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Essays in Labor and Public Economics

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Essays in Labor and Public Economics

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This thesis investigates the employment and welfare effects of social insurance programs and minimum wage policy.[1] The first chapter provides new estimates of the income effect of welfare transfers on individual labor supply. Using administrative data on survivor insurance in Italy, and quasi-experimental variation in the benefit amount received by surviving spouses, I find that survivors fully offset the benefit loss with increases in earnings. Extensive-margin responses—in the form of increased labor-market entry at younger ages and delayed retirement at older ages—are the main driver of the earnings response. A revealed-preference model demonstrates that large participation responses to realized benefit drops are revealing of large implicit valuations of welfare transfers in the widowhood state.

The second chapter analyzes the employment and welfare effects of short-time work programs (STW), which subsidize hour reductions in firms affected by temporary shocks. The analysis uses administrative data from Italy and quasi-experimental variation in STW policy rules to identify the effects of STW on firms and workers, and on reallocation in the labor market. STW has a large and significant negative effect on hours, but large and positive effects on headcount employment. However, these effects disappear once the subsidy ends. Similarly, STW does not provide long-term insurance to workers. Finally, STW has significant negative reallocation effects on employment growth at the local labor market level. A conceptual framework assesses the welfare implications of STW and provides a general formula for the optimal subsidy.

The third chapter investigates the impact of minimum wages on firm behavior and the within-firm wage structure. The analysis exploits the natural experiment of the National Living Wage (NLW) introduction and matched employer-employee data on English care homes. No evidence of adverse employment effects or firm closure is found. Rather, homes bound more tightly by the NLW exhibit smaller short-run improvements in the quality of care services. There is strong evidence of positive wage spillovers onto younger workers, but with no negative employment spillovers. Employers' preferences for fairness emerge as the most plausible explanation for the observed wage spillovers.

The fourth chapter investigates the nature of alternative work arrangements in the U.K. labor market, placing a particular focus on zero-hours contracts (ZHC). Combining existing secondary data and newly collected survey data, the analysis documents the importance and characteristics of ZHC work. The chapter also explores the extent to which higher minimum wages have potential to induce a larger utilization of alternative work arrangements by firms and, consequently, a shift in the composition of their workforce toward more flexible, but also insecure jobs. Minimum wage increases are shown to have resulted in greater utilization of ZHCs in the U.K. social care sector, and in low-wage sectors more generally.

Chapter 1

When Income Effects Are Large: Labor Supply Responses and the Value of Welfare Transfers

The effect of income on labor supply is a parameter of great importance for both theory and policy analysis. From a policy perspective, income effects are central to the evaluation of a broad set of policies involving income transfers, such as social insurance programs, public pension schemes, and tax policies. Income effects are also important for welfare analysis, since they are directly related to the marginal utility of consumption (Chetty 2004, 2008).

In spite of their importance for economic analysis, we still know surprisingly little about income effects, especially in the context of tax and benefit programs. This is mostly due to identification challenges: social insurance and tax and transfer programs generally involve simultaneous changes in income and work incentives, which make it hard to separately identify income and substitution elasticities. For this reason, income effects have been typically assumed away or calibrated. Most quasi-experimental estimates of income effects are based on transfers that are either too modest to trigger a response or relatively short-lived, implying that observed responses may be substantially attenuated by optimization frictions (Blundell and MaCurdy 1999; Kimball and Shapiro 2008; Marinescu 2018; Pencavel 1986). It is therefore still unresolved whether existing estimates of income effects are indeed capturing the true effects of income on labor supply, especially in relation to welfare transfers.

In this chapter, I provide novel estimates of the income effect of welfare transfers on individual labor supply. I exploit a unique research setting in the context of the Italian survivor insurance scheme, which provides a pension benefit to surviving spouses of deceased retirees and workers. The benefit is computed as a fraction of the deceased's pension and starts from the beginning of the month following the death.[2] I take advantage of a policy change that introduced an exogenous, large and permanent discontinuity in the fraction of the deceased's pension received by survivors on the basis of their spouse's death date. Specifically, the reform decreased the fraction of the deceased's pension received by survivors whose benefit started on or after September 1, 1995, generating a discontinuity in expected lifetime benefits and *de facto* introducing two parallel benefit regimes of exogenously different generosity that would then coexist for a long time.

