WORKING PAPER

Fixed-term contracts and dismissal protection. Evidence from a policy reform in Germany

by

Lutz Bellmann, Hans-Dieter Gerner and Christian Hohendanner

University of Lüneburg
Working Paper Series in Economics

No. 320

November 2014

www.leuphana.de/institute/ivwl/publikationen/working-papers.html

ISSN 1860 - 5508

Fixed-term contracts and dismissal protection. Evidence from a policy reform in Germany*

Lutz Bellmann[a], Hans-Dieter Gerner[b] and Christian Hohendanner[c]

Abstract

In our paper, we analyze the impact of German employment protection legislation on the firms' employment adjustment patterns. We explore a reform of the Protection Against Dismissal Act (PADA) in 2004 that decreased the employment protection in small establishments and thus generated a quasi-experiment. Extending previous studies we distinguish between open-ended and fixed-term contracts, as the latter might be used to circumvent the PADA. Difference-in-differences estimations based on IAB Establishment Panel data show no overall effect of the reform on firms' employment adjustment patterns. However, the proportion of hirings based on fixed-term contracts decreases.

[a] University of Erlangen-Nuremberg, Institute for Employment Research, Nuremberg, Lower Saxony Institute for Economic Research, Hannover and Institute for the Study of Labor

[b] Institute of Employment Research, Nuremberg

[c] Institute of Employment Research, Nuremberg, University of Erlangen-Nuremberg

*An earlier version of this paper was presented at the IAB Scientific Council Meeting in Nuremberg, March 31st, 2014, the Research Seminar of the Lower Saxony Institute for Economic Research in Hannover, June 24th, 2014 and the Committee For Social Policy of the German Economic Association in Dresden, September 25th, 2014.

1. Introduction

Germany provides a very interesting example with respect of the both the regulation of employment protection for regular employment and the regulation of different firms of temporary employment: According to the widely used OECD indices (for details, see Venn 2009), Germany has tightened regular employment regulations over the period 1985-2013. Thus, the OECD indicator, which can take values from 0 to 6, with higher scores representing stricter regulation, increased from 2.58 (1985) to 2.78 (2013). In contrast the temporary employment was substantially loosened from 3.75 (1985) to 1.13 (2013); cf. Jahn et al. (2012). The share of temporary contracts in total employment increased as well: Fixed-term employment rose from 5 per cent in 1985 (Rudolph 2000) to 8 per cent in 2013, temporary agency work rose from about 0.2 per cent to 3 per cent in the same period of time[1]. Data for the OECD countries also reveal a rising difference between the regulation of regular temporary employment indicating an increasing protection gap in Europe (OECD 2014).
Whereas the effect of the reforms of temporary forms of employment is investigated in many studies, research on the re-regulation is rather scarce. Thus our research question is the following: What is the impact of the re-regulation of regular employment on the level and the composition of hirings in German firms?

Boeri (2011) argues that most of the recent literature on the effects of labour market institutions on wages and employment draws on reforms used as natural experiments, a development which he regards as a significant improvement with respect to the studies which were based solely on cross-country variation in (highly imperfect) measures of labour market institutions such as employment protection, unemployment compensation and collective bargaining. Essentially, in our paper employment in some firms (e.g. small ones with 5-10 employees) is thought to be more volatile because of regulatory changes in the employment protection legislation. A related argument is that fixed-term employment contracts may became less important for small firms affected by the easing of job protection, because these contracts were used by the establishments to circumvent the employment protection legislation.

There is a small empirical literature (described in Section 2 below) which provide evidence on the impact of re-regulation of regular employment. With the exception of the article of Boockmann/Hagen (2001) and Fritsch/Schank (2004) these papers only focus on permanent jobs and do not differentiate their analyses with respect to different forms of employment such as fixed-term and agency work contracts. Using the IAB Establishment Panel Survey data for the years 2001-2007 we distinguish between permanent and fixed-term jobs. In addition we consider both gross and net changes in employment. Thus, we do not neglect possible churning effects. Furthermore with the exception of the study of Bauernschuster

[1] In absolute figures temporary agency work rose from 32 thousand in January 1985 (West-Germany) to 815 thousand in December 2013 (West and East Germany) (Federal Employment Agency, 2014), fixed-term contracts rose from about 1 million in June 1985 (Rudolph 2000) to 2.6 million in 2013 (Destatis 2014).

(2013) these studies do not cover the most recent changes in the employment regulation in Germany which were introduced in the year 2004. Moreover, to our knowledge there is no study that distinguishes between hirings based on fixed-term and permanent contracts.

