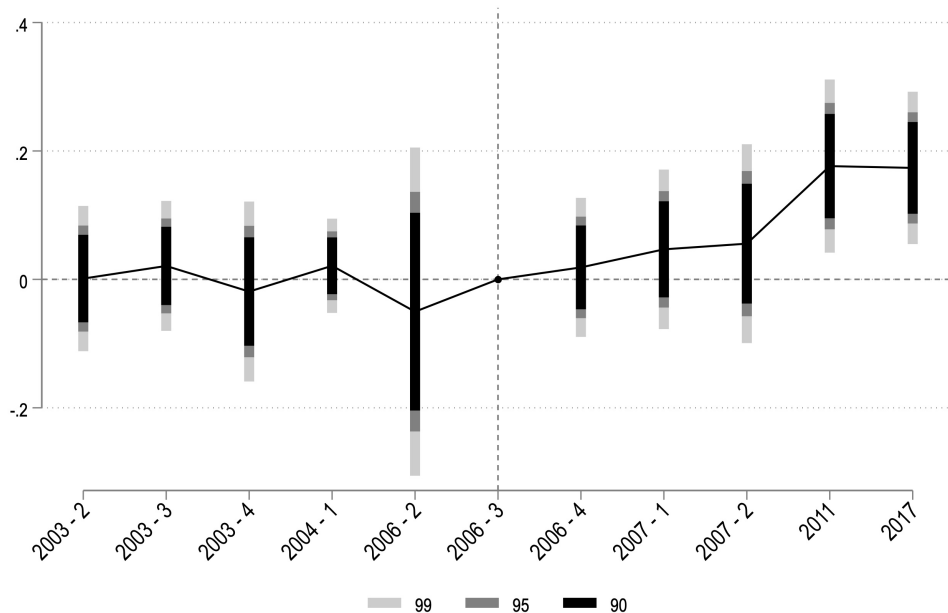
Figure 2: First-Stage — Event Study

Notes: Data is from the Spanish National Health Survey for the editions 2003, 2006, 2011, 2017. Coefficients correspond to the estimation of equation (4). Legend refers to Confidence Intervals.

vary across specifications. We find that the reform increased the probability of holding a permanent contract by 9.2 percentual points. These results are statistically significant at a 1% level, and the F-statistics are well above the Stock and Yogo critical values, so our instrument is strong. Finally, we present the results for the causal estimation of the impact of having a secure labor contract on children's health. As viewed, estimates slightly separate from zero, although only the parameter associated with the *Good Health* dummy is statistically significant. Thus, job security is causally and positively related to children's health. Parents holding a regular contract are 21% more likely to report their child to be in good general health. This result is consistent with the existing literature on the impact of job loss (Liu & Zhao, 2014; Bubanya et al., 2017; Lee, 2022; Schaller & Zerpa, 2019). On the contrary, no effect is found on the probability of being in good mental health. In this regard, our results resemble Bubanya et al. (2017), which do not find evidence supporting the hypothesis of an effect of job loss on children's mental health. In this document, however, daughters' mental health is later found to be more affected by parental job loss than sons',

Table 2: Main Results

	Good Health		Bad Health		Mental Health		Sleep	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Secure Labour Contract	0.007	0.183*	-0.001	0.053	-0.003	0.070	-0.004	-0.039
	(0.009)	(0.089)	(0.003)	(0.078)	(0.004)	(0.058)	(0.010)	(0.168)
First-Stage:								
Treated*Post		0.092***		0.092***		0.092***		0.092***
		(0.019)		(0.019)		(0.019)		(0.019)
Pre-Reform Mean	0.89	0.89	0.01	0.01	0.98	0.98	0.24	0.24
% Impact	0.01	0.21	-0.08	3.89	-0.00	0.07	-0.02	-0.16
F-Statistic		44.39		44.39		44.26		44.39
Obs.	16273	16273	16273	16273	16270	16270	16273	16273

Notes: Data is from the Spanish National Health Survey for editions 2003, 2006, 2011, 2017. Dependent variables are dummies for being in good or very good general health (Cols. 1, 2), being in bad or very bad general health (Cols. 3, 4), being in good mental health (Cols. 5, 6), and not having enough hours of sleep (Cols. 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. Bootstrapped Clustered Standard Errors at the regional level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

especially in the case of maternal job loss. As shown in the next section, this is our case as well when checking for heterogeneous effects.

