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Temporary Agency Employment in Germany – a Strategic "Buffer" for Firms and Regions in the Crisis?

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Uwe Neumann[1]

Temporary Agency Employment in Germany – a Strategic "Buffer" for Firms and Regions in the Crisis?

Abstract

In many European countries the number of employees hired via temporary work agencies has increased considerably over the past two decades, up to around 2% of the total workforce in the European Union today. Different studies have found the demand for agency employment to precede GDP growth. This paper explores to what extent firms utilised agency work as a strategic "buffer" to adapt to variation in labour demand in Germany over the period 2006-2014, i.e. before, during and after the crisis of 2008/2009. Drawing on microdata from a representative employer survey (IAB Establishment Panel) and statistics on regional labour markets, the analysis finds only limited evidence on a systematic firm-level buffer function of temporary agency work. Rather, in many firms hiring from agencies is possibly part of a business strategy relying on flexible recruitment. An analysis of the average treatment effect on the treated (ATT) using a propensity score matching procedure suggests that particularly in regions with high unemployment, such flexibility during the crisis supported adaptation of client firms to economic change, since they were less reluctant than non-clients to hire after the crisis.

JEL Classification: L25, J23, M54, R11

Keywords: Temporary agency work; regional labour markets; establishment data; propensity score matching

December 2017

1 Uwe Neumann, RWI. – *This paper was motivated by work in the research project "Arbeitsqualität in Zeitarbeitsverhältnissen (Working conditions in temporary agency employment)", carried out by RWI and ISG Institute for Social Research on behalf of the Federal Ministry of Labour and Social Affairs (BMAS) between 2012 and 2014 (BMAS 2017). I thank the colleagues from the project team, Ronald Bachmann, Daniel Baumgarten, Michael Fertig, Matthias Gieseke, Helmut Hägele and Michael Kvasnicka for many helpful discussions. I am also grateful to Ana Maria Diaz, Martina Fuchs and participants of ERSA 2017 Conference in Groningen for helpful comments, to Lea Eilers and Rahel Felder for technical support and to Felix Lenz for support and many helpful comments during his internship at RWI. This study uses the IAB Establishment Panel, Wave(s) 2006 - 2014. Data access was provided via remote data access by the Research Data Centre (FDZ) of the German Federal Employment Agency (BA) at the Institute for Employment Research (IAB) (project number 1134). All errors in the research resulting in this paper are entirely my own. –* *All correspondence to: Uwe Neumann, RWI, Hohenzollernstr. 1-3, 45128 Essen, Germany, e-mail: uwe.neumann@rwi-essen.de*

1 Introduction

Since 2000, the number of temporary agency workers has increased considerably across Europe. Although temporary work still represents a modest share of total employment (around 1.8% in the European Union on average in 2012) (Idea Consult 2015), it has become a feature of labour market flexibility in many European countries. The level of employment in temporary agencies has been found by different studies, e.g. from Germany and the Netherlands, to precede cyclical fluctuation (Jahn/Bentzen 2010, Spermann 2011). Temporary agency work may thus serve as a "buffer", allowing firms a certain degree of flexibility in adjusting to phases of economic growth and decline, as far as their human resource management is concerned. Particularly in periods of growth, temporary agency work might also provide a "stepping stone" into permanent employment, if some temporary agency workers are hired directly by the client firms they are assigned to or by other firms.

Due to within-country variation in the mix of industries, the regional economic context coincides with utilisation of temporary work and some agencies specialise on particular markets and regions. Previous research has focussed primarily on the role of temporary work in supporting the labour market transition from unemployment to work. Using Germany as a case study, it is the goal of this paper to examine to what extent firms revert to temporary agency work as a "buffer", making it easier for them to adapt to fluctuation in their demand for labour. The data base comprises firm-level information for the period from 2006 to 2014, which makes it possible to study recruitment over some time before, during and after the crisis of 2008/2009. The central research questions are

- whether firms utilise temporary agency work as a strategic "buffer" by hiring (or dismissing) temporary agency workers preceding periods of firm-level growth or decline,

- whether, in particular, hiring from temporary agencies typically precedes a longer-lasting firm-level job growth that would suggest a "stepping stone" function of temporary agency work,
- whether agency work was utilised as a "buffer" during the crisis period of 2008/2009 that affected post-crisis firm performance, and
- to what extent a possible "buffer" function of temporary agency work varies alongside the regional economic context.