The paper is organized as follows. Section 2 briefly discusses the institutional and theoretical background as well as the related literature. Section 3 presents the data and descriptive statistics. Section 4 introduces the methods applied and reports on the econometric results. Finally, Section 5 concludes.

2. Institutional and Theoretical Background

Fixed-term contracts are used by employers in order to screen workers, to substitute personnel on sick or maternity leave but to avoid redundancy pay as well as the administrative burden if the Employment Protection Against Dismissal Act (PADA) applies. The legal framework and the various options of the employers wishing to adjust the number of employees are described in the following (cf. Ullmann and Bothfeld 2008): Firstly, the firm has to decide between permanent and temporary forms of employment, which made it possible to avoid dismissal processes (cf. Zachert 2004). The number of employees can also be adjusted by means of e.g. not reoccupying vacant positions.[2]
Secondly, if the establishment decides to dismiss permanent employees, the legitimacy of the dismissal must be checked and the terms of notice must be observed if the Employment PADA applies. However, small establishments are exempted: From 1999 until the end of 2003, employees in establishments with up to five full-time equivalent workers were not protected. As part of the reform package AGENDA 2010 this threshold has been shifted up to ten full-time equivalent workers since January 1st, 2004 (with the exception of incumbent workers that are already employed at the firm for more than 6 months[3]). Then, the establishment is obliged to give reasons for the dismissal, which may relate to an employee's person or conduct, or to urgent operational business requirements.

Thirdly, if the establishment selects an employee for dismissal, the dismissal has to be issued in written form. The works council has a right to be informed. If the works council disagrees and the employee decides to take legal action, the employment relationship continues. If a certain proportion of all employees are dismissed the compilation of a social plan is necessary and usually accompanied by redundancy pay. The Survey on the Termination of Employment Relationships 2001 of the WSI (Economic and Social Research Institute affiliated with the Federation of German Unions) revealed that redundancy pay was contracted in 14.8 % of all employer-initiated dismissals – only in 5.2 % of all cases in establishments with less than ten employees (cf. Ullmann and Bothfeld 2008). According to

[2] For employees, self-initiated termination is an attractive option only if a new job is available because it may lead to a blocking period up to 12 weeks in the unemployment insurance.
[3] Employees in the probation period - the first six months of a new employment relationship – are generally exempted of the PADA – regardless of the firm size. For an overview about several thresholds see Koller et al. (2010).

the WSI survey on Company Personnel Policies 2003 legal action was taken against 15 % of dismissals – only in 7 % of all cases in establishments with less than six employees and 13 % of all cases in establishments with more than five and less than ten employees (cf. Ullmann and Bothfeld 2008).

Extending the Mortensen-Pissarides (1999) model Boeri (2011) assumes that all entry-level jobs are fixed-term contracts. Then, the rate of conversion into permanent contracts is negatively associated with the protection gap, i.e. the employment protection of incumbents in comparison to those of workers with fixed-term contracts. The considered policy reform of an easing employment protection of the employees in establishments with 5-10 employees decreases the protection gap. The following propositions concerning its impact can be made:

- The proportion of employees with fixed-term contracts will decrease as well as
- the proportion of hirings into these jobs.
- The proportion of employees with fixed-term contracts who are subsequently hired into a permanent contract will increase.
- Among the fixed-term jobs the churning rate will decline.
- The duration of permanent jobs will decrease in conjunction with
- an increase in the proportion of dismissals of employees with permanent contracts, because the Employment PADA applies less often.

The small empirical literature provides mixed evidence on the impact of re-regulation of the PADA. With regard to fixed-term contracts, Boockmann and Hagen (2002) find a negative impact on their use in firms where the PADA has been relaxed. However, Fritsch and Schank (2004) do not find any effect of PADA reforms on fixed-term contracts. As regards employment in general, evidence is also mixed: Verick (2004) finds non-robust negative effects on employment growth, Bauer et al. (2008) do not find any effects on hiring and firing rates as well as on employment growth. In contrast, Boockmann et al. (2008) find positive effects of the relaxation of the PADA on the stability of new jobs and Bauernschuster (2013) finds positive effects on the hiring rate. The vast international empirical literature also provides mixed results with regard to reforms of dismissal protection legislation in other countries (for an overview see Skedinger 2010). Amongst the variety of studies, there is one study for Portugal that explores a reform of dismissal protection legislation in 2004 similar to the German PADA reform in 2004 that we investigate (Centeno and Novo 2013)[4]. The authors find an increase in the share and in the excess labour turnover of fixed-term contracts in firms with a tightened protection of permanent contracts after the reform. The excess labour turnover of open-ended contracts remained unchanged.