Finally, we do not find any effect on the probability of being in bad health, which, together with the results for *Good Health*, indicates that the impact of job security on health is concentrated on the left-hand side of our 1-5 index distribution. We will comment more on this in the mechanisms section.

6   Heterogeneous Effects

When parental job security affects children's health, this relation is likely different across subpopulations. This section assesses whether the impact of job security varies depending on children's gender and age.

Several reasons can explain the effect of parental job security on children's health. These may be related to labor income, the availability of parental time, or a direct impact of parental stress (Schaller & Zerpa, 2019). Job security-related differences across genders and

stages of child development in these aspects may imply a heterogeneous effect on health. Therefore, as children's needs in terms of expenses and parental time are different across stages of development, an age-specific impact is likely to arise if, for instance, job security and parental time availability are correlated.

Secondly, evidence shows substantial differences in health among males and females. In this sense, the literature on adolescents' mental health proves the existence of a ubiquitous gender gap, having girls a worse average mental health (Campbell et al., 2021). Moreover, we know that highly stressful events such as the COVID-19 pandemic (Mendolia et al., 2022), parental depression, or family malfunctioning (Bouman et al., 2008) also present relatively larger impacts on girls.

In Table 3, we separately show the causal estimates of the effect of job security on children's general and mental health for females and males, and under and above seven years old children.

6.1 Children's Gender

There is no agreement in the literature on the existence of a gender-specific impact of job loss on children's health. Hence, while some papers confirm stronger effects on girls (Lee, 2022; Bubonya et al., 2017)[3], other studies find no evidence in this matter (Powdthavee & Vernoit, 2013; Liu & Zhao, 2014).

Columns 1 to 4 in Table 3 display the results for the separate estimation of our models of reference by gender. As seen, parameters associated with the *Good Health* dummy are close to our benchmark result, being slightly greater for boys. Thus, we do not find a gender-specific effect on general health. Moreover, the division of the sample limits our model's statistical power, making both parameters no longer significant. On the contrary, however, we do find evidence of a differentiated effect on mental health. Hence, we observe that girls' mental health significantly increases (15%) when parents hold a permanent contract, while the effect on boys is close to zero. As mentioned, these results are in line with Bubonya et

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[3]See Lee (2022) for general health and Bubonya et al. (2017) for mental health.

Table 3: Effect Heterogeneity by Children's Gender and Age

	Good Health		Mental Health		Good Health		Mental Health	
	Males	Females	Males	Females	≤ 7 y.o.	> 7 y.o.	≤ 7 y.o.	> 7 y.o.
Secure Labour Contract	0.203	0.171	0.016	0.152*	0.369**	-0.265	0.072	-0.073
	(0.166)	(0.297)	(0.100)	(0.079)	(0.115)	(0.177)	(0.046)	(0.108)
First-Stage:								
Treated*Post	0.098***	0.081**	0.098***	0.081**	0.122***	0.064**	0.121***	0.064**
	(0.023)	(0.027)	(0.023)	(0.027)	(0.025)	(0.021)	(0.025)	(0.021)
Pre-Reform Mean	0.88	0.89	0.98	0.99	0.85	0.91	0.99	0.98
% Impact	0.23	0.19	0.02	0.15	0.43	-0.29	0.07	-0.07
F-Statistic	25.97	16.56	25.87	16.53	35.33	11.10	35.21	11.10
Obs.	8409	7864	8407	7863	8185	8088	8182	8088

Notes: Data is from the Spanish National Health Survey for the editions 2003, 2006, 2011, 2017. Dependent variables are dummies for being in good or very good general health (Cols. 1, 2, 5, 6) and being in good mental health (Cols. 3, 4, 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction; and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. The sample has been restricted to exclusively males (Cols. 1, 3) and females (Cols. 2, 4), and under (Cols. 5, 7) and over (Cols. 6, 8) 7 years old children. Bootstrapped Clustered Standard Errors at the regional level. *** p< 0.01, ** p< 0.05, * p< 0.10.

al. (2017) and complement those from Lee (2022), who also finds gender differences but can only hypothesize these to be related to mental health.