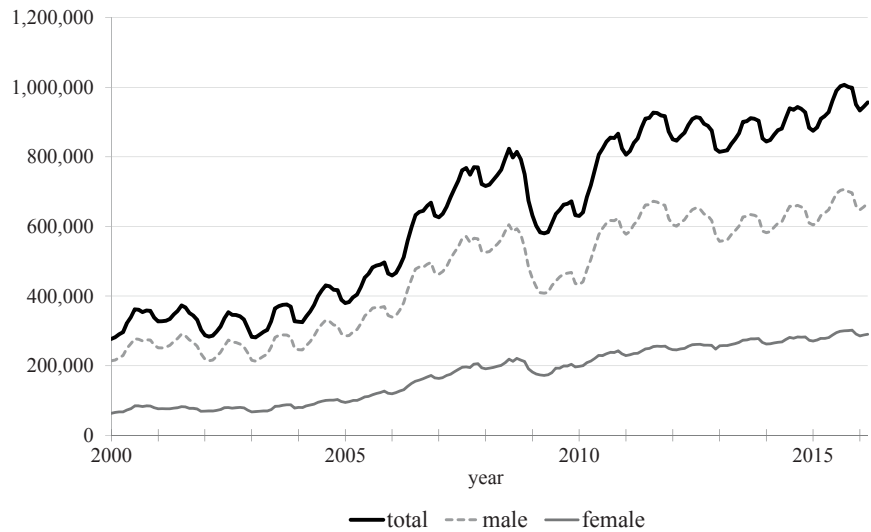
The following section provides a brief review of the literature on the role of temporary agency employment in Europe. The third section outlines the data and empirical approach. Section four examines the regional and section five the firm-level "buffer" function of temporary agency work. The final section discusses the findings. Different estimation methods (cross-sectional growth regressions, fixed-effects regressions) examining the interrelation between hiring (or dismissing) temporary agency workers and subsequent firm-level performance reveal only limited evidence on a "buffer" function. A comparison of post-crisis performance between client- and similar non-client firms using a propensity score matching procedure suggests that particularly in regions with high unemployment, temporary agency work supported adaptation of client firms to economic change insofar as firms that employed agency workers during the crisis recruited more employees liable to social security than non-client firms after the crisis.

2 Literature Review

Temporary agency work has become common in many European countries. In 2008, the European Union passed a directive in order to establish certain Europe-wide levels of worker protection in temporary agency employment (European Union 2008). In Germany, agency employment increased in line with deregulation since the 1990s, particularly during the Hartz reforms of the 2000s (Figure 1). Temporary work in this context describes a triangular relation between employees, temporary employment agencies and other firms hiring employees from temporary employment agencies. In this triangular relation an agency finds a worker and signs an employment contract. Other companies in need of short-term workers contract with the agency to hire workers on specific assignments.

For firms, temporary agency employment increases flexibility to adjust to cyclical change and externalises the costs of recruitment (Burda/Kvasnicka 2006). Utilisation of agency work has been found to precede cyclical fluctuation, since in times of economic decline firms release temporary agency workers before laying off regular employees and in the begging of a period of economic growth they may recruit temporary workers while they are still reluctant to hire permanently. During the economic crisis of 2008/2009, temporary agency employment in Germany decreased rapidly in 2009, followed by a similarly steep rise in 2010. The majority of temporary agency workers are male. Change in the total number of male temporary agency workers coincides with cyclical fluctuation. The number of female temporary agency workers, on the other hand, has increased constantly and more independently of the cyclical context since 2000 (Figure 1).

Figure 1
Temporary agency employees in Germany



Own figure, data source: BA (2017)

It has been argued in favour of agency employment that particularly in periods when firms are reluctant to hire on a permanent basis, temporary work may serve as a "stepping stone" into permanent employment. However, trade unions question this "stepping-stone function", since apparently transition to other forms of employment is relatively rare (wmp consult 2013). On the contrary, firms may even seek to replace regular employees by lower-paid temporary workers (Jahn/Weber 2013, Burkhert et al. 2014). For employees, an increase in the share of jobs in temporary agency work may thus combine with a reduction of earnings and a loss of job security (Autor/Hausmann 2010, Bachmann/Bredtmann 2016, Brülle 2013, Håkansson/Isidorsson

(2015). Yet, Hveem (2013) argues that temporary agency work may prevent individuals from exiting the labour market altogether.

To overcome some of the criticism, which associates agency work with a reduction of wages and employment rights, during this decade in Germany various steps have been taken to re-regulate the agency sector. These steps comprise, e.g. demanding equal pay for agency and client firm employees and limiting the duration of agency worker assignments to client firms. Notwithstanding these regulations, the number of agency workers in Germany has continued to increase. Limiting the duration of assignments only affects a minority of agency workers, in any case. In 2011, 73% of temporary agency employees in Germany had been employed by the same agency for less than 9 months (Haller/Jahn 2014).