Using newly released, rich administrative data on the universe of survivor insurance payments and survivors' contributory histories from the Italian Social Security Administration (INPS), I implement a regression discontinuity design in the spousal death date—which is equivalent to the benefit start date— and compare the long-term outcomes of otherwise identical individuals receiving benefits of different generosity for a long time.[3] The long-run identifying variation generated by the benefit reform offers a unique window on the long-run behavioral responses to a permanent reduction in benefits, allowing to estimate long-run effects that are plausibly not attenuated by short-run optimization frictions. Also, by comparing treated and control individuals similarly affected by the loss of a spouse, the identification strategy implicitly accounts for state-dependent preferences.

I find that survivors fully offset the benefit loss by increasing their earnings and, as a result, do not experience any drop in disposable income. Specifically, in the 15 years after a spouse's death, survivors affected by the reform lose on average €2,000 per year (a 21 percent drop relative to the old regime). In response, they increase their average annual earned income by a quantity equal to the benefit loss. This translates into an estimated marginal propensity to earn out of unearned income of approximately minus one.[4] I document substantial heterogeneity in the income effect by the relative severity of the benefit loss.

I probe the large income response by examining its underlying mechanisms. Labor force participation is the main driver of the income response, in the form of increased labor market entry by younger survivors and delayed retirement by older survivors. Hours worked and the wage rate are found to have a muted response to changes in the benefit. I uncover interesting dynamic patterns in the participation response: the latter is silent in the two years after the spouse's death and then grows steadily larger over time, reaching a differential of 18 percent after 15 years. The overall dynamic is consistent with the notion that optimization frictions, such as adjustment costs or—in the case analyzed—grief, attenuate responses in the short run and fade away over time. I investigate program substitution responses as an additional margin of adjustment.[5] I find that survivor benefit reductions trigger a statistically significant and economically sizable increase in the take-up of paid family leave and unemployment insurance benefits.

Finally, I discuss the normative implications of my findings. In a simple revealed-preference framework, I demonstrate that survivors' participation responses to a realized drop in benefits reveal their implicit valuation of the benefit in the widowhood state, as measured by the gap in the marginal utility of consumption between the low-benefit and high-benefit regime. Intuitively, the extent to which individuals increase work effort in response to a drop in unearned income reveals, ceteris paribus, the consumption value that such lost income would have provided. Hence,

larger responses must mean that the lost income is highly valued and that there are large welfare gains from recouping it. I estimate a marginal welfare gain from increased survivor insurance generosity of 0.5, which implies that the marginal utility of consumption is 50 percent higher among widow(er)s in the low-benefit regime as compared to widow(er)s in the high-benefit regime. This is in the higher end of the range of existing estimates of the value of social insurance.

The findings in this chapter inform a long-standing line of research on the income effect of welfare transfers on labor supply.[6] I contribute to this literature by providing well-identified estimates of the income effect from a large and permanent drop in unearned income, in the long term and in the context of publicly provided benefits. This chapter is also more broadly related to the literature on the labor supply and program substitution effects of social insurance programs.[7] It is also partly related to the literature on the divergence between steady-state macro and micro elasticities of labor supply.[8] Finally, this chapter contributes to a growing body of work that attempts to evaluate the welfare gains of social insurance using empirically estimable "sufficient statistics."[9] I contribute to this literature by providing a simple revealed-preference method based on *within*-state participation responses to benefit losses that allows for state dependence and is applicable to a broad class of public policies involving income transfers.

Chapter 2

Subsidizing Labor Hoarding in Recessions: The Employment and Welfare Effects of Short-Time Work Programs

(with Camille Landais)

The Great Recession has generated a significant revival of interest in policies destined at encouraging labor hoarding by firms during downturns (e.g., Giroud and Mueller 2017; Yagan 2019). STW programs, which are subsidies for temporary reductions in the number of hours worked, are the most emblematic of such policies and have been used aggressively during the Great Recession, especially in European countries. The fraction of employees on STW in 2009 reached 7 percent in Belgium, close to 5 percent in Germany, and 4 percent in France.[10] In Italy, according to social security data, 4.6 percent of the workforce was in STW in 2013, for a cost of 0.5 percent of GDP. This revival of interest is also palpable in the United States, where state STW programs have been actively promoted by the Job Creation Act of 2012. In 2016, more than 28 U.S. states had implemented their own STW programs.[11]

But what is behind this STW craze? Do we know that it is effective in stabilizing employment? Is it an effective

way to provide insurance to workers? More effective than unemployment insurance, for instance? More fundamentally, do we know anything about its welfare implications? What sources of inefficiencies are we trying to correct with STW? If we believe that hours or employment are not optimally set in the labor market, how can STW deal with these inefficiencies? Are we not creating additional inefficiencies with these programs by keeping workers in unproductive firms, preventing an efficient reallocation of labor?