Previous literature has extensively shown mental health shocks during childhood to be highly persistent over time (Brown et al., 2008; Arseneault, 2018; Lippard et al., 2019). We consider this fact to be of extreme importance, since employment status may be generating lifetime health gender gaps which may imply, among many other things, larger future differences in the access to the labor market and a concentration of the incidence of temporary contracts among those whose parents suffered job insecurity.

6.2 Children's Age

In Table 3, columns 5 to 8, we next study whether the effect of having a permanent contract changes as children grow. In this respect, despite some exceptions (Schaller $ Zerpa, 2019)[4], the literature on the effect of job loss generally finds this impact to be concentrated at the

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[4]Probably due to lack of statistical power when dividing the sample, as mentioned in the document.

early stages of life (Powdthavee & Vernoit, 2013; Bubonya et al., 2017). We separately estimate our benchmark models for seven years old or younger kids, and older children. As observed in columns 5 and 6, estimates for general health broadly differ across subsamples. Thus, the effect of job security on children's general health is age-specific, increasing both in magnitude and level of significance for younger children while turning non-statistically significant for the oldest. On the other hand, we find no evidence of a heterogeneous effect on mental health (Cols. 7, 8). Again, these results are consistent with Lee (2022) and present essential policy implications, as governments should consider these when designing economic policies to prevent parental job spillovers on children.

7   Mechanisms

Finally, we intend to clarify some mechanisms through which job security impacts children's physical and mental health. In the previous sections, we have found that having a permanent contract significantly increases children's general health. Moreover, we have seen that this effect is concentrated among younger children, and that job security also increases girls' probability of being in good mental health. Now, we assess the impact of job security on additional health outcomes (listed and summarized in Table A1), aiming to explain some of the channels through which these effects occur.

We present our results divided into four tables: Table 4 contains the results for measures related to accidents and health access, Table 5 refers to underweight, overweight, and obesity, Table 6 includes the analysis of sport and dietary habits, and Table 7 assess the consumption of medications. As before, we present both the results for the naïve OLS estimation and the IV specification for every outcome. We find that having a permanent contract does not impact health access nor the likelihood of suffering from weight-related conditions. On the other hand, we show that job security reduces the likelihood of minor accidents, improves dietary and sports habits, and eases the consumption of medication mainly associated with pain and common illnesses.

Table 4 analyzes the impact of job security on the children's likelihood of having had an

Table 4: Accidents and Health Access

	Accident		Emergency Room		Private Insurance		Help-Seeking Behaviour	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Secure Labour Contract	0.008	-0.275**	-0.011	0.336	0.039***	-0.121	0.000	0.002
	(0.009)	(0.111)	(0.010)	(0.275)	(0.007)	(0.076)	(0.009)	(0.231)
First-Stage:								
Treated*Post		0.092***		0.092***		0.136***		0.092***
		(0.019)		(0.019)		(0.027)		(0.019)
Pre-Reform Mean	0.11	0.11	0.36	0.36	0.10	0.10	0.11	0.11
% Impact	0.07	-2.41	-0.03	0.93	0.41	-1.27	0.00	0.02
F-Statistic		44.39		44.39		44.72		44.39
Obs.	16273	16273	16273	16273	12926	12926	16273	16273

Notes: Data is from the Spanish National Health Survey for editions 2003, 2006, 2011, 2017. Dependent variables are dummies that stand for having had an accident (Cols. 1, 2), having been to the emergency room (Cols. 3, 4), having private insurance (Cols. 5, 6), and having spent 12 months or more since the last visit to the doctor (Col. 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. Bootstrapped Clustered Standard Errors at the regional level. *** p< 0.01, ** p< 0.05, * p< 0.10.

accident, having visited the emergency room, having private insurance, and having spent 12 months or more without seeing a doctor. Accidents are evaluated to explore whether the impact on health could come through non-health-related factors associated with behavioral differences, such as lack of parental time. Moreover, we consider private insurance and the frequency of consultations as indicators of health access.