Previous research has been concerned largely with the question whether temporary work does support the labour market transition of individuals from unemployment to work. As it is understood to be a function of agency work to support firms in adjusting their labour force to changing seasonal and cyclical conditions (Jahn/Bentzen 2010), there is a strong case also for examining its importance from the perspective of firms, specific economic sectors and regions. In fact, in Germany many temporary work agencies specialise on selected sectors and develop strong regional ties (BMAS (ed.) 2017). Meyer (2013) points out that in the period of crisis between 2008 and 2009, there was great regional variation in the reduction of agency employment. The number of agency workers declined particularly in regions with a strong sectoral focus on export-oriented manufacturing industries, e.g. the automobile industry, mechanical engineering, steel manufacture, shipbuilding, naval architecture and electronics. On the other hand, reduction was low in large cities (Berlin, Hamburg, and Munich) and in regions with a strong specialisation on services, e.g. in the health sector.

Bellmann/Kühl (2008) show that between 1998 and 2006, among client firms in Germany there was an increase particularly in the share of "intensive users", i.e. firms, in which agency workers account for over 20% of the total workforce. They argue that among these client firms the buffer function of temporary agency employment becomes subordinate in the light of a more general strategic approach relying increasingly on short-term and flexible recruitment. Rather than providing flexibility as a buffer, temporary agency work may thus become utilised as a more integral part of a human resource management focussing on flexible recruitment altogether, quite independently of cyclical or seasonal fluctuation, the regional context or the sectoral affiliation.

Baumgarten and Kvasnicka (2017) examine how utilisation of temporary agency work among client firms in Germany contributed to workforce development, use of short-time work, and business performance during the period 2007-2010. They show that client firms with a greater pre-crisis use of temporary agency work fared better with the sharp decline in demand during the 2008/2009 recession and made less frequent use of government-sponsored short-time work schemes during the crisis. They argue that cutting down on the number of temporary agency workers during the crisis may have functioned as a less costly adjustment mechanism than dismissing regular workers and, thus, provided these client firms with a buffer mechanism.

It is the goal of the following analysis to explore whether temporary agency work serves as a "buffer" insofar as its utilisation coincides with variation in firm-level labour demand and performance, given the regional and cyclical context during and after the crisis up to 2014.

3 Data and methods

The following analysis explores to what extent utilisation of temporary employment coincided with firm-level job growth and earnings during the period from 2006 to 2014. This period can be subdivided into three cyclical phases, each comprising three years before (2006-2008), during and shortly after (2009-2011) and after (2012-2014) the economic crisis of 2008/2009. The data will be compiled from an employer survey that is carried out yearly between June and October (see below) and regional statistics. Since the survey from 2008 reports on firm performance during the previous year, the results for 2008 are defined as "pre-crisis".

A first preliminary step explores what characteristics of the regional economic context coincide with regional-level utilisation of temporary agency work. This analysis draws on data from German employment statistics, compiled at the level of municipal districts (Kreise and kreisfreie Städte) and on various statistics provided at this territorial level by the statistical offices of the federal states and by the German federal statistical office. It can be argued that municipal districts may not represent regional economic entities thoroughly. While larger commuter zones are more appropriate for purposes of regional labour market analysis in general, it is the goal here to account for local economic characteristics in closer vicinity to the location of client firms. These characteristics are more adequately represented by features of the local municipalities (Kreise).

The analysis of the regional context is based on a spatial autoregressive model allowing for spatial autocorrelation among the dependent variable and the error term,

(1) $\log(y_i) = \lambda \sum_{j=1}^{n} w_{ij} \log(y_j) + \sum_{p=1}^{k} x_{ip} ß_p + u_i$

(2) $u_i = \rho \sum_{p=1}^{k} m_{ij} u_j + \varepsilon_i$

in which y_i is the outcome value in terms of the share of temporary agency workers among all employees liable to social security in 2012, w_{ij} and m_{ij} represent spatial weights, which are inversely related to the distance (in kilometres) between the centres of districts i and j, x is a set of k independent variables characterising regional economic variation (Ragniz 2012) and u_i is a spatial autoregressive error term, such that residuals ε_i are assumed to be independent and identically distributed, the parameter λ measures the extent of spatial interaction in the spatial lag of the dependent variable and ρ measures spatial dependence in the error term. The spatial-autoregressive model implemented in the analysis uses a generalised spatial two-stage least-squares (GS2SLS) estimator (Arraiz et al. 2010). In an alternative estimation, the dependent variable is replaced by growth in the district-level share of agency workers 2012-2014.

The second step uses the German IAB Establishment Panel, an annual representative survey comprising around 15,500 firms over the study period from 2006 to 2014 (Ellguth et al. 2014) as data source. Specification (3) explores growth in the number of jobs liable to social security contributions, or alternatively growth of income per employee in client firms during three phases t_1 - t_0 (2006-2008, 2009-2011, 2012-2014) in relation to firm-level and regional characteristics at each respective base year t_0, i.e. 2006, 2009, 2012.