Despite STW being a key element to the countercyclical policy tool kit, and one of the main active labor market policies during downturns, we are completely at a loss to answer these fundamental questions. This is due to three simple reasons: 1) a critical lack of firm- or individual-level administrative data on STW;[12] 2) even in the presence of firm-level data, the lack of credible sources of identification of STW treatment;[13] and 3) the lack of a simple, tractable yet general conceptual framework to rationalize the empirical evidence and feed the estimates back into a welfare evaluation of STW policies.[14]

This chapter contributes to our understanding of STW by addressing these three limitations. It relies on uniquely rich administrative data on STW from Italy. It uses variation in eligibility rules across firms to provide compelling evidence of the causal impact of STW on firms' and workers' outcomes. And it offers a simple and general conceptual framework that maps onto our empirical results to transparently assess the welfare consequences of STW programs.

Our data come from the INPS and cover the universe of Italian employer-employee matches in the private sector and the universe of all social security and transfer payments in Italy from 1983 to 2015. Besides granular information on firms and workers' histories, it provides detailed information on eligibility, applications, and authorizations of the universe of STW episodes at both the firm and individual levels from 2005 to 2015. Identification stems from the interaction between two sources of variation in eligibility: INPS codes and firm size. First, we exploit the fact that within five-digit industries, certain firms, defined by particular INPS codes, are eligible while others are not, as per the implementation by INPS of STW legislation dating back to the 1970s. Second, we use the additional requirement that firms must be above a certain size threshold to be eligible. This enables us to test and control for the possibility that differential time shocks affected eligible and noneligible INPS codes within five-digit industries during the recession. We provide multiple robustness checks for the validity of our approach.

Our results demonstrate that STW has large and significant effects on firms' employment at both the intensive and extensive margin. Compared to counterfactual firms, firms treated by STW experience a 40 percent reduction in hours worked per employee, and a similar magnitude increase in the number of employees in the firm, with no discernible effect on wage rates. We show that these employment effects are temporary and immediately disappear once STW treatment stops. On the workers' side, we similarly find that treatment effects are all concentrated in the short run. STW has immediate positive effects on employment probability, but negative effects on hours, and a positive effect on total earnings and transfers. But these effects disappear after treatment, so that STW provides no significant insurance to workers in the medium or long run. In fact, two years after treatment, there are no significant differences in the employment probability, earnings, and total income of workers who were treated by STW and workers who were counterfactually laid off.

We then analyze the selection of firms into STW and the heterogeneity in the treatment effects of the program. We show that firms that were at the bottom of the productivity distribution before the recession are three times more likely than higher-productivity firms to take up STW during the recession and that employment effects for them are significantly smaller. This suggests that STW is predominantly targeting firms that have permanently lower productivity and helps explain why STW does not entail long-term benefits. More importantly, this suggests that by keeping workers in low-productivity firms, STW may have significant negative reallocation effects in the labor market.

To investigate these claims, we leverage the rich spatial variation available in Italy across more than 600 local labor markets and estimate how an increase in the fraction of workers on STW in a local labor market affects employment in nontreated firms. We instrument variation in the intensity of STW treatment across local labor markets by the average yearly fraction of eligible workers in the local labor market in the prerecession period, controlling for a rich set of firm and local labor market characteristics. Our results provide compelling evidence of the presence of equilibrium effects of STW. STW significantly decreases employment growth and inflow rates in nontreated firms, and has a significant negative impact on total factor productivity growth in the labor market.

We finally provide a tractable search and matching framework that rationalizes these empirical findings and maps our estimates into a transparent welfare evaluation of STW. Our model is directly related to the public finance literature on optimal policies in equilibrium models of the labor market (see, for instance, Landais, Michaillat, and Saez 2018; Michaillat and Saez 2019). The main insight is that optimal STW not only balances the insurance value of the subsidy with its fiscal externality but also needs to account for two additional sources of inefficiencies: 1) employment may be inefficient because of the frictional nature of the labor market, and 2) equilibrium hours may also not be at their socially optimal level due to the missing market for hours. STW will entail positive welfare gains when equilibrium employment is suboptimally low and hours suboptimally high, and our formula offers a clear representation of these terms.

