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Labor Demand During the Crisis: What Happened in Germany?*

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Abstract

In Germany, the employment response to the post-2007 crisis has been muted compared to other industrialized countries. Despite a large drop in output, employment has hardly changed. In this paper, we analyze the determinants of German firms' labor demand during the crisis using a firm-level panel dataset. Our analysis proceeds in two steps. First, we estimate a dynamic labor demand function for the years 2000-2009 accounting for the degree of working time flexibility and the presence of works councils. Second, on the basis of these estimates, we use the difference between predicted and actual employment as a measure of labor hoarding as the dependent variable in a cross-sectional regression for 2009. Apart from total labor hoarding, we also look at the determinants of subsidized labor hoarding through short-time work. The structural characteristics of firms using these channels of adjustment differ. Product market competition has a negative impact on total labor hoarding but a positive effect on the use of short-time work. Firm covered by collective agreements hoard less labor overall; firms without financial frictions use short-time work less intensively.

Key Words: Labor demand, economic crisis, short-time work, financial frictions, labor market institutions, employment adjustment

JEL codes: J23, J68, G32

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1 Motivation

Labor market developments following the post-2007 crisis have diverged across countries. In the U.S., unemployment rates more than doubled from 4.4% in December 2006 to 10.0% at the end of 2009.[1] In Germany, by contrast, unemployment was lower at the end of 2009 (8.7%) than at the end of 2006 (10.7%). These differences are in striking contrast to the different output responses. In 2009, output contracted much more in Germany (-5.0%) than in the U.S. (-2.4%) (IMF 2010). Also, the employment response has been muted compared to previous recessions in Germany (Burda and Hunt 2011).

What happened in Germany during the recent crisis? To answer this question, we use establishment-level panel data from the German IAB Establishment Panel, and we analyze firms' labor demand before and during the crisis. We use new data released in 2010 covering employment in a representative sample of establishments up to mid-2009 and thus including the peak of the crisis. The data contain information on various labor market institutions at the firm level, on financial frictions, and on competition intensity. These factors help explaining why only 38% of the firms in our sample reduced employment whereas, according to our panel estimates of the labor demand function, 61% of the firms were predicted to do so. The remaining firms hoarded labor, and we analyze which economic and institutional factors facilitated labor hoarding.

There are at least four possible explanations for Germany's robust labor market performance.

First, the government has intervened in the labor market by subsidizing labor hoarding through short-time work benefits (*Kurzarbeit*). These benefits provide a financial incentive to adjust to lower demand by reducing hours worked rather than cutting employment, and they allow firms to shift some of the costs of labor hoarding to the government. Labor hoarding is advantageous for firms if demand picks up following a recession: workers can quickly move back into employment, and firms do not loose qualified and experienced personnel. Short-time work has consequently been identified as one main reason for the relatively good employment performance of the German economy during and after the crisis (IMF 2010). At the same time, German firms also

[1] U.S. numbers are from the Bureau of Labor Statistics (BLS) (http://data.bls.gov/PDQ/servlet/SurveyOutputServlet?data_tool=latest_numbers&series_id=LNS14000000). German numbers are from the Federal Statistical Office (http://www.destatis.de/jetspeed/portal/cms/Sites/destatis/Internet/EN/Content/Statistics/TimeSeries/EconomicIndicators/LabourMarket/Content75/arb210a.psml).

engaged in unsubsidized labor hoarding by not adjusting labor input in line with the drop in demand.

The use of labor hoarding also depends on the financial situation of the firms prior to the recession. During the previous boom from 2005 to 2007, many companies have accumulated profits. Firms with sufficiently "deep pockets" could sustain employment at its previous levels even without help from the government budget. Consistent with this, we find that a high degree of competition in the product market is associated with subsidized labor hoarding through short-time work and less unsubsidized labor hoarding. Thus, short-time work accounts for stable employment in some parts of the economy, with unsubsidized hoarding prevails in other parts.

Second, several labor market institutions may have had a favorable impact during the crisis. The German collective bargaining system has become more flexible over the past decade in several ways: working time flexibility has increased because of the introduction of working time accounts; firms may use opening clauses in collective bargaining agreements to cushion negative demand shocks, thus preventing mass redundancies and firm closures; the overall coverage of the collective bargaining system has fallen substantially. Hence, local bargaining over wages, working time, and work conditions has become more prevalent. At the same time, employment protection regulation and works councils make redundancies costly for firms. Indeed, our results show that firms with works councils have higher employment levels in normal times and have hoarded more labor during the crisis. In addition, working time accounts helped firms to manage fluctuations in demand: employment in firms using working time accounts extensively is more persistent, and it reacts less to changes in output and wages. This higher degree of flexibility reduced firms' need to adjust staff numbers also during the crisis.

Third, financial frictions may have been less binding during the crisis in Germany than in other countries due to the three-tier structure of its banking sector. Although German banks have been a main source of financing for the U.S. subprime sector prior to the crisis (Sinn 2009) and have thus been hit hard by the crisis on international banking markets, many of the banks that suffered losses do not play a major role in the domestic retail market. Smaller savings and cooperative banks, which dominate the retail segment of the German banking market, have remained relatively unaffected by the crisis. Consistent with this, larger and presumably more export-oriented firms have reported a tightening of credit constraints during the crisis more so than small and mid-sized firms (Rottmann and Wollmershäuser 2010). Our results also show that firms facing no financial frictions relied less on subsidized labor hoarding than others.

Fourth, the type of shock affecting the U.S. and Germany may have also affected employment responses (IMF 2010). While the U.S. experienced the bursting of a housing bubble leading to a systemic financial crisis, Germany was mainly affected through the decline in external demand. This might have influenced expectations about the duration of the crisis. If firms expected the crisis to be of a relatively short-term nature, it would be a rational response to hoard labor rather than to layoff – and later recall – workers. Therefore, we control for the firms' export share in some of our specifications, but we find no significant effects.

Our analysis proceeds in two steps. We combine panel- and cross-sectional estimation methods because the most recent available wave of our panel data, conducted in June of 2009, includes questions directly related to the effects of the crisis. Yet, we also want to exploit the full panel dimension of our dataset. In a first step, we thus estimate a dynamic labor demand function for the time period 2000 through 2008 using General Methods of Moments (GMM) estimators. In a second step, we use the residuals from this regression for the first half of 2009, which can be interpreted as a measure of labor hoarding, as a dependent variable in a cross-sectional regression. We take into account a number of factors which may have influenced firm-level adjustment during the crisis – short-time work, labor market institutions, and financial frictions. Hence, we ask the question whether these institutional arrangements have had an impact on the labor demand of firms *conditional* upon the longer-run determinants of labor demand. In addition, we use the share of short-time work as a proxy for subsidized labor hoarding as the dependent variable.