(3) $y_{it1} \,/\, y_{it0} = a_{0t0} + a_1 \log(y_{it0}) \; + \; a_2 E_{it0} + a_3 I_{it0} + a_4 D_{it0} + \; a_5 R_{it0} + \varepsilon_{it0}$

in which y_i is the outcome value in terms of firm-level jobs or wages per employee, E_i is a set of characteristics of the workforce (total number of employees, shares of apprentices, part-time workers, female employees, workers in temporary employment and the share of temporary

agency employees), I_i characterises investment and hiring of new employees, D_i a range of dummy variables representing membership in chambers of commerce, whether the firm is bound by a collective labour agreement, the main sector of activity, the establishment type (individual enterprise or other type), the (self-estimated) status of technical equipment and the broad regional affiliation (North Rhine-Westphalia, Northern, Southern or Eastern Germany) and R_i regional prosperity (average income, unemployment rate).

In the analysis for t_0 = 2012, a separate estimation incorporates a lagged variable representing the share of firm-level temporary agency workers in t_{-1} (2009). This specification explores whether firms with a relatively large share of temporary agency workers at the beginning of the crisis fared better in terms of jobs and wages after the crisis, i.e. providing a more long-term buffer function extending into post-crisis regeneration.

Alternatively, equation (4)

$$(4)\ \log(y_{it}/y_i) - \overline{\log(y_{it}/y_i)} = a_1(E_{it} - \overline{E_i}) + a_2(I_{it} - \overline{I_i}) + a_4(R_{it} - \overline{R_i}) + \varepsilon_{it} - \overline{\varepsilon_i}$$

represents a fixed-effects model, in which the deviation of the number of social security jobs from the average number of these jobs in firm i during our three study periods (2006-2008, 2009-2011, 2012-2014) is regressed on the deviation of firm characteristics E_t, I_t and regional characteristics R_t from their within-firm average during the study periods. In contrast to the previous specifications, the fixed-effects approach eliminates unobserved individual and regional heterogeneity likely to affect the estimation and incorporates the information contained in all years of the panel survey. It is assumed that a "buffer" function of temporary agency work implies a coincidence between the share of temporary agency workers and the total number of

employees liable to social security in a firm during each three-yearly period (or, in fact, during the total period 2006-2014).

While the information in the data does not distinguish between employees liable to social security and those in tax-free "Minijobs" (with a maximum salary of € 400 per month until 2012, € 450 per month since 2013) among the agency workers hired by a client firm (but it does report on the number of employees liable to social security contributions in firms as a whole), in the following hiring or dismissing temporary agency workers in case of a "buffer" function would be expected to affect the firm-level number of jobs liable to social security contributions (i.e. paid above the "Minijob" threshold). If the agency workforce in a client firm includes employees paid above the "Minijob" level, in case of their dismissal the number of employees liable to social security altogether will decline and if they are hired the total number will increase. If, say, in the first year of a three-year period many new temporary agency workers were hired (for jobs paid more than the "Minijob" threshold) by a firm and they would all be taken over as regular employees (liable to social security contributions), the total number of more-than-Minijob-employees in this firm would not vary over the period, whereas the share of temporary agency workers would decrease in the second year. In this case, no statistical correlation between the share of temporary agency workers and the total number of employees liable to social security would be measured. In the fixed-effects regressions, both a (significantly) positive coefficient for the share or temporary agency workers and a statistically insignificant coefficient may thus comply with a "buffer" function. A negative coefficient, however, would contradict

the "buffer" hypothesis as defined in this paper (i.e. affecting client-firm performance regarding jobs liable to social security contributions over a period of three years). Since it would be difficult to interpret the interrelation between average firm-level wages and the share of temporary agency workers with respect to the potential buffer function in the fixed-effects model, this step of the analysis will be restricted to job growth.

In a further step, the performance of client firms in terms of job and wage growth during and after the crisis is compared to similar non-client firms. For this purpose, a matching procedure will be applied. In a propensity score matching (Rosenbaum and Rubin 1983) the average treatment effect on the treated (ATT) is examined for base years 2009 and 2012. In the estimation

$$(5)\ \widehat{ATT} = \frac{1}{n} \sum_{i \in I_1} \left[{}^{Y_{1i\,t1}}/_{Y_{1i\,to}} - \sum_{j \in I_0} \omega\,(i,j)_{t0} \cdot {}^{Y_{0i\,t1}}/_{Y_{0i\,to}} \right]$$

n is the number of firms in the treatment group I_1 (in this case being a client firm), I_0 indicates firms in the control group (non-clients) and $\omega\,(i,j)$ is a matching procedure specific weight derived from basic firm-level and regional characteristics. The motivation for statistical matching is to find firms in the control group that resemble members of the treatment group, given a set of observable covariates. The propensity score, which is estimated from a binary choice model, condenses the information from the covariates into a single index function such that firms in the treatment and control group with the same distribution on the covariates would share the same score. It is assumed that conditional on the covariates the outcome in terms of job or wage growth among client firms (Y_1) would be the same as that among the control group (Y_0), if they had not become temporary work agency clients.