[4] In contrast, in Portugal PADA was tightened in 2004.

3. Study Design

For our analysis we use information from the IAB Establishment Panel Survey (Fischer et al. 2009). The basis for its sampling is the establishment file of the Federal Employment Agency in Germany, where all German establishments are recorded which have at least one employee covered by social security. The IAB Establishment Panel surveys approximately 16,000 establishments on an annual basis. The personal interviews are conducted with high-ranked managers of the firms by TNS Infratest Social Research (Munich) on behalf of the Institute for Employment Research (IAB). The annual questionnaire covers, for example, information about the development and the structure of the workforce (regular, fixed-term and agency workers), the business development or the sum of the earnings. In our analysis we use data from the IAB Establishment Panel and focus on the 1st half of the years 2001 to 2007.

We identify the causal effect of the PADA reform on the firms' hiring behaviour by applying the exogeneity of the PADA reform within a difference-in-differences framework. Our treatment group, i.e. firms which are subject to the policy change, comprises all firms which constantly employed between 5 and 10 full-time equivalent workers (from 2001 to 2003) before the reform took place (see Bauernschuster 2013). For our control group, we selected all establishments with more than 10 but less than 20 full-time equivalent workers. In order to calculate full-time equivalents we considered the weighted sum of full and part time workers whereby full-time workers were weighted by one and part time workers were weighted by 0.5. The basic results of our study do not differ when definitions for constructing our treatment and control groups are modified. In order to check the robustness of our results we changed the time span in which the treatment and the control group constantly employed 5 to 10 or 10 to 20 full time equivalent workers, respectively from 2001-2003 to 2002-2003. Considering the higher weekly working hours of part-time workers in East Germany we additionally varied the weight for part-time workers in East Germany from 0.5 to 0.6.

The dependent variables under study are: A dummy which is 1 if a firm hires at least one worker in the first half of a year, the firm's worker inflow rate in the first half of a year (i.e. hirings divided by the mean of total employment between two subsequent years), a dummy which is 1 if a firm hires at least one worker on the basis of a temporary contract in the first half of a year, a dummy which is 1 if the proportion of hires on the basis of a fixed-term contract on all newly hired workers is at least 50%, and a dummy which is 1 if all hires are on a fixed term basis.

Our difference-in-difference estimator investigates the change in the dependent variables under study with respect to the exogenous reform of the PADA in 2004. In order to identify different patterns in the development of these outcome variables between plants with and without relaxed dismissal protection, we assume the following simple linear relationship

$$y_{it} = \tau T_t + \varphi C_i + \delta C_i T_t + x'_{i,2003}\beta + \epsilon_{it} \qquad (1)$$

where y_{it} gives the outcomes observed for plant i in year t. C_i is a dummy which is equal to one, if plant i is in the treatment group. T is a time dummy which is one from 2004 and C_iT_t is an interaction term. Finally, x' is a vector of control variables (see table Y appendix for a detailed definition) which includes first of all includes confounding variables which are potentially correlated with both, the time and the treatment indicators as well as the outcome variables. Furthermore, x' includes variables which are potentially correlated with the outcomes variables in order to get precise estimates. We fixed the regressors to 2003 in x' to avoid the problem of controlling for confounding variables. However, our basic results do not change, if we allow the explanatory variables in x' to vary over time. ε_{it} is an idiosyncratic error term. We estimated (1) separately for the different outcome variables by OLS. In order to obtain fully robust standard errors, we apply a modified sandwich estimator which accounts for correlated outcomes within a given plant (Rogers 1993; Hardin & Hilbe 2007).
Under the assumption that for the treatment and the control group the time trends in the outcome variables would have been the same in the absence of the PADA reform, δ identifies the causal effect of the PADA on the outcome variables. This so called common time trend assumption is motivated by implementing appropriate placebo tests. Within this test procedure, we concentrated on the time period 2000-2003 and introduced placebo treatments, i.e. we made several difference-in-differences estimations for this period of time, where the treatment and control groups remain identical to the definition above but the treatment years are placed into 2002 and/or 2003.

4. Results

The main results[5] for the first two outcome variables, i.e. the firm's probability for hiring at least one worker and the firm's worker inflow rate in the first half of a year are presented in table 1. The first row shows that there are no pre-treatment differences in the outcome variables between treatment and control firms. The second row indicates a significant negative time trend in the firms' probability for hiring new workers in the first half of a year. Finally, the third row indicates that there are no significant differences in the time trends between treatment and control firms. However, the hypothesis that there is no time trend in the firms' probability for hiring new workers can be rejected as well.