Results suggest that better employment status reduces the odds of having an accident. In particular, we observe that children whose parents hold a regular contract are more than two times less likely to have an accident. At the same time, we do not find evidence of a significant effect on the probability of going to the emergency room, which allows us to conclude that the impact on accidents is related to minor events that do not require medical assistance. We conjecture that this result may be due to a lack of parental time, both in quantity and quality. Children may spend more time in the care of third parties, alone at home or outside the household. Moreover, parental time and attention quality may be lower due to poorer labor conditions, such as shorter resting times or inadequate job schedules. In any case, data restrictions prevent us from continuing exploring, so this should just be left

Table 5: Weight

	Underweight		Overweight		Obesity		Weight Problem	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Secure Labour Contract	0.002	0.095	-0.014*	-0.110	0.001	0.070	-0.011	0.055
	(0.004)	(0.095)	(0.006)	(0.166)	(0.008)	(0.168)	(0.008)	(0.284)
First-Stage:								
Treated*Post		0.093***		0.093***		0.093***		0.093***
		(0.019)		(0.019)		(0.019)		(0.019)
Pre-Reform Mean	0.03	0.03	0.11	0.11	0.10	0.10	0.24	0.24
% Impact	0.07	3.14	-0.13	-1.03	0.01	0.69	-0.04	0.23
F-Statistic		34.67		34.67		34.67		34.67
Obs.	11989	11989	11989	11989	11989	11989	11989	11989

Notes: Data is from the Spanish National Health Survey for editions 2003, 2006, 2011, 2017. Dependent variables are a dummies for being underweight (Cols. 1, 2), overweight (Cols. 3, 4), obese (Cols. 5, 6), or one of the three (Cols. 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. Bootstrapped Clustered Standard Errors at the regional level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

as a possible explanation.

Besides, we do not find evidence of an impact on health access. Previous literature has shown that increased health access does not necessarily imply better self-reported health (Miller et al., 2021), as people are diagnosed with problems and conditions they did not know they had. Thus, our initial hypothesis was to find a positive impact of job security on health access, which would have polarized our 1-5 health index, increasing both the likelihood of reporting being in good and bad health. Nonetheless, we do not find this effect on self-reported health and, therefore, nor on health access. We believe this result is due to the wide coverage of the Spanish Public Healthcare System.

We next evaluate, in Tables 5 and 6, the impact of job security on weight-related problems, sport and dietary habits. As seen, the impact of job security on weight-related conditions is not statistically significant. Nevertheless, we do observe that children whose parents have a permanent contract are more likely to practice sports and have a diet more limited in sugary foods and richer in protein. We relate these results to the larger stability of income and the better ability to organize time that regular contracts provide.

Table 6: Sport and Dietary Habits

	Sport		Vegetables & Fruit		Meat		Sweets	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Secure Labour Contract	0.026	0.361*	0.009	-0.104	0.024*	0.357**	-0.018	-0.276*
	(0.016)	(0.160)	(0.006)	(0.249)	(0.013)	(0.115)	(0.013)	(0.149)
First-Stage:								
Treated*Post		0.092***		0.086***		0.086***		0.087***
		(0.020)		(0.018)		(0.018)		(0.018)
Pre-Reform Mean	0.69	0.69	0.24	0.24	0.82	0.82	0.66	0.66
% Impact	0.04	0.53	0.04	-0.43	0.03	0.44	-0.03	-0.42
F-Statistic		35.56		36.68		36.46		36.95
Obs.	13138	13138	15151	15151	15154	15154	15154	15154