From a range of different matching algorithms the (Epanechnikov) kernel approach is chosen, in which client firms are matched with a weighted average of all controls such that the weight

is inversely proportional to the distance between clients and control group within a predefined bandwidth[1]. Compared to other algorithms of nearest-neighbour-matching, the risk of bad matches in case of relatively great dissimilarity between a member of the treatment group and the closest control member is thus avoided (Heckman et al. 1998, Stroka 2016).

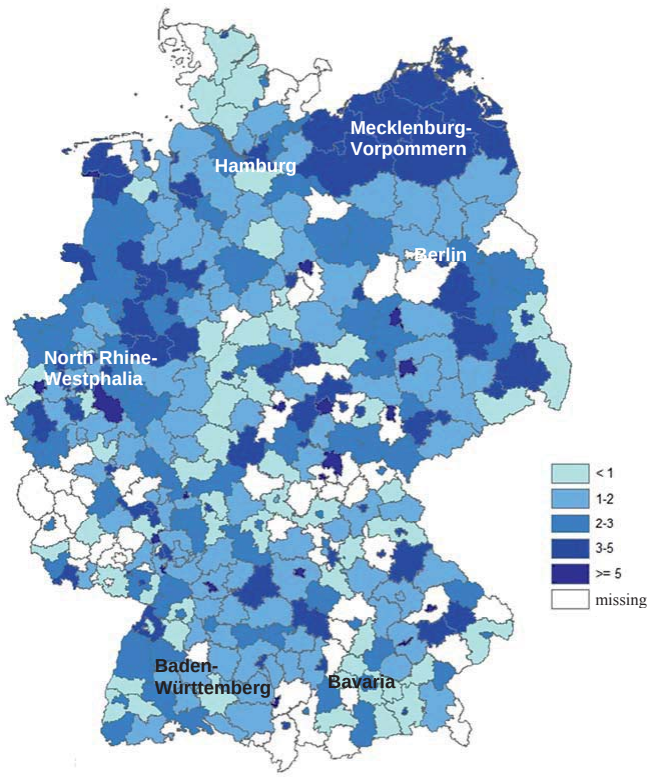
The ATT will be calculated with respect to growth in jobs and wages in client firms during two periods, 2009-2011 and 2012-2014. Further, the ATT in terms of performance 2012-2014 will also be examined for client firms from t_{-1} (2009), thus studying whether utilising temporary agency work during the crisis provided client firms with an advantage affecting their post-crisis prosperity. Such kind of post-crisis effect would suggest that for client firms, agency work did provide a "buffer" affecting their longer-term performance. Separate estimations account for the potential effects of utilising agency work on job growth and earnings in client firms.

4 Regional variation in the utilisation of temporary agency work

After the economic crisis of 2008/2009, as explained the total number of employees in temporary agencies increased rapidly. In 2012, the share of temporary workers among the total workforce varied considerably across municipal districts (Kreise und kreisfreie Städte) in Germany (Figure 2).

[1] Propensity score matching will be carried out using the psmatch2 stata module, version 4.0.11 (Leuven/Sianesi 2003). The predefined bandwidth for Epanechnikov kernel matching is set to 0.06. In a study using data from the National Job Training Partnership Act (JTPA) Study funded by the U.S. Department of Labor, Heckman et al. (1997) find a bandwidth of 0.06 (comprising a propensity score from −0.06 to +0.06) out of a range of tested bandwidths to optimise the tradeoff between variance and bias and to produce the smoothest fits. The sample from the JTPA study consists of over 20,000 young adults who applied for job-training support across the U.S. between 1987 and 1989. They were assigned randomly to either a programme group or a control group.

Figure 2
Share of employees liable to social security contributions in temporary employment agencies
2012, in %



Source: Federal Employment Agency

Table 1
Descriptive statistics, regional level
2012, mean

	all districts	districts by tercile of unemployment rate		
		lowest	medium	highest
average gross annual wages (in €)	20,487	21,909	20,836	18,723
employees liable to social security	76,7,81	61,790	76,353	92,320
share among employees liable to social security (in %)				
temporary agency workers	2.4	1.9	2.5	2.8
male	54.4	56.5	53.6	53.1
aged < 25	12.5	14.0	12.6	11.0
employees aged > 50	29.3	28.4	28.8	30.7
without qualification	12.7	13.5	13.2	11.4
share of employees in largest sector	26.3	32.8	24.6	21.2
gross value added in agriculture (in %)	1.2	1.5	1.2	1.0
gross value added in manufacturing	24.4	30.3	23.0	19.8
unemployment rate (in %)	6.8	3.8	6.2	10.5
observations	307	105	98	104