Table 1: Difference-in-differences estimation for firm level hirings

Dependent variable	Firm hires at least one worker	Worker inflow rate
Treatment dummy (=1 for 5-10 fte workers)	0,033 (0,029)	0,019 (0,014)
Time dummy (=1 from 2004)	-0,063*** (0.017)	0,000 (0,005)
Time dummy x treatment dummy	0,038 (0,024)	0,004 (0,006)
Control variables	yes ***	yes***
R^2	0,089	0,101
N	5.889	5.889

Own calculations based on the IAB Establishment Panel 2001-2007. All results are obtained by OLS. Cluster adjusted standard errors are reported in parentheses. ***/**/* indicates significance at the 1/5/10 % level.

[5] For the definition of control variables see table A 2 in the appendix.

The next table shows the results for the firms' probability to hire at least one worker on the basis of a fixed term contract. Furthermore, we restricted the sample to firms which hired at least one worker and run the regression once again. The results reported indicate significant pre-treatment differences between the control and the treatment group. However, we did not find any significant time trends for the control group and no significant differences in the time trends between the treatment and the control group.

Table 2: Difference-in-differences estimation for firm level hirings

Dependent variable	Firm hires at least one worker on the basis of a fixed-term contract	Firm hires at least one worker on the basis of a fixed-term contract (given it hires at least on worker)
Treatment dummy (=1 for 5-10 fte workers)	0,026** (0,013)	0,121*** (0,028)
Time dummy (=1 from 2004)	0,005 (0,019)	-0,023 (0,043)
Time dummy x treatment dummy	-0,015 (0,016)	-0,044 (0,043)
Control variables	yes ***	yes***
R^2	0,117	0,178
N	5.870	2.013

Own calculations based on the IAB Establishment Panel 2001-2007. All results are obtained by OLS. Cluster adjusted standard errors are reported in parentheses. ***/**/* indicates significance at the 1/5/10 % level.

Table3 presents the difference-in-differences estimations for the probability that a firm's proportion of workers hired on the basis of a fixed-term contract on all hires is at least 50 % and for the probability that 100 % of new hires are on the basis of a fixed-term contract.

Table 3: Difference-in-differences estimation for firm level hirings

Dependent variable	Firm hires at least 50 % of the new hires on the basis of a fixed-term contract	All new hires are on the basis of a fixed-term contract
Treatment dummy (=1 for 5-10 fte workers)	-0,013 (0,043)	0,003 (0,042)
Time dummy (=1 from 2004)	0,127 (0,025)	0,132 (0,024)
Time dummy x treatment dummy	-0,066* (0,040)	-0,079** (0,040)
Control variables	yes ***	yes***
R^2	0,181	0,172
N	2.013	2.013

Own calculations based on the IAB Establishment Panel 2001-2007. All results are obtained by OLS. Cluster adjusted standard errors are reported in parentheses. ***/**/* indicates significance at the 1/5/10 % level.

As table 3 shows, there are no pre-treatment differences between the treatment and the control group. Finally, there is a significant difference in the time trends between the treatment and the control group. Treatment firms c.p. exhibit a much lower increase in the outcome variables from 2004 compared to the pre-treatment period then control firms. Tables A1 finally strongly supports the common time trend assumption which is crucial for the identification of causal effects within a difference in differences framework since we find no significant difference in the development of the outcome variable in the pre-treatment period. Our results therefore suggest that one rational from the firms' perspective behind the application of fixed-term contracts is to circumvent the dismissal protection legislation.

5. Conclusion

In Germany the policy reform of regular employment in 2004 relaxed the dismissal protection of employees in firms with 5-10 full-time equivalent workers. Using the IAB Establishment Panel Survey data 2001 - 2007 we studied the impact of this reform on inflows into employment. Our difference-in-differences estimations reveal a decreasing importance of firm hires on the basis of a fixed-term contract – although the legislation has eased the use of the type of employment contract at the same time. Thus, our analyses can be regarded as a lower bound of the effect. In line with key findings of the recent OECD Employment Outlook (OECD 2014), our empirical results thus provide indications that relaxing regulations on dismissal protection of permanent workers may reduce fixed-term contracts and thereby diminish the labour market divide that is recently observed in many OECD countries. Even if the reform of the PADA in 2004 did not influence total levels of employment in Germany, it had an impact on the composition of hirings.