Our approach offers the possibility to conduct a local welfare calibration using our reduced form estimates, which suggests that, in the current Italian context, the marginal welfare gains of further increases in STW are small. Finally, we use a calibrated version of the model to run nonmarginal counterfactual analysis and quantify the welfare effects of removing STW. This analysis confirms that the welfare gains of further increases in the generosity of STW are small, but the value of having STW is significantly positive. We also use the calibrated model to show that the immediate employment effects of STW are significantly larger when the aggregate shock is temporary than when it is permanent, as firms' desire to hoard labor is greater for temporary shocks.

Chapter 3

Changing the Structure of Minimum Wages: Firm Adjustment and Wage Spillovers

(with Stephen J. Machin)

The by-now centennial history of minimum wages and their widespread application across developed and developing countries has triggered a great deal of academic research and policy discussion on the topic. Recent years have seen a burst of renewed interest in minimum wage policy. In this chapter, we study the effect of a substantive change in the U.K. minimum wage structure on firm behavior and the within-firm wage structure. The change occurred when in July 2015 the newly elected Conservative Party government unexpectedly announced the introduction of the National Living Wage (NLW). This altered the structure of U.K. minimum wages by introducing a new minimum wage rate of £7.20 an hour for workers aged 25 or above starting April 2016, while leaving the minimum wage rates for younger workers unchanged.

We are interested in analyzing the consequences of this change on three main areas that have been traditionally explored in the minimum wage literature. Firstly, wage and employment effects are studied in the context of workers and firms in the U.K. care home sector, which has been argued to be a good testing ground for evaluating minimum wage effects on employment in earlier research (Machin, Manning, and Rahman 2003; Machin and Wilson 2004). Secondly, we exploit the age-related change in minimum wage rates to study whether the NLW induced wage or employment spillovers onto workers under 25. Thirdly, we explore the possibility that care homes responded to the wage cost shock by altering other margins, such as prices, productivity, and the quality of care services provided. In addition, we consider whether the policy had implications for aggregate employment and firm dynamics (entry and exit).

We leverage the unique natural experiment offered by the U.K. policy setting, coupled with rich matched employer-employee data, including detailed information on individual hourly wages for the English care home sector. Empirically, we implement a difference-in-differences with continuous treatment, where we exploit between-firm variation in exposure to the NLW to identify the effect of the minimum wage increase on firm-level outcomes over the 12 months following the reform.

The changed minimum wage structure and associated higher minimum wage for those aged 25 and above significantly impacted wages, but there is much less evidence of adverse employment effects, and no significant impact on firm closure nor on entry/exit dynamics more generally one year after. Rather, the margin of adjustment that was used was the quality of care services. Care homes bound more tightly by the NLW exhibited smaller short-run improvements in the quality of care services than less-bound homes.

There is also strong evidence of wage spillovers resulting from the new minimum wage structure as younger workers' wages rose in tandem with the higher adult minimum wage, but with no spillover impact on their employment. We discuss potential explanations for this pattern of spillovers, including preferences for pay fairness and administrative simplicity. The evidence suggests that employers'—rather than workers'—preferences for fairness play an important role in within-firm wage-setting policies in the sector that is studied.

The content of this chapter relates to all of the three main streams along which the minimum wage literature has evolved through time. Firstly, the primary focus of this literature has been on the employment and unemployment effects of minimum wages.[15] Secondly—and partly in response to the fact that, in a number of settings, employment effects have proven elusive to track down—a smaller but growing body of research has examined other margins of adjustment by firms, such as prices, profits, and firm value.[16] Thirdly, another strand of the minimum wage literature has studied the impact on wage inequality at the bottom of the distribution and at spillover effects up the wage distribution.[17] Thanks to a combination of rich data sources and a novel research setting, we contribute to this literature by providing a comprehensive assessment of the impact of the NLW introduction on employment and other margins of firm adjustment, as well as new evidence on downward wage spillovers.