Author´s calculations based on data from the Federal Employment Agency and Federal Statistical Office

Among employees liable to social security, in 2012 the share of temporary agency workers was above the national average of 2.4% (Table 1) in many urban districts (kreisfreie Städte) in all parts of Germany, in both rural and urban districts of East Germany, on the border between North Rhine-Westphalia and Lower Saxony in the North-West, but also in some more remote districts of Baden-Württemberg and Bavaria in the South of Germany. The estimations according to equations (1) and (2) demonstrate that at the regional level, utilisation of temporary agency work coincides with the sectoral specialisation. A relatively high share of temporary agency employees work in regions, where there is an overall focus on manufacturing, but where employment is not concentrated in one specific industry (which would be a characteristic of more prosperous regions, where utilisation of agency work is less common, Tables 1 and 2).

Table 2
Regional-level regression of share (growth) of temporary agency employment on selected labour market characteristics
2012

	share of employees liable to social to social security in temporary employment agencies			
	2012, in %		change 2012-2014	
	OLS	GS2SLS	OLS	GS2SLS
	(1)	(2)	(3)	(4)
empl. liab. soc. sec. (log)	-0.297	-0.266	0.0571	0.0593
	(0.212)	(0.211)	(0.160)	(0.108)
empl. in agriculture (in %)	-0.353***	-0.379***	-0.0188	-0.0122
	(0.0770)	(0.0771)	(0.0507)	(0.0411)
empl. in manufacturing (in %)	0.0727**	0.0723**	-0.0211	-0.0221
	(0.0248)	(0.0322)	(0.0270)	(0.0252)
male employees (in %)	0.0521*	0.0468	-0.0356*	-0.0348*
	(0.0285)	(0.0348)	(0.0177)	(0.0190)
employees aged < 25 (in %)	0.111***	0.146**	0.00588	0.0151
	(0.0331)	(0.0673)	(0.0400)	(0.0375)
employees aged > 50 (in %)	-0.208***	-0.212***	0.0710**	0.0645**
	(0.0592)	(0.0516)	(0.0236)	(0.0268)
empl. without qualification (in	0.169	0.172***	0.0518	0.0425
	(0.112)	(0.0585)	(0.0415)	(0.0296)
employees in largest sector(in	-0.114***	-0.115***	0.0261	0.0273
	(0.0297)	(0.0389)	(0.0308)	(0.0288)
East Germany (dummy)	3.259***	3.541***	0.155	0.108
	(1.024)	(0.616)	(0.350)	(0.257)
unemployment rate (in%)	0.0719	0.0687	-0.0284	-0.0156
	(0.0410)	(0.0450)	(0.0180)	(0.0269)
constant	6.106	5.132	-1.406	-1.469
	(4.106)	(3.241)	(2.526)	(1.680)
R^2	0.36		0.15	
λ		0.194		0.958
		(0.186)		(0.857)
ρ		0.423**		-0.0312
		(0.187)		(0.739)
observations	307	307	292	292

Author´s calculations based on data from the Federal Employment Agency and Federal Statistical Office

Given other basic regional features, a high share of temporary agency employees is more characteristic of regions in East Germany. Further, the regional share of temporary agency employees correlates with the age composition of employees, a higher share being found in regions with a relatively "young" workforce. An increase in the share of temporary agency employees between 2012 and 2014, however, was more characteristic of regions with an older workforce. The parameters λ and ρ in the models allowing for spatial effects (estimations 2 and 4 in Table 2) suggest significant spatial autocorrelation in the residuals of the estimation for the share of temporary agency employees (estimation 2). Since basic economic characteristics of regions

and neighbouring regions at the level of municipal districts (Kreise) apparently relate to the degree of utilisation of temporary agency work, in the following firm-level analysis it will be important to control for basic regional characteristics (unemployment rates, average income). At large, the results in the spatial models are similar to those of the OLS estimations, with the exception that a significant coefficient is found for the share of employees without a formal qualification (estimation 2).

5 Firm-level variation

5.1 Cyclical variation in the utilisation of agency employment across client firms?

With an average workforce of over 100 employees in 2012, client firms are typically much larger than non-clients (among which the average workforce is 14 employees) (Table 3). Over 60% of client firms engage in manufacturing, but only below 20% of non-clients (in 2012). Average wages are much higher in the (mainly) large industrial firms hiring agency workers, the shares of female employees and employees with part-time contracts much lower than among non-client firms. Labour agreements are much more common in client firms and these are, in contrast to non-client firms, rarely single-establishment firms. Agency workers are thus mainly hired by large firms operating under strongly regulated labour market conditions. On average, in 2012 16.6% of employees in client firms where hired from agencies.