However, the relaxation of dismissal protection for permanent workers in Germany was limited to the small group of firms with 5 to 10 employees. This restriction explains why temporary contracts in Germany rose also after the reform in 2004: Most employees with fixed-term contracts in Germany – also in times before the reform - work in larger firms with more than 10 employees. Even if more comprehensive reforms of dismissal protection for permanent workers seem to be very unlikely in Germany, our empirical study gives indications about what would happen by uncovering the mechanisms behind the observed labour market divide. Further analyses should be devoted to the investigation of the duration of permanent contracts as well as the development of the proportion of dismissals of employees with permanent contracts thus complementing our study.

6. References

Bauer, Thomas K.; Bender, Stefan; Bonin, Holger (2007): Dismissal Protection and Worker Flows in Small Establishments. Economica 74: 804-821.

Bauernschuster, Stefan (2013): Dismissal protection and small firms' hirings: evidence from a policy reform. Small Business Economcis 40: 293-307.

Boeri, Tito (2011): Institutional Reforms and Dualism in European Labor Markets. Handbook of Labor Economics 4b: 1173-1236.

Boockmann, Bernhard; Hagen, Tobias (2001): Determinanten der Nachfrage nach befristeten Verträgen, Leiharbeit und freier Mitarbeit: Empirische Analysen auf Basis des IAB-Betriebspanels. BeitrAB 257.

Boockmann, Bernhard; Gutknecht, Daniel; Steffes, Susanne (2008): Die Wirkung des Kündigungsschutzes auf die Stabilität „junger" Beschäftigungsverhältnisse. Journal for Labour Market Research 41: 347-364.

Centeno, Mário; Novo, Álvaro A., (2012): Excess worker turnover and fixed-term contracts: Causal evidence in a two-tier system. Labour Economics 19: 320-328.

Destatis (2014): Atypische Beschäftigung 1991 - 2013. Kernerwerbstätige nach einzelnen Erwerbsformen. Ergebnisse des Mikrozensus. Wiesbaden.

Federal Employment Agency (2014): Official Statistics of Temporary Agency Work released by the Federal Employment Agency, Nuremberg.

Fischer, Gabriele; Janik, Florian; Müller, Dana; Schmucker, Alexandra (2009): The IAB Establishment Panel. Things users should know. Schmollers Jahrbuch. Zeitschrift für Wirtschafts- und Sozialwissenschaften 129: 133-148.

Fritsch, Antje; Schank, Thorsten (2004): Betrieblicher Einsatz befristeter Beschäftigung. Sozialer Fortschritt 54: 211-220.

Hardin, James W. & Hilbe, Joseph M. (2007): Generalized Linear Models and Extensions. College Station, Texas.

Höland, Armin; Kahl, Ute; Zeibig, Nadine (2007): Kündigungspraxis und Kündigungsschutz im Arbeitsverhältnis, eine empirische Praxisuntersuchung aus Sicht des arbeitsgerichtlichen Verfahrens, Baden-Baden.

Jahn, Elke J.; Riphahn, Regina T.; Schnabel, Claus (2012): Feature: Flexible forms of employment: boon and bane. The Economic Journal 122, F115-F124.

Koller, Lena; Schnabel, Claus; Wagner, Joachim (2010): Beschäftigungswirkungen arbeits- und sozialrechtlicher Schwellenwerte. University of Lüneburg, Working Paper Series in Economics 181.

Mortensen, Dale T.; Pissarides, Christopher A. (1999): New developments in models of search in the labor market. Handbook of Labor Economics, edition 1, volume 3, chapter 39, 2567-2627.

OECD (2014): Employment Outlook 2014, Paris.

Rogers, William H. (1993): Regression standard errors in clustered samples. Stata Technical Bulletin 3: 19-23.

Rudolph, Helmut (2000): Arbeitsmarktpolitik: Befristete Arbeitsverträge sind bald neu zu regeln. IAB-Kurzbericht 12/2000.

Skedinger, Per (2010): Employment Protection Legislation. Evolution, Effects, Winners and Losers, Cheltenham.
Ullmann, Karen; Bothfeld, Silke (2008): The German Employment Protection Act – How does it work in company practice? WSI-Diskussionspapier Nr. 161.
Verick, Sher (2004): Threshold Effects of Dismissal Protection Legislation in Germany. IZA Discussion Paper 991.
Zachert, Ulrich (2004): Beendigungstatbestände im internationalen Vergleich. Eine normative und empirische Bestandsaufnahme, Baden-Baden.