Notes: Data is from the Spanish National Health Survey for editions 2003, 2006, 2011, 2017. Dependent variables are dummies that stand for practicing any sport (Cols. 1, 2), eating vegetables and fruits every day (Cols. 3, 4), eating meet at least three times a week (Cols. 5, 6), and eating sweets every day (Cols. 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. Bootstrapped Clustered Standard Errors at the regional level. *** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Table 7: Consumption of Medication

	Overall		Cold, flu, Throat		Pain, Fever		Antibiotics	
	OLS	IV	OLS	IV	OLS	IV	OLS	IV
Secure Labour Contract	0.008	0.359*	0.008	0.144	-0.003	0.345*	0.007**	-0.040
	(0.017)	(0.170)	(0.013)	(0.197)	(0.008)	(0.150)	(0.003)	(0.089)
First-Stage:								
Treated*Post		0.092***		0.093***		0.092***		0.093***
		(0.019)		(0.019)		(0.019)		(0.019)
Pre-Reform Mean	0.36	0.36	0.15	0.15	0.13	0.13	0.05	0.05
% Impact	0.02	1.01	0.05	0.95	-0.02	2.56	0.14	-0.80
F-Statistic		44.39		44.86		44.41		44.87
Obs.	16273	16273	16252	16252	16272	16272	16245	16245

Notes: Data is from the Spanish National Health Survey for editions 2003, 2006, 2011, 2017. Dependent variables are dummies that stand for having consumed any medication during the last 2 weeks (Cols. 1, 2), having consumed medications to treat cold, flu or throat (Cols. 3, 4), having consumed medications to treat pain or fever (Cols. 5, 6), having taken antibiotics (Cols. 7, 8). All regression include time and region fixed effects. Individual characteristics include dummies for children's age, gender and their interaction and parent's age, gender, education, nationality and civil status. The instrument is the interaction of eligible individual (female or under 30) and post-treatment. Bootstrapped Clustered Standard Errors at the regional level. ** $p < 0.01$, ** $p < 0.05$, * $p < 0.10$.

Lastly, we evaluate how employment status determines the consumption of medication (Table 7). We observe that job security increases overall drug consumption. Moreover, we find this fact to be driven by higher consumption of pain and fever-related medications. These are, together with cough or flu drugs, the most common medicines during childhood (Table A1). Furthermore, we know these drugs are usually paid for out of pocket, which explains why a permanent job that provides greater income stability impacts their consumption. We conclude that job security eases access to this type of medication, which allows for treating minor diseases and pains and ultimately increases self-reported health.

8   Conclusions

This paper examines the impact of parental job security on children's health. In the literature, job security has traditionally been related to a wide variety of physical and mental health conditions (De Witte et al., 2015). However, the majority of this evidence does not properly address the problem of endogeneity. Even so, several papers have attempted to further explore the impact of job security on health in recent years. Still, studies on the effects of job loss constitute an essential branch of the literature in this regard, as the number of papers considering endogeneity and directly evaluating the impact of job security is scarce. Among these, moreover, those that consider the effects on children are even rarer.

Job security has generally been addressed through self-reported perceived job insecurity (Caroli et al. 2016), dismissal rates in worker's sector or firm (Reichert et al., 2017) and employment status (Lee, 2022). However, the extent to which job loss and dismissal rates are appropriate proxies of job security is unclear. As mentioned, dismissal rates may affect health through other channels different than job security. In addition, job loss is less frequent and presumably more damaging than job insecurity. Thus, this document evaluates the effect of job security using employment status. In particular, we explore the impact of the type of labor contract in Spain, where the incidence of temporary employment is enormous, and differences between fixed-term and permanent contracts in EPL are highly salient to workers. To address endogeneity, we draw upon the 2006 Spanish labor reform, which sought

to expand the use of permanent contracts among female and young (under 30) workers. Hence, the reform induced the needed exogenous variation in the use of permanent contracts to infer causality. We combine a Difference-in-Differences (DID) and an instrumental variable strategy. Specifically, we instrument the type of contract using the interaction between being female or young (Treated) and being surveyed after the policy (Post-Treatment). Hence, the first stage in our setting becomes a classic DID, whose treatment effect befits the excluded instrument in the second stage.