We confine our analysis to the federal state of Baden-Württemberg because we have access to data on actual output in the crisis year 2009. According to national accounts data for 2009, the share of Baden-Württemberg's output in national GDP was 14.3%, the employment share 13.8% and the share of exports 15.5%. With an output decline of 7.4% in 2009, Baden-Württemberg has been hardest hit by the crisis among all 16 German federal states. Correspondingly, the use of subsidized short-time work was particularly high. In April 2009, 328.000 employees were in short time-work in Baden-Württemberg, corresponding to 21.4% of all German workers in short-time work.[2]

We are not the first to analyze the adjustment of German firms to economic crises, but we are the first to do so in a regression framework based on firm-level data and for the current crisis. Previous empirical evidence suggests hat labor market reforms and the behavior of social partners have enhanced the ability of firms to accommodate a

[2] These numbers were taken from the statistics of the Federal Employment Agency, http://www.pub.arbeitsamt.de/hst/services/statistik/detail/s.html

(temporary) decline in demand. Time series evidence shows that, possibly supported by the generous short-time work schemes, firms' were willing to pursue a strategy of massive labor hoarding in 2009 (Möller 2010). Based on a cross-country analysis, Möller (2010) also argues that employment protection has not played a major role in explaining the adjustment behavior of German firms. Using the same firm-level data set as in our paper, Dietz et al. (2010) report changes in working hours during the crisis due to short-time work, reducing overtime, and working time accounts. Based on evidence from the last recession in 2003, these authors argue that, although short-time work has facilitated labor hoarding, the program was also used by firms not experiencing measurable losses in revenue. Boeri and Bruecker (2011) also use the IAB Establishment Panel and study the determinants of short-time work and working time accounts. They find relatively moderate deadweight losses of the short-time work program.

Burda and Hunt (2011) use time series regressions on aggregate as well as industry-level data. They argue that two factors are behind the "labor market miracle" in Germany during the recent crisis. First, firms expanded employment less in the boom period preceding the crisis than in earlier boom periods. Hence, there was less need for an adjustment of employment in the crisis. Second, adjustment during the crisis is attributed to changes in labor market regulations prior to the crisis. In particular, Burda and Hunt argue that firms have used working time accounts as substitutes for the use of short-time work. Our results allow analyzing the interplay between different labor market institutions at the firm-level. They show that, in firms with work time accounts, employment is indeed more persistent (a result of our first-stage estimates). However, there is no *additional* effect of work time accounts on the adjustment of employment *during* the crisis (a result of our second-stage estimates).

In section 2, we provide an overview of German labor market regulations before and during the crisis. Section 3 introduces the data and provides descriptive statistics. Section 4 contains the estimation approach and the empirical results for the dynamic labor demand specification. Section 5 presents results for the second-step cross-sectional estimation. Section 6 concludes.

2 Labor Market Adjustment in Germany Before and During the Crisis

Labor market institutions have an important impact on how firms can adjust to crises. There is ample evidence showing that the labor market performance of countries can be traced to differences in shocks, differences in institutions, and the interaction between

those two (see, e.g., Blanchard and Wolfers 2000). In this paper, we are interested in explaining labor market outcomes at the establishment level for German firms during the crisis that started in 2007. These outcomes are likely to be influenced by specific, short-run policy measures, such as the subsidization of short-time work programs, as well as longer run trends on the German labor markets, which have affected the ability of firms to adjust to external shocks, such as the increased use of work time accounts.

2.1 Short-Time Work

Short-time work programs help firms to shield employment against cyclical fluctuation of demand, and they exist in the majority of OECD countries. Short-time compensation can take the form of wage supplements paid directly by the employer and reimbursed by the employment agency, as it is the case in Austria, Belgium, Germany, France, Italy, or Portugal. But it can also consist of direct payments by the unemployment insurance agency as in Denmark, Finland, Ireland, Spain, or the UK. The European Commission (2010) classifies the arrangements in Spain or Portugal as being more generous than unemployment benefits, the arrangements in Austria, Belgium, Germany, Denmark, Spain, Ireland or Luxemburg as being as generous as unemployment benefits and the arrangements in Finland or France as less generous than unemployment benefits.

In Germany, short-time work has existed as an instrument of labor market policy since 1957. Under this scheme, financed by the Federal Agency for Labor (*Bundesagentur für Arbeit*), working time may be reduced by up to 100%. To compensate for the income lost, employees receive a transfer of 60% of their former net income (67% for employees with at least one child). Although the transfers are publicly financed, short-time work programs are costly for the firms because firms have to pay social security contributions. Moreover, many collective agreements provide for additional firm-financed payments on top of the 60% (67%) provided by the federal program.

While, in principle, short-time work programs have been a feature of the German labor market for a long time, the use of these programs has particularly been encouraged and more highly subsidized by the government during the post-Lehman crisis. The requirement to pay social security contributions has been relaxed: for the first six months under the program, employees had to pay only 50% of the social security contributions; after 6 months, payments were waived, thus increasing the costs of the programs for the Federal Employment Agency. Still, Bach and Spitznagel (2009) calculate that the remaining costs for firms not covered (covered) by collective agreements amount to 24-35% (37-48%) of regular labor costs.

Generally, the use of short-time work is restricted to a maximum of 6 months. The Federal Ministry of Labor can extend this deadline to a maximum of 24 months in situations of extreme tensions on the labor market. This right has been used in May 2009, as the maximum period has been extended 24 months. Subsequently, the maximum duration has been shortened to 18 months.

Short-time work programs have been used extensively by German firms during the crisis. At the peak time of the program in May 2009, about 1.5 million employees (5.6% of all regular employees) participated. Total reduction in working hours amounted to 340,000 jobs in 2009, measured as full-time equivalents (Dietz et al. 2010). Afterwards, participation started to decline (Figure 1). In *Baden-Württemberg*, 328.000 employees or 21.4% of the total have been covered by short-time work, which is substantially above the share of the state in total employment (13.8%).

Figure 1 here

2.2 Working Time Accounts

While the use of short-time work can be characterized as a subsidized form of labor hoarding, firms can also use unsubsidized forms of adjustment to lower output demand and draw down working time accounts. Generally, working time accounts aim at improving flexibility at the firm level by allowing firms to adjust employment in response to fluctuations in demand. Instead of working fixed daily or weekly hours, employees accumulate working time depending on whether actual hours worked exceed or fall short of contractual working hours. Firm-specific regulations determine the degree of flexibility and stipulate the time intervals within which the account has to be balanced.

In Germany, the share of employees using working time accounts has increased steadily from 38% in 1999 to 47% in 2007 (Groß 2009). Compared to other European countries, working-time accounts are more widespread in Germany. In 2004, 42.5 % (38.2%) of German male (female) employees used working-time accounts compared to an average of 11.5% (11.6%) in the EU-25 countries (Hardarson 2007).

Overall, we would expect a slower overall adjustment in employment numbers over the business cycle and a positive impact of work time accounts on employment during a crisis if firms have gone through sufficiently long boom periods before.

2.3 Works Councils

Another firm-level labor market institution, which can have an impact on the flexibility of firms to adjust to the crisis, is works councils. Works councils are the main institution of shop-floor worker representation in Germany. In establishments with at least five employees, workers are legally entitled to establish a works council. In practice, however, employees in small establishments often do not take the initiative to set up such a council. Participation rights of works councils are regulated in detail by the Works Constitution Act and the Dismissal Protection Law. Articles 102-104 of the Works Constitution Act grant consultation rights in dismissal cases. Works councils can raise objections within one week of the notification of dismissal. In addition, the works council can make suggestions on how to stabilize employment; the employer has the obligation to respond to these suggestions. According to Article 112 of the Works Constitution Act, the works council has a right to participate in drawing up a social plan in the case of mass redundancies. The presence of a works council can, therefore, be expected to increase dismissal costs. This applies to cases of individual layoffs[3] as well as to mass redundancies.[4] Thus, during a crisis, one would expect fewer workers being made redundant in firms with a works council compared to other firms.