7. Appendix

Table A1: Placebo tests

Dependent variable	Firm hires at least one worker	Firm hires at least one worker
Period	2000-2003	2000-2003
Placebo treatment year	2001	2002
Treatment dummy (=1 for 5-10 fte workers)	-0,043 (0,043)	-0,089** (0,036)
Time dummy	-0,030 (0,027)	-0,071*** (0,023)
Time dummy x treatment dummy	-0,034 (0,038)	0,041 (0,032)
Control variables	yes ***	yes***
R^2	0,063	0,065
N	3.224	3.224
Dependent variable	Firm hires at least one worker	Worker inflow rate
Period	2000-2003	2000-2003
Placebo treatment year	2003	2001
Treatment dummy (=1 for 5-10 fte workers)	-0,075** (0,033)	0,018 (0,014)
Time dummy	-0,072*** (0,025)	-0,014** (0,007)
Time dummy x treatment dummy	0,025 (0,035)	-0,006 (0,010)
Control variables	yes ***	yes***
R^2	0,064	0,166
N	3.224	3.224

Table A1 (continued)

Dependent variable	Worker inflow rate	Worker inflow rate
Period	2000-2003	2001-2003
Placebo treatment year	2002	2002
Treatment dummy (=1 for 5-10 fte workers)	0,013 (0,011)	0,011 (0,011)
Time dummy	-0,010** (0,005)	-0,013 (0,004)
Time dummy x treatment dummy	0,001 (0,007)	0,008 (0,007)
Control variables	yes ***	yes***
R^2	0,164	0,163
N	3.224	3.224
Dependent variable	Firm hires at least one worker on the basis of a fixed term contract	Firm hires at least one worker on the basis of a fixed term contract
Period	2001-2003	2001-2003
Placebo treatment year	2002	2003
Treatment dummy (=1 for 5-10 fte workers)	-0,033 (0,027)	-0,021 (0,024)
Time dummy	-0,023 (0,018)	-0,012 (0,017)
Time dummy x treatment dummy	0,031 (0,022)	0,028 (0,022)
Control variables	yes ***	yes***
R^2	0,109	0,109
N	2.416	2.416

Table A1 (continued)

Dependent variable	Firm hires at least one worker on the basis of a fixed term contract (given it hires at least on worker)	Firm hires at least one worker on the basis of a fixed term contract (given it hires at least on worker)
Period	2001-2003	2000-2003
Placebo treatment year	2002	2003
Treatment dummy (=1 for 5-10 fte workers)	-0,029 (0,067)	-0,022 (0,058)
Time dummy	0,002 (0,034)	0,016 (0,037)
Time dummy x treatment dummy	0,043 (0,056)	0,068 (0,061)
Control variables	yes ***	yes***
R^2	0,205	0,207
N	865	865
Dependent variable	Firm hires at least 50 % of the new hires on the basis of a fixed term contract	Firm hires at least 50 % of the new hires on the basis of a fixed term contract
Period	2001-2003	2000-2003
Placebo treatment year	2002	2003
Treatment dummy (=1 for 5-10 fte workers)	0,046 (0,067)	0,049 (0,056)
Time dummy	0,022 (0,032)	0,087 (0,035)
Time dummy x treatment dummy	-0,005 (0,055)	-0,026 (0,058)
Control variables	yes ***	yes***
R^2	0,174	0,181
N	865	865

Table A1 (continued)

Dependent variable	All new hires are on the basis of a fixed term contract	All new hires are on the basis of a fixed term contract
Period	2001-2003	2000-2003
Placebo treatment year	2002	2003
Treatment dummy (=1 for 5-10 fte workers)	0,027 (0,067)	0,037 (0,057)
Time dummy	0,005 (0,033)	0,058 (0,035)
Time dummy x treatment dummy	0,014 (0,055)	-0,006 (0,058)
Control variables	yes ***	yes***
R^2	0,187	0,192
N	865	865

Own calculations based on the IAB Establishment Panel 2000-2003. All results are obtained by OLS. Cluster adjusted standard errors are reported in parentheses. ***/**/* indicates significance at the 1/5/10 % level. Control variables are measured in 2000.

Table A2 Definition of control variables

Variable	Definition
Proportion of qualified workers	Number of qualified workers divided by the total number of workers
Proportion of female workers	Number of female workers divided by the total number of workers
Log(wages)	Logarithm of the sum of wages in June of the respective year
Log(number of employees)	Logarithm of the total number of employees
[log(number of employees)]^2	Logarithm of the total number of employees squared
Proportion of part time workers	Number of part time workers divided by the total number of workers
Technical state of the plant	5 dummies, ranging from 1: very good to 5: bad
Works council	3 dummies, 1: works council exists, 2: no works council exists, 3: other workers' representatives exist
Collective bargaining	3 dummies, 1: sector level bargaining, 2: firm level bargaining, 3: no collective bargaining
Proportion of apprentices	Number of apprentices divided by the total number of workers
Proportion of agency workers	Number of agency workers divided by the total number of workers
Region	Dummy, 1: plant is located in East Germany
Sector	16 sector dummies