Using data from the Spanish National Health Survey (SNHS), we observe that having a permanent contract significantly increases children's general health. Moreover, we find that this effect is concentrated in young children (< 7 years old) and that job security also has a positive impact on girls' mental health. In addition, we further assess the effects of job security on additional health outcomes such as sleep, accidents, health access, sports, dietary habits, and medication consumption, identifying some mechanisms through which these effects on health occur. We find that children whose parents hold a permanent contract have significantly fewer minor accidents, practice more sports, have better dietary habits, and have better access to some of the most commonly used medications during childhood.

These results are consistent with the previous literature and present essential policy implications. As previous research has shown, adverse effects during childhood are highly persistent and accumulate over children's lives (Case et al., 2002; Sobolewsky & Amato, 2005; Brown et al., 2008). Therefore, future labor market reforms must consider these results, explicitly foreseeing policies to prevent parental job's adverse effects on children.

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A   Appendix

Figure A1: Female/Young Workers' Employment Share
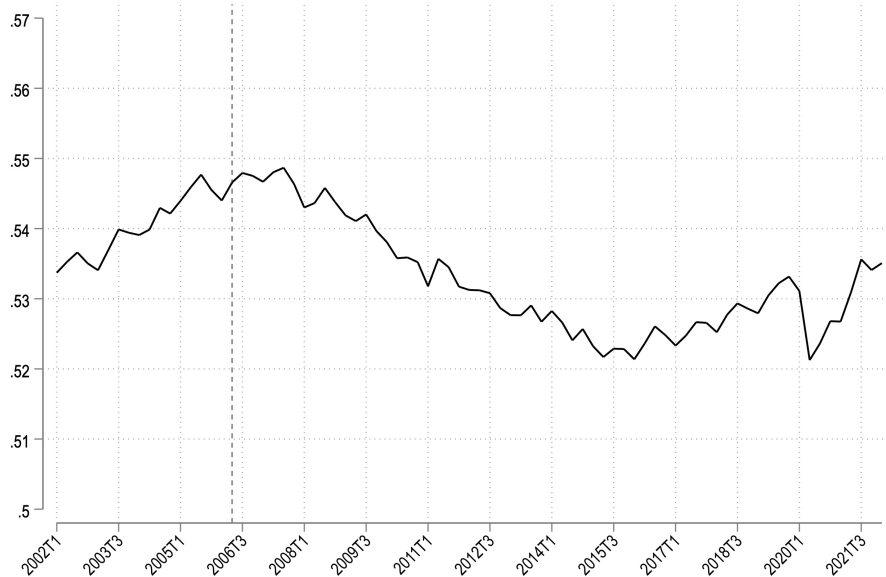
Notes: The graph depicts the evolution of the employment share for female and young workers in Spain.
*Source:* Spanish Labor Force Survey (EPA), Spain — Own Elaboration

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Table A1: Table of Descriptive Statistics - Mechanisms

	Obs.	Mean	SD	Min	Max
General Health					
Not enough hours of sleep	16273	0.24	0.43	0	1
Log(Hours of Sleep)	16242	2.27	0.19	0	3
Underweight	11989	0.04	0.19	0	1
Overweight	11989	0.11	0.31	0	1
Obesity	11989	0.11	0.31	0	1
Body Mass Index (BMI)	11989	18.43	3.69	7	40
Accidents and Health Access					
Accident (Yes=1)	16273	0.11	0.31	0	1
Emergency Room (Yes=1)	16273	0.38	0.49	0	1
Private Health Insurance	12926	0.12	0.33	0	1
Help-Seeking Behaviour	16273	0.10	0.31	0	1
Sport and Diet Habits					
Sport (Yes=1)	13138	0.72	0.45	0	1
Daily vegetables and fruit (Yes=1)	15151	0.31	0.46	0	1
Meat at least three times a week (Yes=1)	15154	0.80	0.40	0	1
Daily Sweets (Yes=1)	15154	0.67	0.47	0	1
Medication Consumption					
Medication Consumption (Last 2 weeks)	16273	0.36	0.48	0	1
Flu, Cold and Throat Medication	16252	0.16	0.37	0	1
Pain and Fever Medication	16272	0.15	0.36	0	1
Antibiotics	16245	0.05	0.21	0	1