2.4 Collective Agreements

Collective agreements are a long-standing feature of the German labor market. They are negotiated at the industry level between unions and employers' associations, and they are mandatory for all employees if the employer is a member of an employers' association. From a theoretical point of view, collective bargaining could increase or decrease firms' flexibility in response to external demand shocks. On the one hand, collective bargaining enhances the bargaining power of unions, thus ceteris paribus increasing wages and reducing flexibility. On the other hand, centralized collective bargaining may encourage unions to negotiate wages and employment conditions in a way that takes negative feedback effects for the sector as a whole or for the unemployed into account (Calmfors and Driffill 1988).

At least over the past two decades, industry-level collective bargaining has become less prevalent, which reflects two different trends. First, coverage by collective bargaining is lower in East than in West Germany. In 2003, 70% of West German employees but only 47% of East German employees were covered by collective agreements. In addition, coverage declined from 76 to 65% of all employees in West Germany and from 63 to

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3 See Article 99ff. of the German Works Constitution Act (*Betriebsverfassungsgesetz*).

4 Article 17 of the German Protection Against Dismissals Act (*Kündigungsschutzgesetz*).

51% in East Germany between 1998 and 2009 (WSI 2010).[5] Second, there has been a trend towards local bargaining with an increasing use of opening clauses, allowing for deviations from the terms of the collective agreements (Heinbach 2007, Heinbach and Schröpfer 2007). Flexible working time regulations, including working time accounts, have been introduced frequently by means of opening clauses.

2.5 Financial Frictions

Firm size and the degree of export orientation have generally affected the exposure of firms to the world financial crisis. But since the crisis has been triggered by a large adverse financial market shock, it is likely to have affected firms with a high degree of external finance dependence more than others. The employment consequences of financial frictions have been investigated previously in the empirical literature. Funke et al. (1999) link capital structure to employment decisions. They show that higher debt asset ratios have a negative impact on employment. In a dynamic labor demand framework, von Kalckreuth (2008) does not find robust difference in the speed of adjustment to shocks between financially constrained and unconstrained firms.

3 Data and Descriptive Statistics

To analyze the labor demand of German firms during the crisis, we use a representative establishment-level panel data-set for German firms (*IAB-Betriebspanel*) (see Fischer et al. 2008.) The Data Appendix provides information on the variables included in the surveys. The IAB Establishment Panel has a special focus on labor market conditions. The survey has been conducted annually since 1993, and panel data are available for about 16,000 plants representative of all industries, regions, and size classes, of which more than 1,000 are located in Baden-Württemberg.

For our panel analysis, we use 9 cross-sections (2000 to 2008).[6] Not all of the questions of interest to us have been asked in all waves. A first set of variables including employment, sales, wages, the presence of a works council, or coverage by collective bargaining is available in each cross section. Information on a second set of variables is collected every two or three years. Among these variables are the use of short-time work and working time accounts.

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[5] See the statistics from WSI, the German trade unions' Economic and Social Institute, at http://www.boeckler.de/549_19392.html

[6] Prior to 2000, the sample for Baden-Württemberg is too small to be representative for the establishments in this federal state.

Figure 2 shows the percentage of establishments with specific labor market arrangements and financial frictions by establishment size, for the year 2009. Larger firms are more likely than smaller firms to use short-time work and working time accounts, which should increase flexibility and reduce the need to use short-time work programs. Flexibility of large firms may be reduced by the presence of works councils though: very few small establishments but almost all large firms have works councils.

Figure 2 here

Incentives to use short-time work are also correlated with the exposure of firms to fluctuations in external demand and the perceived intensity of competition. The bulk of employees in short-time work (85%) are in the manufacturing sector and thus in the tradables sector; producers of nontradables such as firms in construction, trade, or other services are much less affected (Behringer et al. 2010). The share of workers in short-time work is lower in industries that the firms themselves classify as being competitive. This finding can be explained by the fact that companies using short-time work are still facing substantial costs of labor hoarding (Bach and Spitznagel 2009). These costs are more easily borne if profit margins are sufficiently high.

Table 1 provides correlation coefficients between the log employment change between 2008 and 2009 and the institutional variables. There is a highly significant negative correlation between the proportion of workers in short-time work and employment changes, implying reductions in employment in establishments that use short-time work (see also Dietz et al. 2010). A negative correlation between firm-level outcomes and the use of short-time work is also reported for other countries. For the French case, Calavrezo et al. (2008) show that participation in the STC program does not prevent redundancies. Calavrezo et al. (2010) report higher exit rates for firms having used short-time work provisions.

At first sight, the negative correlation between changes in employment and the use of short-time work finding is at odds with the conventional wisdom that short-time work has helped to stabilize employment. The reason could be that firms used cuts in the work force and short-time work as complementary instruments to deal with declining demand. The same may be true for working time accounts, which are also negatively correlated with changes in employment. We also see a negative correlation between employment growth and coverage by a collective bargaining agreement. This could point to the fact that collective agreements prevent wages from adjusting downwards, which in turn increases redundancies during a crisis. There are no significant correlations for works councils or financial frictions.

Table 1 here

Concerning financial frictions, firms are asked every two to three years whether they have experienced difficulties in raising external capital for investment or innovation. We identify the following groups of firms in our sample: (i) firms that experienced difficulties in obtaining external financing for implementing investment plans or innovations, (ii) firms that had no difficulties in obtaining external finance for investment or innovations or relied on equity capital for these purposes, and (iii) firms without investments or innovations and therefore without financing needs for these purposes.

Figure 2 shows the percentages of firms in groups (i) and (ii). For 2009, the question on financial frictions captures the effects of the economic crisis. Generally, the number of firms reporting financial frictions is small: only 2% of establishments reported difficulties with raising external finance during the recent crisis (Figure 2) and in previous years (Figure 3). Other surveys, such as those conducted by the German ifo Institute show much higher values.[7]

Figure 3 here

The share of firms reporting financial frictions during the crisis has been small, consistent with the lack of evidence for a credit crunch in Germany during this period. Still, it may seem surprising that only a few firms report being credit constrained, and that this share has been even smaller in 2004 when economic conditions were more favorable. There are two possible explanations for this. First, data for 2004 cover innovation financing, whereas, in other years, the question refers to investment. Since it is more difficult to pledge collateral for investments into R&D and innovation than for capital investments, one would expect to find a higher share of credit-constrained firms. Second, the IAB Establishment Panel asks about difficulties with regard to financing investment or innovation; in the ifo survey, the question is more general. In particular during the recent crisis, access to working capital is like to have been a more important constraint than access to investment finance. Finance for investment is unlikely to have a major concern in this period, given the underutilization of capacities.

[7] More specifically, in the ifo survey, firms are asked "How would you assess the current willingness of banks to extend credit to businesses"?, and 39% of the firms consider banks' credit supply policies as being restrictive (Rottmann and Wollmershäuser 2010).

4 Estimation of a Dynamic Labor Demand Function from Panel Data

How have German firms adjusted their demand for labor during and after the crisis? Have firms that export been affected more? Has access to finance affected the adjustment? And to what extent have recent changes in labor market institutions and regulations smoothened the adjustment?