Table 3
Descriptive statistics, firm level[1]

	2006		2009		2012	
	clients	non-clients	clients	non-clients	clients	non-clients
gr. month. wages/emp. (in €, mean)	2,301	1,302	2,200	1,302	2,337	1,340
employees l. soc. security (mean)	110.6	10.2	105.7	10.7	97.6	10.7
total number of employees (mean)	116.5	13.5	112.6	14.1	103.7	14.1
investment (mean)	1,012,772	66,098	1,222,035	73,804	916,872	70,327
share of employees (in %) (mean)						
female	25.1	47.8	27.7	48.2	26.9	48.5
apprentices	5.6	4.0	4.6	3.9	4.8	3.3
part-time	11.4	30.8	12.7	27.9	14.6	34.7
temporary contracts	5.2	3.3	6.7	3.1	5.7	3.9
temporary agency employees	15.3	-	16.6		16.6	-
hired in previous year	5.8	5.2	4.4	4.8	6.3	5.8
dummy variables = 1 (in %)						
labour agreement	54.0	35.9	56.8	35.0	49.3	30.5
good year	38.3	24.0	47.2	34.2	50.3	42.1
one location	14.9	53.3	10.7	54.5	20.3	53.3
new equipment	62.9	65.2	68.4	68.3	64.6	64.2
West German owner	70.8	72.0	73.8	71.9	69.1	70.9
chamber member	68.3	49.6	66.3	51.5	65.4	52.3
established before 1990	61.8	49.8	50.1	43.0	45.6	36.9
manufacturing	63.2	20.6	56.3	20.2	61.2	19.3
North	17.5	15.6	18.4	15.8	15.6	15.9
NRW	23.3	19.9	23.0	20.0	20.0	19.9
South	38.6	43.1	41.1	43.2	44.7	43.1
East	18.2	18.9	17.6	20.9	19.7	21.1
regional wages (ann.) (in €) (mean)	18,906	18,653	19,394	19,526	21,209	20.878
reg. unemployment rate (mean)	11.7	11.9	8.6	7.9	7.0	6.9
obs. (max.)	2,119	13,156	1,750	13,563	2,178	13,178

Author´s calculations based on IAB Establishment Panel and data from the Federal Statistical Office (regional wages and regional unemployment rate); [1]weighted according to weights provided by the IAB; gr. month wages/emp. = gross monthly wages per employee

Among the covariates included in the analysis, as expected average wages per employee in each period were correlated negatively with subsequent growth in wages. Concerning job growth, a significant (and positive) correlation with average wages was found (only) in the post-crisis period (estimation 6 in Table 4). Before the crisis a higher share of temporary agency workers in the base year 2006 correlated with below-average wage growth in the subsequent phase (estimation 1 in Table 4).

Table 4
Growth in wages/employee and jobs liable to social security in client firms (OLS)