Chapter 4

Zero-Hours Contracts and Labor Market Policy

(with Nikhil Datta and Stephen J. Machin)

Alternative work arrangements, such as independent contractors, temp agency workers, and contract company workers, are a growing and increasingly important feature of

the labor markets of many developed economies. Alternative work arrangements have been growing not only in self-employment, but also as an evolution of traditional employment jobs. One such example is ZHCs, whereby workers agree to be available for work as and when required, with no guaranteed hours or times of work. In the past 10 years, the number of workers on ZHCs increased tenfold in the United Kingdom, reaching one million in 2017. The increased incidence of this kind of work has led to discussions of there being a trade-off between additional flexibility and the emergence of low-wage, dead-end jobs, which function outside the job legislation offered in conventional forms of employment. From a research perspective, it is important to try to determine which side of this trade-off dominates, and if it differs by work arrangement.

In this chapter, we examine the labor market in the United Kingdom, where the rise of atypical work has been a key feature of the post-financial-crisis period. The focus is placed specifically on one kind of alternative work arrangement that has increasingly entered the U.K. setting, namely ZHCs. Almost a million people are on ZHCs at the time of writing, out of a total workforce of 32 million. Many of these ZHC work positions are prominent in the low-wage sectors of employment. Their relevance to labor market policy that affects low-wage levels is therefore high.

The principal focus of the chapter is placed on developing a better understanding of ZHCs and labor market policy. In doing this, the chapter has two main aims. The first is to empirically document the evolution and characterization of ZHCs in the U.K. setting. There are two parts to this—the first draws on data from the Quarterly Labour Force Survey and the second on newly collected survey data on alternative work arrangements. Part of the latter survey is devoted to ZHCs, which are surveyed and understood only limitedly in existing survey data sources (Abraham and Amaya 2018) and, consequently, in the literature, and the intention is to fill this gap with new evidence.

The second aim is to explore the extent to which labor market institutions have the scope to be, at least partly, responsible for the increased diffusion of flexible work arrangements, or, conversely, whether the latter are a consequence of factors that have little to do with labor market institutions and rigidities. In this chapter, a particular policy focus is placed on minimum wages, where we are interested in understanding whether higher minimum wages have potential to induce a larger utilization of alternative work arrangements by firms and, consequently, a shift in the composition of their workforce toward more flexible but also insecure jobs.

In Europe, the rise of alternative work arrangements and gig-economy jobs is often considered an expression of the duality of the labor market, whereby the existence of rigidities in the 'primary' market creates the conditions for an expansion of more flexible contractual relationships in the secondary market. Alternative work arrangements have also grown in the United States, where labor markets overall are less rigid than in Europe but where minimum wages are an important component of labor market policies. By providing direct evidence on the role—or lack thereof—of minimum wage policies on the incidence of flexible work arrangements, this chapter contributes to understanding a policy question relevant to both the United States and European labor markets.

In the first part of the chapter, survey-based evidence is presented to show that ZHCs are a key contract type in some predominantly low-wage, sectors of the U.K. labor market. Coupled with limited and fragmented hours, such low pay implies high levels of earnings insecurity. A stark dichotomy emerges between workers who value the flexibility provided by ZHC jobs and workers who would rather work more and more regular hours, and therefore appear to be engaged in ZHCs out of necessity rather than by choice. ZHCs also feature, in different guises or by different names, in other countries' employment structures.

The second part of the chapter analyzes minimum wage policy and ZHC utilization by exploiting a substantial increase in the minimum wage rate for workers aged 25 and over that took place in the United Kingdom in April 2016, when a new minimum wage rate—the NLW—was introduced (Bell and Machin 2018; Giupponi and Machin 2018). In the U.K. setting, ZHC usage by employers does seem to have been affected by changes in labor market policy, as the sizable hike of the minimum wage that occurred when the NLW was introduced did shift more workers onto ZHC positions in the adult social care sector (and in low-wage sectors more generally). To our knowledge, this is the first study connecting minimum wage changes to employers' use of different types of job contracts.

Notes

1. Chapter 1: I acknowledge financial support from STICERD and the sponsors of the VisitINPS program. The findings and conclusions expressed in this chapter are solely those of the author and do not represent the views of INPS. Chapter 2: We acknowledge financial support from ERC Grant No. 679704 - DYNAMICSS, the INPS Valeria Solesin Fellowship, ESRC, STICERD and the sponsors of the VisitINPS program. The findings and conclusions expressed are solely those of the authors and do not represent the views of INPS. Chapter 3: We acknowledge financial support from the Low Pay Commission. Chapter 4: We acknowledge financial support from ESRC (ESRC Grant No. ES/S000097/1).
2. Entitlement to the benefit is lost upon remarriage. It otherwise continues until death.
3. In the empirical analysis, I restrict the sample to individuals aged 55 and under at the time of their spouse's death.
4. The income effect—or marginal propensity to earn out of unearned income—is measured as the change in earned income for a unit change in unearned income.