In answering these questions using data from the IAB Establishment Panel, we have to accommodate the fact that some questions have been asked only during the crisis period. For instance, short-time work had no practical importance over most of the 2000s (Figure 1). Also, the employment response to existing institutions such as collective agreements and working time accounts may have been quite different during the crisis as compared to previous years.

We thus follow a two-step empirical approach. In a first step, we estimate a dynamic labor demand function using the full set of panel observations (2000-2008). In a second step, reported in Section 5, we use the residuals from this regression as a dependent variable in a cross-section regression for the first half of 2009, *conditioning* on the different channels of adjustment to the crisis. These residuals can be interpreted as a "shock" to labor demand due to the crisis. This two-step methodology also allows for the fact that adjustment in the immediate aftermath of the crisis might be different than the longer-run labor demand of firms.

4.1 Derivation of Labor Demand

Using a CES production function, log labor demand is a linear function of wages, interest rates and output (Hamermesh 1996):

$$l_{it}^{d} = c_1 + \eta_{LL} w_{it} + \eta_{LK} r_{it} + \eta y_{it} + \varepsilon_{it} \qquad (1)$$

where η_{LL} and η_{LK} denote the constant-output labor demand elasticities with regard to wages and interest rates, w_{it} denotes firm-level wages, r_{it} denotes firm-level interest rates, and y_{it} is firm-specific output. Including firm-specific output allows estimating the elasticity of labor demand for a given scale of activities.

The empirical model derived from (1) is specified as

$$\ln l_{it} = \alpha_0 + \alpha_1 \ln l_{it-1} + \alpha_2 y_{it} + \alpha_3 \ln w_{it} + \delta' Z_{it} + \varepsilon_{it} \qquad (2)$$

where l_{it-1} is lagged employment, and Z_{it} is a vector of control variables. Firm-level output y_{it} is measured with a lag of one year. Time and industry fixed effects are

included to capture price changes and other developments at the industry level such as the cost of capital, for which we do not have reliable firm-level estimates.

As regards the control variables Z_{it}, we start by including information about financial frictions, labor market institutions, firms' exports, as well as other firm-level information.

Our data include information about staff numbers, but little information on working time – it merely contains standard hours and the proportion of part-time workers. Cleary, adjustment of hours of employment (the intensive margin) and employment numbers (the extensive margin) may evolve differently.[8] Moreover, these two channels of adjustment may be used as substitutes: companies with higher working time flexibility may exhibit smaller employment changes. To address this aspect in our estimations, we estimate equation (2) for two sub-sets of our data: companies using working time accounts for more than 50% of their employees (measured over the whole length of the data)[9] and companies using them less frequently, including those companies not using them at all.

4.2 Specification of the Dynamic GMM Model

Equation (2) includes a lagged term to account for the persistence of employment. In our empirical specifications reported below, the first lag of the endogenous variable is indeed highly significant. Since the residuals are correlated with the endogenous variables, fixed effects estimates would be biased. We use the one-step system GMM estimator proposed by Blundell and Bond (1998) which allows unbiased coefficients to be estimated in dynamic panels.

Our main regression results are based on a system GMM model. Generally, system GMM should be preferred over difference GMM if the dependent variable (here: employment) is stationary. Intuitively, stationarity implies that firms are in their respective steady state and that fast-growing firms are not systematically closer to or further away from their steady state than slow-growing firms. During the convergence process, employment in smaller (larger) firms would tend to increase (decrease). Using lagged employment changes as instruments in a system GMM model would be inappropriate since the instruments would be correlated with the fixed effects. If

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8 Previous evidence for Germany shows that, in contrast to the US, changes in employment mainly occur along the intensive margin (see Burda and Hunt 2011 for details).

9 The information is regarded as time-constant because information on the use of working time accounts is not requested in all waves. The time variation in this variable is limited. We also checked the robustness of our results by using different ways of splitting the sample. The results were very similar.

employment is stationary, difference GMM performs poorly because it uses past levels as instruments, which carry little information about future employment changes.

Due to the unbalanced nature of our panel and the short time series dimension, we cannot apply standard panel unit root tests to check whether employment is stationary. We thus follow Roodman (2009) and use an indirect method of assessing the appropriateness of choosing system over difference GMM. We estimate equation (3) using a naïve OLS and a within-panel model (unreported). This gives a range for the lagged coefficient term between 0.48 and 0.96. All our estimates reported below give point estimates within this range.

We treat firm-level variables such as sales and wages as endogenous, and we use the second and earlier lags as instruments. We use the first lag and earlier of the instrument variable for the transformed equation. Sector and time dummies are treated as exogenous, and these variables are included in the set of IV rather than GMM-type instruments.

An additional concern is instrument proliferation (Roodman 2008). The instrument count in system GMM is quadratic in *T*. Because the maximum string of firm-level observations is eight years and because the time dimension is much shorter for some model specifications, we use the one-step instead of the – more data-intensive – two-step estimator. Additionally, we use the Difference-in-Hansen test for the full set of instruments as well as for different subsets of regressors.

For each regression, we report the degrees of freedom of the Sargan and Hansen tests, i.e. the number of instruments minus the number of regressors. As a rule of thumb, the number of instruments used should be strictly smaller than the number of groups. This is the case.

Our estimation results are consistent if we use appropriate instruments for our lagged endogenous variable and if there is no second-order autocorrelation. Tests on first and second-order serial correlation and the Hansen test on overidentifying restrictions do not allow the validity of our specification and instruments to be rejected. The same holds for (unreported) Difference-in-Hansen tests. Generally, the Hansen test is insignificant while the Sargan test is not. We follow the Hansen test because the Sargan test imposes stricter assumptions such as, for instance, the assumption that the residuals are i.i.d., which might not hold. However, these assumptions are not required for consistency. Therefore, we use the Hansen statistic from the two-step estimates as a theoretically superior identification test for the one-step estimator (Roodman 2009). We also run several (unreported) robustness tests with regard to the specification of the dynamic

models and the set of instruments included. Our qualitative results are robust with regard to these modifications.

4.3 Estimation Results for Dynamic Labor Demand

Table 2 provides the results from the first-stage regressions. We first estimate equation (2) without including industry dummies and without any of the institutional variables. Second, we check which of the institutional variables (works councils, collective agreements, financial frictions, export orientation) influence the employment levels. Only the presence of a works council has a robust influence on employment while the remaining results are largely unchanged.[10] Therefore, a works council dummy is included in a specification which, in addition, also has industry dummies. Finally, we split the sample according to whether the majority of employees is covered by working time accounts to accommodate the fact that firms can adjust both, the number of employees and the volume of hours worked per employee.

Coefficients of standard labor demand variables are in line with expectations: labor demand increases in output, and the point estimate for the short-run effect is about 0.15. This is comparable to the estimates reported in Hamermesh (1996) and in Buch and Lipponer (2010) for German firms. Also, the negative coefficient on wages is in line with expectations. The point estimate of the short-run effect is -0.08, which is somewhat smaller in absolute terms than previous estimates for Germany. The presence of a works council increases employment, in line with the "overstaffing" hypothesis.