Working Paper Series in Economics

(recent issues)

No.319: *Knut Gerlach, Olaf Hübler und Wolfgang Meyer:* Betriebliche Suche und Besetzung von Arbeitsplätzen für qualifizierte Tätigkeiten in Niedersachsen - Gibt es Defizite an geeigneten Bewerbern?, Oktober 2014

No.318: *Sebastian Fischer, Inna Petrunyk, Christian Pfeifer and Anita Wiemer:* Before-after differences in labor market outcomes for participants in medical rehabilitation in Germany, December 2014

No.317: *Annika Pape und Thomas Wein:* Der deutsche Taximarkt - das letzte (Kollektiv-) Monopol im Sturm der „neuen Zeit“, November 2014

No.316: *Nils Braakmann and John Wildman:* Reconsidering the impact of family size on labour supply: The twin-problems of the twin-birth instrument, November 2014

No.315: *Markus Groth and Jörg Cortekar:* Climate change adaptation strategies within the framework of the German “Energiewende” – Is there a need for government interventions and legal obligations?, November 2014

No.314: *Ahmed Fayez Abdelgouad:* Labor Law Reforms and Labor Market Performance in Egypt, October 2014

No.313: *Joachim Wagner:* Still different after all these years. Extensive and intensive margins of exports in East and West German manufacturing enterprises, October 2014

No.312: *Joachim Wagner:* A note on the granular nature of imports in German manufacturing industries, October 2014

No.311: *Nikolai Hoberg and Stefan Baumgärtner:* Value pluralism, trade-offs and efficiencies, October 2014

No.310: *Joachim Wagner:* Exports, R&D and Productivity: A test of the Bustos-model with enterprise data from France, Italy and Spain, October 2014

No.309: *Thomas Wein:* Preventing Margin Squeeze: An Unsolvable Puzzle for Competition Policy? The Case of the German Gasoline Market, September 2014

No.308: *Joachim Wagner:* Firm age and the margins of international trade: Comparable evidence from five European countries, September 2014

No.307: *John P. Weche Gelübcke:* Auslandskontrollierte Industrie- und Dienstleistungs-unternehmen in Niedersachsen: Performancedifferentiale und Dynamik in Krisenzeiten, August 2014

No.306: *Joachim Wagner:* New Data from Official Statistics for Imports and Exports of Goods by German Enterprises, August 2014

No.305: *Joachim Wagner:* A note on firm age and the margins of imports: First evidence from Germany, August 2014

No.304: *Jessica Ingenillem, Joachim Merz and Stefan Baumgärtner:* Determinants and interactions of sustainability and risk management of commercial cattle farmers in Namibia, July 2014

No.303: *Joachim Wagner:* A note on firm age and the margins of exports: First evidence from Germany, July 2014

No.302: *Joachim Wagner:* A note on quality of a firm's exports and distance to destination countries: First evidence from Germany, July 2014

No.301: *Ahmed Fayez Abdelgouad:* Determinants of Using Fixed-term Contracts in the Egyptian Labor Market: Empirical Evidence from Manufacturing Firms Using World Bank Firm-Level Data for Egypt, July 2014

No.300: *Annika Pape:* Liability Rule Failures? Evidence from German Court Decisions, May 2014

No.299: *Annika Pape:* Law versus Economics? How should insurance intermediaries influence the insurance demand decision, June 2013

No.298: *Joachim Wagner:* Extensive Margins of Imports and Profitability: First Evidence for Manufacturing Enterprises in Germany, May 2014 [published in: Economics Bulletin 34 (2014), 3, 1669-1678]

No.297: *Joachim Wagner:* Is Export Diversification good for Profitability? First Evidence for Manufacturing Enterprises in Germany, March 2014 [published in: Applied Economics 46 (2014), 33, 4083-4090]

No.296: *Joachim Wagner:* Exports and Firm Profitability: Quality matters!, March 2014 [published in: Economics Bulletin 34 (2014), 3, 1644-1652]

No.295: *Joachim Wagner:* What makes a high-quality exporter? Evidence from Germany, March 2014 [published in: Economics Bulletin 34 (2014), 2, 865-874]

No.294: *Joachim Wagner:* Credit constraints and margins of import: First evidence for German manufacturing enterprises, February 2014 [published in: Applied Economics 47 (2015), 5, 415-430]

No.293: *Dirk Oberschachtsiek*: Waiting to start a business venture. Empirical evidence on the determinants., February 2014