5. Program substitution refers to a change in take-up of other social assistance and social insurance programs (conditional on eligibility) in response to a change in a given program's generosity (Inderbitzin, Staubli, and Zweimüller 2016).

6. See, among others, Robins (1985); Burtless (1986); Ashenfelter and Plant (1990); Hum and Simpson (1993); Imbens, Rubin, and Sacerdote (2001); Akee et al. (2010); Cesarini et al. (2017); and Jones and Marinescu (2018).

7. On disability insurance, see Bound (1989); French and Song (2014); Kostol and Mogstad (2014); Autor et al. (2016); Deshpande (2016a,b); and Autor et al. (2019). On health insurance, see Garthwaite, Gross, and Notowidigdo (2014); on earned income tax credits, Eissa and Liebman (1996) and Saez (2010); on retirement wealth, Krueger and Pischke (1992) and Gelber, Isen, and Song (2016, 2017).

8. See Chetty et al. (2011) for a review of this literature.

9. See Baily (1978); Gruber (1997); Chetty (2006); Shimer and Werning (2008); Chetty (2008); Landais (2015); Hendren (2017); Dobkin et al. (2018); Fadlon and Nielsen (2019); Fadlon, Ramnath, and Tong (2019); and Landais and Spinnewijn (2019).

10. See Hijzen and Martin (2013) and Cahuc, Kramarz, and Nevoux (2018).

11. U.S. Department of Labor Office (2016).

12. As a matter of example, the German social security administration (IAB) does not collect data on STW. Most STW applications and reports are sent in a paper format to the Federal Employment Agency and are not digitized. Only a sample of these reports has been digitized for the Nuremberg metropolitan area for years 2008 to 2010 and matched to IAB data (Tilly and Niedermayer 2016).

13. In most countries with large STW programs in place, such as Germany or France, there is no variation in a firm's eligibility to take up STW. Most papers therefore rely on the structure of calibrated models to analyze the effects of STW on workers and firms (Tilly and Niedermayer 2016; Cooper, Meyer, and Schott 2017). Other studies instrument STW take-up during the recession with the prior experience of firms with the program (e.g. Boeri and Brücker 2011; Cahuc and Carcillo 2011; Hijzen and Martin 2013) and find competing results. Recently, Cahuc, Kramarz, and Nevoux (2018) offer a credible and compelling IV strategy in the French context. They instrument STW take up using the proximity of a firm to other firms having used STW before recessions. They also use as an alternative instrument response time variation in the administrative treatment of STW applications across French departments. They find, similar to our results, large and significant employment effects of STW treatment.

14. While a small theoretical literature shows (not surprisingly) that STW may distort both hours (Burdett and Wright 1989) and the allocation of workers across firms, thus reducing output (Cooper, Meyer, and Schott 2017), there is no clear view of the conditions under which STW programs might be socially desirable and improve welfare.

15. Following an early and mostly U.S.-based time-series work that found negative employment effects among teenagers (Brown, Gilroy, and Kohen 1982), starting from the early 1990s quasi-experimental micro-based studies found no evidence of disemployment effects in the United States and the United Kingdom (Card and Krueger 1994; Machin, Manning, and Rahman 2003; Stewart 2004). A recent revival of minimum wage research in the US has adopted spatial identification strategies, also mostly finding it hard to detect evidence of job cuts due to minimum wages (Dube, Lester, and Reich 2010, 2016; Baskaya and Rubinstein 2015; Clemens and Wither 2019). In a rather different context of union bargained minima, Kreiner, Reck, and Skov (forthcoming) study the effect of a change in the youth minimum wage in Denmark and find an employment elasticity to the wage rate of −0.8.

16. On prices, see Aaronson (2001), MaCurdy (2015), and Harasztosi and Lindner (2019); on profits, see Draca, Machin, and Van Reenen (2011); and on stock market values, see Bell and Machin (2018). Multiple adjustment channels are studied in Hirsch, Kaufman, and Zelenska (2015), and Harasztosi and Lindner (2019). Sorkin (2015) emphasizes the distinction between modes of adjustment in the short and long run.

17. See DiNardo, Fortin, and Lemieux (1996), Lee (1999), and Autor, Manning, and Smith (2016).

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