Table 2 here

By providing an alternative means of adjustment, working time accounts should mainly influence the speed of adjustment of employment rather than the level of employment. Firms with working time accounts have more flexibility in adjusting working time following demand shocks. This reduces the need to adjust employment by laying off workers (or to temporarily hire new workers). One would thus expect smaller wage and output elasticities and more persistence in the level of employment in establishments using working time accounts. Our results lend support to these hypotheses. Sales and wage elasticities are higher for firms with no or little use of working time accounts, and the degree of persistence (as measured by the coefficient of the lagged dependent variable) is lower. The wage elasticity is insignificant in both sub-samples. Using an unreported fully interacted model, we tested for the significance of the differences in

[10] In further (unreported) estimates, we split the sample by size, sector, and export activity. The estimation results do not indicate that these variables have a robust influence on labor demand.

the coefficients. The results show that the restrictions imposed by pooling over firms using and not using working time accounts are rejected.[11]

In sum, results from the first stage regressions are largely in line with previous estimates of labor demand functions: labor demand is highly persistent, it increases in firm-level output, and it falls in firm-level wages. The presence of a works council has a positive impact on employment. The elasticity of employment with respect to wages depends on whether or not firms use working time accounts: employment in firms which use working time accounts for most of their employees adjusts less than employment in other firms.

5 What Explains Labor Hoarding during the Crisis?

In the following, we use the cross-sectional variation in labor demand in 2009 to explore the extent of labor hoarding in German firms during the crisis. We analyze the question which instruments helped German firms to maintain a high level of employment despite the crisis. Moreover, we are interested in the question whether total labor hoarding and short time work as a form of subsidized labor hoarding were used by similar firms. This could indicate whether these measures are substitutes of complements and whether deadweight effects of public subsidies are an issue.

5.1 Cross-Sectional Estimation of Adjustment Channels

We use two different endogenous variables related to labor hoarding and adjustment: the change in residual employment (total labor hoarding) and the share of workers in short-time work (subsidized labor hoarding). The change in residual employment is conditional on the short-run determinants of labor demand explored in the first stage of the model.[12]

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[11] The Wald test statistic for the test for all coefficient differences is 33.1 (p-level: 0.016). If the test is limited to the coefficients for lagged employment, sales and wages, the test statistic is 9.1 (p-level: 0.028).

[12] We also attempted to combine residual employment changes and short-time work into a joint model, in order to estimate to which degree the use of short-time work has contributed to total labor hoarding. A major concern is, however, that short-time work is endogenous with respect to employment changes. As Table 1 shows, there is a strong relationship between short-time work and reductions in employment. This relationship may be due to unobserved factors at the firm level and inflict a negative bias on the estimated impact of short-time work on employment. Indeed, our OLS results showed a negative (albeit insignificant) coefficient of short-time work. We went on to an IV strategy, using the past use of subsidized labor (such as hiring subsidies) as an instrument for short-time work. The idea was that past use of subsidies from the federal employment agency reduces the costs of applying for new ones. The results confirmed this notion, but the instrument is relatively weak.

For the first dependent variable, we use specification (2) in a regression up to the year 2008 in order to obtain coefficients not influenced by the crisis.[13] Using the coefficients from this regression, we predict employment for 2009 and calculate predicted residuals for the change in log employment. We use this as a measure of total labor hoarding.[14] The model predicts a decline in employment for 315 out of 442 establishments. In reality, however, only 169 establishments actually lowered their staff numbers, corresponding to 53.7% of all establishments predicted to reduce employment. This shows that there is a structural break in employment in 2009 and that labor hoarding is a frequent case in our sample.

The second measure of labor hoarding is the proportion of workers in short-time work. We use the number of workers affected by short-time work, because we have no information on reductions in working hours. We use this as a measure of subsidized labor hoarding.

In separate cross-sectional estimations, we regress the two measures of labor hoarding on variables measuring the severity of the crisis and different institutions affecting the required adjustment:

$$Y_{i,2009} = \beta_0 + \beta_1 CC_{i,2009} + \beta_2 WC_{i,2009} + \beta_3 FF1_{i,2009} + \beta_4 FF2_{i,2009} + \beta_5 CI_{i,2009} + \zeta' D_{i,2009} + \Delta\eta^{\varepsilon}{}_{i,2009} \tag{3}$$

where the dependent variable is either residual employment changes ($\Delta \log \hat{E}$) or the proportion of workers in short-time work (STW):

$$Y_{i,2009} \in \{\Delta \log \hat{E}_{i,2009}, STW_{i,2009}\}.$$

The independent variables include a dummy variable indicating whether the firm is covered by a collective agreement (*CC*), a dummy variable indicating the presence of a works council (*WC*), and measures for financial frictions ($FF1$, $FF2$) as defined in Section 3. To check for the effect of product market competition (*CI*) on the degree of labor hoarding, we include a subjective measure of competition intensity. It is defined as a dummy variable indicating whether or not the degree of product market competition is high. To check whether working time accounts have an effect on employment adjustment different from the effect implied by our first-stage estimates, we include a variable indicating the use of working time accounts for more than 50% of the employees. Additional control variables are included in other (unreported)

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13 The field work us done during the summer. Hence, variables from the 2008 panel wave do not reflect the impact of the crisis.

14 The critical assumption here, which we take as given by using our first-stage estimates, is that the speed of adjustment is unaffected by the crisis.

specifications but are not found to be significant. These include the export share and the shares of workers with particular qualifications. A set of industry dummies and firm size dummies (in case of short-time work and working time accounts) is also included. Since the shares of employees in short-time work and with working time accounts are limited between 0 and 100, we use a fractional logit model (Papke and Wooldridge 1996) to estimate the parameters.

Table 3 here

5.2 Estimation Results

The first four columns of Table 3 contain the second-stage results from four different specifications: with and without working time accounts as well as including and excluding firm size dummies. The fifth sixth and seventh column display marginal effects on the share of short-time workers (measured from 0 to 100) from fractional logit estimation. Three specifications are included. One includes only institutional variables and industry dummies. The second includes, in addition, firm size dummies, and the third includes also the changes in sales and wages between 2008 and 2009. The last specification is closest to the second-stage estimates based on the dynamic labor demand model, since sales and wages are accounted for in both cases.

The first row shows that a works council has a positive impact on residual employment changes and on short-time work, but only if the firm size dummies are excluded. Given the high correlation of works councils and short-time work with firm size, the exclusion of firm size clearly leads to an omitted variable bias. The issue is less clear for total labor hoarding, where the firm size dummies are also insignificant. A positive impact of the works council on residual employment in 2009 would be consistent with the view that works councils protect employers against employment losses. The protective role of the works council against involuntary job losses is found in other studies as well (e.g. Boockmann and Steffes 2010).

Collective bargaining has a negative impact on labor hoarding. This is in line with the hypothesis that collective agreements reduce flexibility in adjusting wages and working hours. Consequently, employment cuts in firms with collective agreements are higher than normal as a response to the crisis. Thus, establishments lacking flexibility in wages and working conditions are forced to cut their workforces more substantially than more flexible firms. The dummy for firms experiencing financial frictions is insignificant. Recall that the questions related to financial frictions experienced when financing R&D or investments whereas the constraints during the crisis most likely prevailed with regard to working capital. The variable indicating investing firms not experiencing

financial frictions has a positive (but insignificant) coefficient for the employment residual and a negative coefficient in the short-time work equation. Due to the lack of financial constraints, these firms have less subsidized labor hoarding.