Notes: (1) *Hours of sleep* is directly extracted from the Minor questionnaire. *Sleep* (not enough hours of sleep) is a dummy that takes value one for children who sleep less than an age-specific threshold. (2) The Body Mass Index (BMI) is computed using information on children's weight and height, directly provided in the Minor questionnaire. *Underweight*, *Overweight* and *Obesity* dummies take value one for children whose BMI is below 5th percentile, above 85th percentile, or above 95th percentile, respectively. Percentiles are age and gender-specific and are based on Sobradillo et al. (2002). (3) *Accident*, *Emergency Room* and *Help-Seeking Behaviour* are dummies based on information from the Minor questionnaire that stand for having had an accident or visited the emergency room during the last two weeks, and not having visited the doctor in the last 12 months, respectively. Furthermore, *Private Health Insurance* takes value one if parents have a family private health insurance that covers the child's health. (4) *Sport*, *Daily Vegetables and Fruit*, *Meat* and *Daily Sweets* are dummies that stand for practicing any sport, eating vegetables and fruits every day, eating meat at least three times a week and eating sweets every day, respectively. (5) Finally, *Medication Consumption* is a dummy that indicates if the child has consumed medications during the last two weeks. Moreover, dummies for three specific groups of medications have been specifically created: flu, cold and throat medication, pain and fever medication, and antibiotics.

Figure A2: First-Stage — Event Study
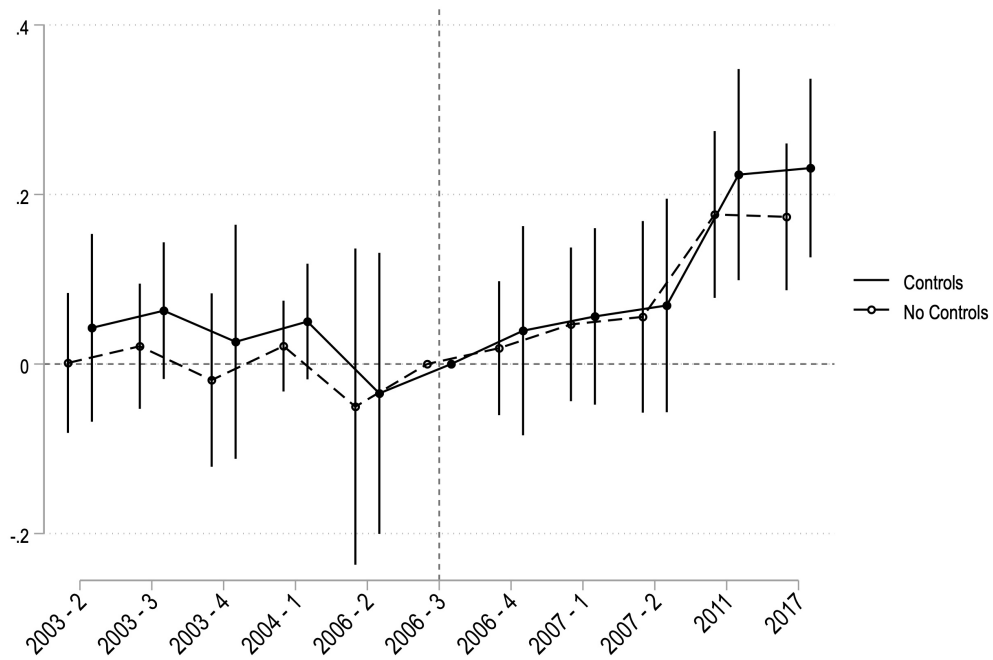
Notes: Data is from the Spanish National Health Survey for the editions 2003, 2006, 2011, 2017. Coefficients correspond to the estimation of equation (4) with and without controls. 95% Confidence Intervals.