No.292: *Joachim Wagner*: Low-productive exporters are high-quality exporters. Evidence from Germany, February 2014 [published in: Economics Bulletin 34 (2014), 2, 745-756]

No.291: *Institut für Volkswirtschaftslehre:* Forschungsbericht 2013, Januar 2014

No.290: *Stefan Baumgärtner, Moritz A. Drupp und Martin F. Quaas*: Subsistence and substitutability in consumer preferences, December 2013

No.289: *Dirk Oberschachtsiek*: Human Capital Diversity and Entrepreneurship. Results from the regional individual skill dispersion nexus on self-employment activity., December 2013

No.288: *Joachim Wagner and John P. Weche Gelübcke*: Risk or Resilience? The Role of Trade Integration and Foreign Ownership for the Survival of German Enterprises during the Crisis 2008-2010, December 2013 published in: [Jahrbücher für Nationalökonomie und Statistik 234 (2014), 6, 758-774]

No.287: *Joachim Wagner*: Credit constraints and exports: A survey of empirical studies using firm level data, December 2013

No.286: *Toufic M. El Masri*: Competition through Cooperation? The Case of the German Postal Market, October 2013

No.285: *Toufic M. El Masri*: Are New German Postal Providers Successful? Empirical Evidence Based on Unique Survey Data, October 2013

No.284: *Andree Ehlert, Dirk Oberschachtsiek,* and *Stefan Prawda*: Cost Containment and Managed Care: Evidence from German Macro Data, October 2013

No.283: *Joachim Wagner* and *John P. Weche Gelübcke*: Credit Constraints, Foreign Ownership, and Foreign Takeovers in Germany, September 2013

No.282: *Joachim Wagner*: Extensive margins of imports in The Great Import Recovery in Germany, 2009/2010, September 2013 [published in: Economics Bulletin 33 (2013), 4, 2732-2743]

No.281: *Stefan Baumgärtner, Alexandra M. Klein, Denise Thiel,* and *Klara Winkler*: Ramsey discounting of ecosystem services, August 2013

No.280: *Antonia Arsova* and *Deniz Dilan Karamen Örsal*: Likelihood-based panel cointegration test in the presence of a linear time trend and cross-sectional dependence, August 2013

No.279: *Thomas Huth*: Georg von Charasoff's Theory of Value, Capital and Prices of Production, June 2013

No.278: *Yama Temouri and Joachim Wagner*: Do outliers and unobserved heterogeneity explain the exporter productivity premium? Evidence from France, Germany and the United Kingdom, June 2013 [published in: Economics Bulletin, 33 (2013), 3, 1931-1940]

No.277: *Horst Raff and Joachim Wagner*: Foreign Ownership and the Extensive Margins of Exports: Evidence for Manufacturing Enterprises in Germany, June 2013

No.276: *Stephan Humpert*: Gender Differences in Life Satisfaction and Social Participation, May 2013

No.275: *Sören Enkelmann and Markus Leibrecht*: Political Expenditure Cycles and Election Outcomes Evidence from Disaggregation of Public Expenditures by Economic Functions, May 2013

No.274: *Sören Enkelmann*: Government Popularity and the Economy First Evidence from German Micro Data, May 2013

No.273: *Michael Berlemann, Soeren Enkelmann,* and *Torben Kuhlenkasper*: Unraveling the Relationship between Presidential Approval and the Economy – A Multi-Dimensional Semi-Parametric Approach, May 2013

No.272: *Michael Berlemann* and *Sören Enkelmann*: The Economic Determinants of U.S. Presidential Approval – A Survey, May 2013

No.271: *Soeren Enkelmann*: Obama and the Macroeconomy Estimating Social Preferences Between Unemployment and Inflation, May 2013

No.270: *Anja Köbrich León*: Does Cultural Heritage affect Employment decisions – Empirical Evidence for Second Generation Immigrants in Germany, April 2013

No.269: *Anja Köbrich León* and *Christian Pfeifer*: Religious Activity, Risk Taking Preferences, and Financial Bahavior, April 2013

No.268: *Anja Köbrich León*: Religion and Economic Outcomes – Household Savings Bahavior in the USA, April 2013

No.267: *John P. Weche Gelübcke* and *Isabella Wedl*: Environmental Protection of Foreign Firms in Germany: Does the country of origin matter?, April 2013

(see www.leuphana.de/institute/ivwl/publikationen/working-papers.html for a complete list)

Leuphana Universität Lüneburg
Institut für Volkswirtschaftslehre
Postfach 2440
D-21314 Lüneburg
Tel.: ++49 4131 677 2321
email: brodt@leuphana.de

www.leuphana.de/institute/ivwl/publikationen/working-papers.html