Competition intensity affects labor hoarding negatively – this is in line with the hypothesis that profits earned in less competitive industries facilitate labor hoarding. By contrast, short-time work is more prevalent in more competitive industries. The effect is relatively small in magnitude: the marginal effect is slightly less than one percentage point on the share of short-time workers. It is insignificant if sales and wages are included.[15] This suggests that some substitution is taking place: as competition intensity increases, firms cannot afford unsubsidized labor hoarding and turn to short-time work instead. The fact that we find a positive coefficient on the dummy for manufacturing firms is consistent with this.

There is no statistically significant effect of working time accounts. Concerning the estimated coefficients for the industry dummies, short-time work is highly concentrated in manufacturing and, to come extent, in construction. The positive association between the use of short-time work and the firm being in the manufacturing sector is another indication that competition intensity matters. Arguably, manufacturing firms are more exposed to international competition than providers of (local) services. This makes it more difficult to sustain suboptimally high employment numbers over a longer time horizon. Consistent with this, labor hoarding occurs mostly in construction, commerce (the baseline category) and private services. As expected, increases in sales have a negative effect on short-time work. Wage increases also influence the short-time work ratio negatively, which could indicate that the remaining costs of short-time work for firms are too high to make short-time work attractive if these firms are also facing wage increases.

To sum up, labor hoarding and short-time work appear to be alternative ways of coping with the crisis used in different parts of the economy. Short-time work occurs in large companies, in manufacturing, and as a response to high competition intensity. Labor hoarding, by contrast, is found in service sector firms, in firms operating under low competitive pressure, firms with less binding collective agreements, and in firms with works councils.

[15] Unlike the marginal effect, the coefficient remains significant at the five percent level.

6 Conclusions

Although the German economy has been hit hard by the crisis that started in 2007, the employment response has been muted. In this paper, we use recent information from a firm-level panel dataset which sheds light on the determinants of labor demand of firms before and during the crisis. We use a two-step empirical model. First, we estimate a dynamic labor demand function for the period 2000-2009. Second, we use a cross-sectional empirical model to focus specifically on the crisis period. This modeling strategy has the added advantage of not constraining firm-level adjustment to be the same for the crisis and the pre-crisis period.

Our study has three main findings.

First, the long-run determinants of labor demand differ for firms with and without working time accounts. Firms using working time accounts for the majority of their employees have more persistent levels of employment and react less sensitively to changes in output and wages.This suggests that working time accounts provide a buffer against fluctuations in demand and may disburden firms from adjusting their staff numbers, as argued by Burda and Hunt (2011). Accounting for this longer-run effect though, there has been no additional effect of working time accounts on the degree of labor hoarding *during* the crisis.

Second, we find a structural break in employment in 2009, as many firms have hoarded labor during the crisis. Based on panel estimates of labor demand in the years 2000-2008, we predict the residual employment changes in 2009. The model predicts a decline in employment for 261 out of 425 establishments. In reality, however, only 162 establishments actually lowered their staff numbers, corresponding to 62.1% of all establishments predicted to reduce employment.

Third, the residual from the dynamic labor demand equation give us a measure of (total) labor hoarding. The degree of subsidized labor hoarding is measured through the use of short-time work. While labor hoarding is prevalent in services and in firms with works councils, short-time work is mainly used in manufacturing. The intensity of competition is an important determinant of the channel through which labor hoarding occurs. In firms which report being exposed to intense competition, there is less overall labor hoarding. These firms resort more to short-time work. Firms subject to financial frictions have a higher fraction of their employees in short-time work.

Our results do not indicate which institutions were causally responsible for stabilizing employment numbers. For such a statement, a counterfactual experiment would be required, which we cannot conduct with the data at hand. What the results do indicate is

that there is not one universal explanation for the German “job miracle”. Instead, firms have used multiple channels of adjustment to fluctuations in demand, and the labor market reforms of the early 2000s have provided them with additional channels of adjustment. Hence, policy should aim at providing firms with a flexible tool-box that contains instruments which do not subsidize specific forms of adjustment.

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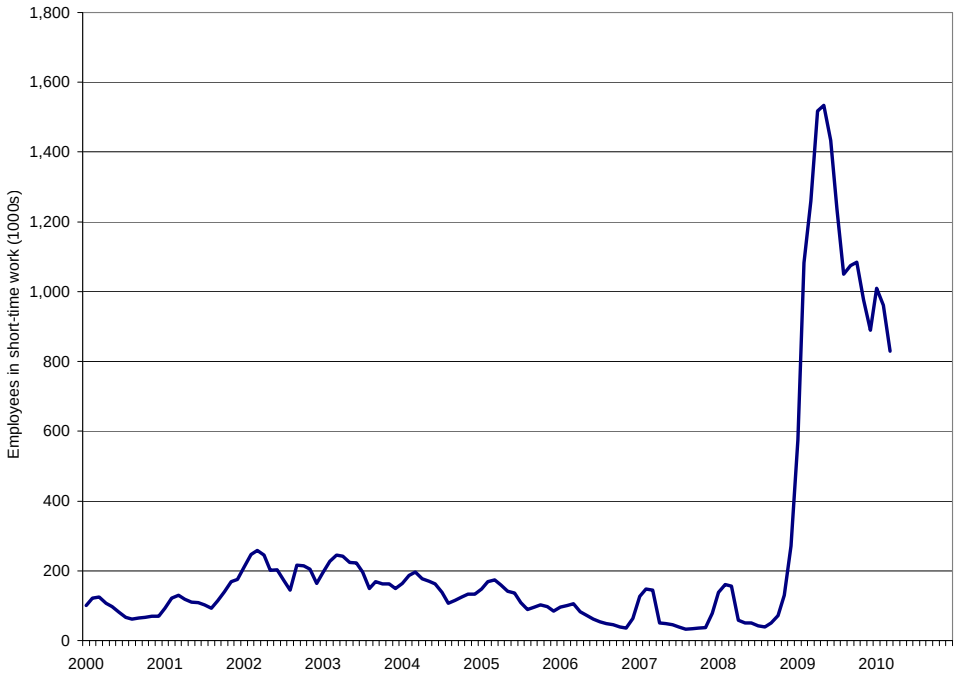
Data Appendix

The empirical analysis in this paper is based on data taken from the *IAB Establishment-Level Panel* (*IAB Betriebspanel*). (See http://betriebspanel.iab.de/infos.htm for details.) The following Table gives a summary of data available from the *IAB Establishment-Level Panel*, which are used for this project. The *IAB Establishment-Level Panel* is a large panel dataset, which is representative for German firms. The panel is a survey of German firms with a special focus on employment conditions. The survey has been conducted annually since 1993, and panel data are available for about 16,000 plants representative of all sectors and size classes.

		Before 2004	2004	2005	2006	2007	2008	2009
Financial frictions	Dummy variable reporting problems to raise external capital for investments (2004, 2007, 2009: … for R&D)	x (2001)		x (2004)			x (2007)	
	Difficulties with obtaining credit finance? 5 possible answers							x (2009)
	Share of cash flow in investments			x (2004)			x (2007)	
	Share of subsidies in financing investments		x (2003)	x (2004)			x (2007)	
Export share	Share of foreign sales in total sales (previous business year)	x	x (2003)	x (2004)	x (2005)	x (2006)	x (2007)	x (2008)
Productivity	Labor productivity (value added / employment), Value added = sales less intermediate inputs	x	x (2003)	x (2004)	x (2005)	x (2006)	x (2007)	x (2008)
	Business conditions, indicator variable (1-5), (i) previous year, (ii) expectations for current business year	x	x	x	x	x	x	x (2009)
	R&D activity (0/1)	x (2001)	x			x		x
	Implementation of innovations (0/1) (in the past two years)	x (2001)	x			x	x	x (2008)
	Innovation problems (= innovations which could not be implemented)(0/1) (in the past 2 years)	x (2001)	x			x		x (2008)

		Before 2004	2004	2005	2006	2007	2008	2009
Employment conditions	Personnel shortage (0/1) (expected in the coming 2 years),	x (2000)	x		x		x	
	Wage cost problems (0/1) (expected in the coming two years),	x (2000)	x		x		x	
	Works council (0/1)	X	x	x	x	x	x	x
	Collective bargaining (0/1)	X	x	x	x	x	x	x
		x	x	x	x	x	x	x
	Share of unskilled workers	x	x		x		x	x
Employment subsidies	*Arbeitszeitkonten* (yes/no, share of employment)	(2002)						
	Kurzarbeit							x
	Employee ownership / profit sharing agreements (yes / no, share of employees covered) (as of time of survey, i.e. summer)	x (2000)		x		x	x	x

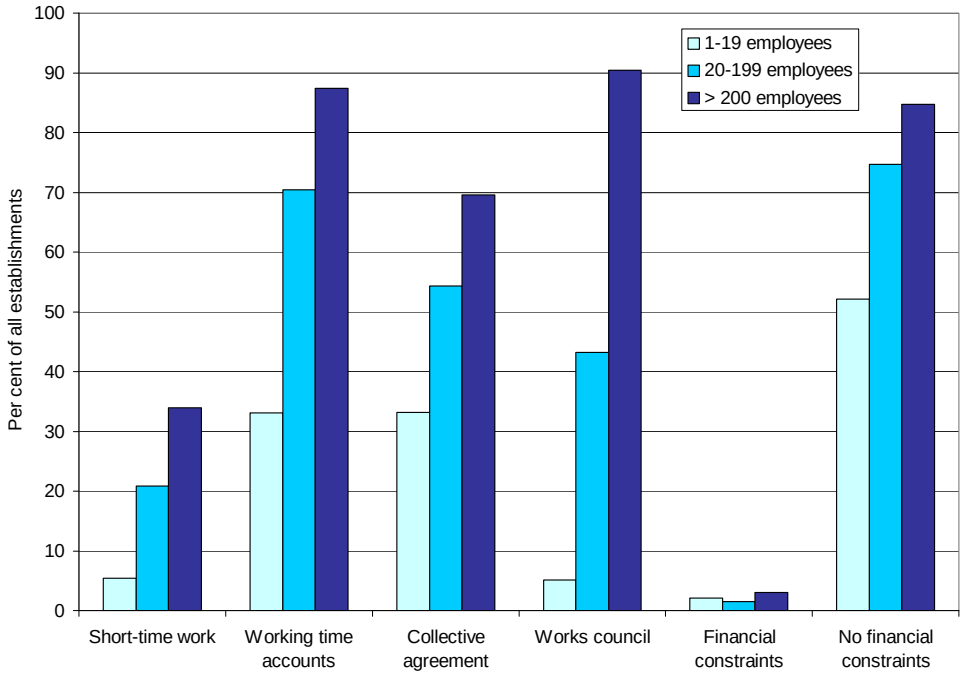
Figure 1: Short-Time Work in Germany (2000-2010)



Source: Federal Employment Agency

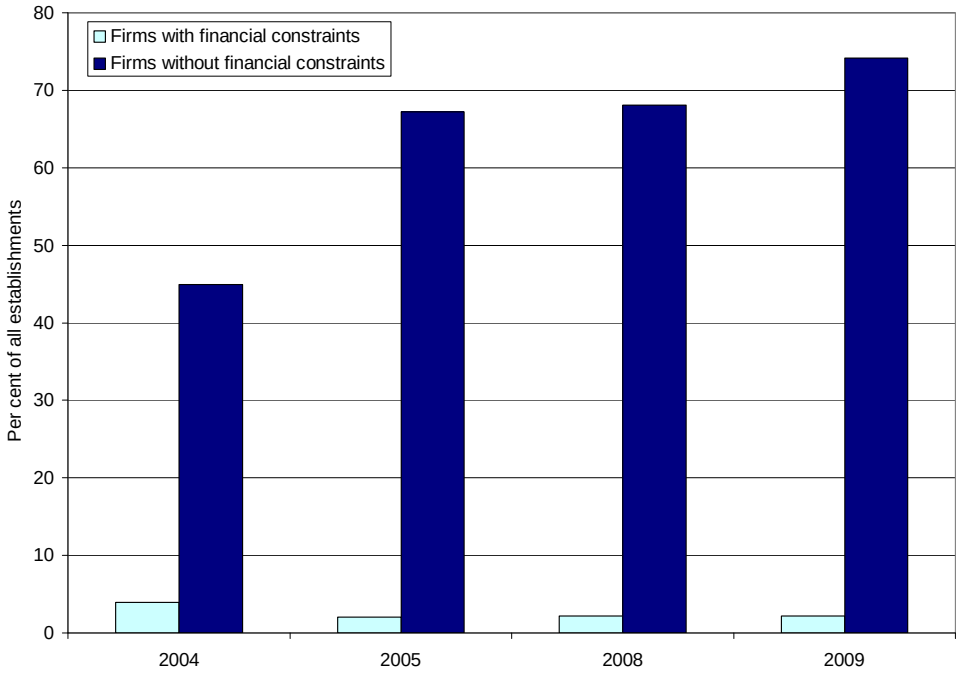
Figure 2: Labor Market Institutions and Financial Frictions by Firm Size (2009)

For the year 2004, the question on financial frictions refers to financing R&D; for the remaining years, it refers to the financing of investment.



Source: IAB Establishment Panel for Baden-Württemberg, 2009

Figure 3: Financial Frictions Over Time (2004-2009)



Source: IAB Establishment Panel for Baden-Württemberg, 2009

Table 1: Correlations Between Log Employment Changes and Institutional Variables (2009)

*, **, ***: significant at the 10%, 5% and 1% level.

Share of employees in short-time work	-0.096***
Working time accounts	-0.095***
Works council	0.007
Collective agreement	-0.060*
Financial frictions	-0.048
No financial frictions	0.046

Source: IAB Establishment Panel for Baden-Württemberg, 2009

Table 2: Labor Demand Baseline Regression Results

This Table reports the results of the first-state regressions described in Section 4.1. The dependent variable is the log of the number of employees as of 2000 to 2009 (mid-year). Results are robust, one-step system GMM estimates. The baseline specification is in columns headed (1). Column (2) contains results from a specification with industry and works council dummies. Column (3) has results for firms having working time accounts for more than 50% of their employees, column (4) for firms having working time accounts for less than 50% of their employees or less (including those who do not use working time accounts at all). Standard errors are included in parentheses. *, **, ***: significant at the 10%, 5% and 1% level, respectively.

	(1) Baseline			(2)	(3) Working time account > 50%	(4) Working time account < 50%
	GMM	OLS	Fixed Effects	GMM	GMM	GMM
log employment$_{t-1}$	0.81***	0.96***	0.51***	0.79***	0.87***	0.73***
	(0.040)	(0.006)	(0.012)	(0.039)	(0.040)	(0.055)
log sales	0.16***	0.04***	0.14***	0.15***	0.08***	0.23***
	(0.033)	(0.005)	(0.008)	(0.031)	(0.031)	(0.048)
log wages	-0.06	-0.04***	-0.08***	-0.08	-0.07	-0.13
	(0.063)	(0.008)	(0.009)	(0.058)	(0.042)	(0.083)
Works council (0/1)				0.04***	0.02	0.05**
				(0.017)	(0.023)	(0.023)
Constant	-1.28***	-0.11*	0.20	-0.91**	-0.29	-1.49***
	(0.427)	(0.058)	(0.134)	(0.370)	(0.312)	(0.488)
Time dummies	yes	yes	yes	yes	yes	yes
Industry dummies	no	No	no	yes	yes	yes
Observations	5,265	5,265	5,265	5,207	2,405	2,794
Number of firms	1,325		1,325	1,324	582	736
Number of instruments	141			197	197	197
Hansen statistic	141.6			187.7	202.9	195.4
Hansen test (p-value)	0.211			0.314	0.107	0.191
Hansen test (degrees of freedom)	129			179	179	179
AR test (1) (p-value)	0.000			0.000	0.000	0.001
AR test (2) (p-value)	0.483			0.504	0.208	0.236

Table 3: Regression of Residual Employment Changes, Short-time Work, and Working Time Accounts

This Table presents the results of the regressions described in Section 5. The dependent variable in the first four columns is the prediction of the change in log employment from 2008 to 2009, using the model estimated in equation (2). The dependent variables in the fifth, sixth and seventh column are the proportion of workers in short-time work. These three columns contain numerically estimated marginal effects calculated at the mean of the variables on the share of short time workers (in percent). Standard errors are estimated robustly and included in parentheses. The number of observations is smaller in the regressions using log employment change as the dependent variable because this variable is generated from a panel regression using data for firms with at least four years of data. The short-time work ratio is available for a larger cross-section of firms. The baseline category for the industry dummies is commerce. *, **, ***: significant at the 10%, 5% and 1% level, respectively.

	Residual Log Employment Change				Short-Time Work Ratio		
	First-stage model without working time accounts		First-stage model including working time accounts				
Works council	0.06**	0.04	0.05**	0.04	1.16***	0.14	0.74
	(0.026)	(0.036)	(0.026)	(0.035)	(0.394)	(0.342)	(0.802)
Collective agreement	-0.05*	-0.06**	-0.05*	-0.05*	-0.47	-0.47	-0.85
	(0.027)	(0.027)	(0.026)	(0.026)	(0.314)	(0.307)	(0.616)
Financial frictions	0.02	0.01	0.04	0.04	0.89	1.00	0.66
	(0.088)	(0.089)	(0.087)	(0.087)	(0.907)	(1.035)	(1.952)
No financial frictions	0.03	0.02	0.04	0.04	-0.72*	-0.90**	-0.63
	(0.042)	(0.042)	(0.042)	(0.042)	(0.418)	(0.437)	(1.024)
Competition intensity	-0.04*	-0.05*	-0.04*	-0.04*	0.96***	0.86***	1.10
	(0.024)	(0.025)	(0.024)	(0.024)	(0.318)	(0.292)	(0.690)
Working time accounts	-0.03	-0.04	-0.04	-0.04	0.53	0.15	0.60
	(0.029)	(0.028)	(0.028)	(0.027)	(0.326)	(0.308)	(0.670)
Employees: 20-99		0.01		0.02		2.54***	4.86**
		(0.029)		(0.030)		(0.829)	(2.128)
Employees: 100+		0.04		0.03		3.34***	3.35*
		(0.045)		(0.042)		(1.150)	(1.933)
Δ Sales 2008-2009							-1.55***
							(0.485)
Δ Wages 2008-2009							-2.48***
							(0.730)

Table 3: Regression of Residual Employment Changes, Short-time Work, and Working Time Accounts (continued)

	Residual Log Employment Change				Short-Time Work Ratio		
	First-stage model without working time accounts		First-stage model including working time accounts				
Agriculture/Forestry/Mining	-0.24***	-0.24***	-0.23***	-0.23***	-0.53	-0.28	3.67
	(0.078)	(0.078)	(0.076)	(0.077)	(1.112)	(1.179)	(5.401)
Manufacturing	-0.11***	-0.11***	-0.10***	-0.11***	12.38***	9.84**	20.02**
	(0.037)	(0.039)	(0.036)	(0.037)	(4.542)	(4.064)	(8.909)
Construction	0.00	0.00	0.01	0.01	7.31	7.35	14.38
	(0.043)	(0.043)	(0.043)	(0.043)	(4.970)	(5.073)	(11.837)
Services (for-profit)	-0.06	-0.06	-0.06	-0.06	1.12	1.06	1.96
	(0.037)	(0.037)	(0.036)	(0.036)	(1.085)	(1.014)	(2.562)
Services (public sector and non-profit organizations)	-0.16***	-0.14***	-0.15***	-0.15***	-3.26***	-2.86***	-1.84***
	(0.036)	(0.040)	(0.033)	(0.037)	(0.599)	(0.546)	(0.609)
Constant	(0.046)	(0.047)	(0.045)	(0.046)			
	0.09*	0.09*	0.08*	0.08*			
Observations	399	399	399	399	1,109	1,109	439
R^2	0.066	0.068	0.067	0.068			

Table 3: Regression of Residual Employment Changes, Short-time Work, and Working Time Accounts (continued)

	Residual Log Employment Change				Short-Time Work Ratio		
	First-stage model without working time accounts		First-stage model including working time accounts				
Agriculture/Forestry/Mining	-0.24***	-0.24***	-0.23***	-0.23***	-0.53	-0.28	3.67
	(0.078)	(0.078)	(0.076)	(0.077)	(1.112)	(1.179)	(5.401)
Manufacturing	-0.11***	-0.11***	-0.10***	-0.11***	12.38***	9.84**	20.02**
	(0.037)	(0.039)	(0.036)	(0.037)	(4.542)	(4.064)	(8.909)
Construction	0.00	0.00	0.01	0.01	7.31	7.35	14.38
	(0.043)	(0.043)	(0.043)	(0.043)	(4.970)	(5.073)	(11.837)
Services (for-profit)	-0.06	-0.06	-0.06	-0.06	1.12	1.06	1.96
	(0.037)	(0.037)	(0.036)	(0.036)	(1.085)	(1.014)	(2.562)
Services (public sector and non-profit organizations)	-0.16***	-0.14***	-0.15***	-0.15***	-3.26***	-2.86***	-1.84***
	(0.036)	(0.040)	(0.033)	(0.037)	(0.599)	(0.546)	(0.609)
Constant	(0.046)	(0.047)	(0.045)	(0.046)			
	0.09*	0.09*	0.08*	0.08*			
Observations	399	399	399	399	1,109	1,109	439
R^2	0.066	0.068	0.067	0.068			

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