	2006-2008		2009-2011		2012-2014	
Base year	2006	2006	2009	2009	2012	2012
growth in…	wages/empl.	jobs	wages/empl.	jobs	wages/empl.	Jobs
	(1)	(2)	(3)	(4)	(5)	(6)
wages/employee (log)	-18.614***	8.131	-11.025**	-0.177	-14.783***	6.120*
	(4.494)	(3.404)	(4.061)	(2.698)	(4.373)	(3.267)
employees (log)[1]	1.689*	-0.367	0.014	-0.565	2.121*	-0.022
	(0.932)	(0.849)	(1.071)	(0.880)	(1.235)	(1.073)
apprentices	-0.274	-0.017	0.089	0.213	0.089	-0.027
	(0.304)	(0.197)	(0.216)	(0.143)	(0.192)	(0.172)
female	-0.025	-0.087	0.076	-0.073	-0.274***	0.056
	(0.096)	(0.068)	(0.068)	(0.059)	(0.083)	(0.056)
part-time	0.222	0.325***	-0.445***	0.129	0.092	0.041
	(0.138)	(0.108)	(0.098)	(0.082)	(0.125)	(0.109)
temporary contracts	0.006	0.171	-0.021	0.036	-0.126	0.022
	(0.147)	(0.140)	(0.065)	(0.088)	(0.099)	(0.112)
TAE	-0.158*	0.034	-0.003	-0.086	0.030	-0.025
	(0.095)	(0.264)	(0.106)	(0.066)	(0.079)	(0.052)
TAE: 3-year-lag					-0.351***	-0.244**
					(0.086)	(0.097)
employees hired	0.220	0.180	0.056	0.572***	0.293	0.159
	(0.158)	(0.181)	(0.142)	(0.174)	(0.324)	(0.194)
investment	0.000	0.000	0.000	0.000**	0.000**	-0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
labour agreement	7.878***	0.774	2.110	-1.646	-2.351	-0.751
	(2.902)	(2.177)	(3.290)	(2.332)	(2.865)	(1.947)
good year	-0.754	0.684	6.760***	3.739	-0.588	2.467
	(2.293)	(2.322)	(2.550)	(2.275)	(2.673)	(1.979)
new equipment	2.733	2.813	-3.404	-1.582	-3.877	2.762
	(3.041)	(2.314)	(2.811)	(2.514)	(2.724)	(2.000)
one location	8.864	12.650***	-13.850**	-0.942	-1.632	0.544
	(6.604)	(4.694)	(5.504)	(4.456)	(4.483)	(4.877)
West German	-0.348	5.700***	-2.069	2.638	-8.063**	2.904
	(2.624)	(2.350)	(3.851)	(2.454)	(3.586)	(3.116)
chamber	5.549	5.372*	-2.001	-0.362	3.290	-2.159
	(3.556)	(2.530)	(3.158)	(2.847)	(3.675)	(3.497)
pre 90	-2.880	-5.321*	0.643	-2.801	3.810	-2.694
	(3.480)	(2.512)	(2.937)	(2.656)	(3.032)	(2.226)
manufacturing	3.355	4.418*	-2.802	-0.245	0.969	4.043
	(3.336)	(2.302)	(3.311)	(2.646)	(3.415)	(3.092)
North/NRW/South	Yes	Yes	Yes	Yes	Yes	Yes
regional wages/unempl.[2]	Yes	Yes	Yes	Yes	Yes	Yes
constant	116.664***	-70.857	72.248**	3.528	134.708***	-58.406**
	(37.071)	(28.169)	(33.132)	(21.489)	(38.529)	(29.590)
observations	847	1,112	705	776	609	662
R^2	0.233	0.220	0.216	0.137	0.222	0.208

Author´s calculation based on IAB Establishment Panel and data from the Federal Statistical Office (regional wages/unemployment rate); pooled cross-section; sample comprises 5th – 95th percentile of dependent variables robust standard errors in parentheses; weighted according to weights provided by the IAB; [1]total employees: est. 1, 3, 5, employees liable to soc. sec.: est. 2, 4, 6; [2]averge regional wages: est. 1, 3, 5, unemployment rate: 2, 4, 6; ***/**/*: significant 0.01/0.05/0.1 level; TAE: temporary agency employees

Otherwise, the cross-sectional growth regressions report no statistically significant coefficients that would suggest an interrelation between the share of temporary agency employees in 2009 or 2012 and subsequent job or wage growth. However, in the analysis for job and wage growth 2012-2014, a negative coefficient suggests a negative effect of the share of agency employees in 2009 (estimations 5 and 6). It would contradict the "buffer" hypothesis that a relatively high share of agency workers at the beginning of the crisis combined with below-average performance after the crisis. Further, since before the crisis temporary agency work seems to have been utilised particularly by firms performing below the average in terms of wage growth (estimation 1), the cross-sectional analysis would suggest wage reduction as a more likely role of temporary agency work than acting as a "buffer" that helps maintaining jobs across mid-term business cycles.

5.2 Cyclical variation of the utilisation of agency employment within client firms?

Concerning within-firm job growth, the fixed-effects regressions according to equation (4) find no statistically significant coincidence with growth in wages per employee, although the coefficients for each of the three sub-periods and for the total period are negative (Table 5).

An increase in the share of employees with temporary contracts correlated with job growth during all periods, i.e. new employees were hired mainly on a temporary basis. At the firm level, job growth was likely to coincide with a (self-assessed) "good business year". In case of an increase in regional unemployment, firms were unlikely to experience job growth during all periods. An increase in the share of temporary agency employees correlated with a (slight) decrease of the total workforce liable to social security during all periods. Most likely, recruitment of agency workers thus combined with a total firm-level job cut in any given year, which contradicts the "buffer" hypothesis.

Table 5
Jobs in client firms (panel regression, fixed effects)

	2006-2008	2009-2011	2012-2014	2006-2014
wages/employees (log)	-0.030	-0.031	-0.014	-0.018
	(0.020)	(0.026)	(0.033)	(0.018)
apprentices	0.003	0.007***	0.008**	0.004***
	(0.002)	(0.002)	(0.004)	(0.001)
female	0.000	-0.000	-0.004*	-0.002**
	(0.001)	(0.000)	(0.002)	(0.001)
part-time	-0.001	-0.001	-0.004**	-0.002*
	(0.001)	(0.001)	(0.002)	(0.001)
temporary contracts	0.003***	0.003**	0.005***	0.003***
	(0.001)	(0.001)	(0.002)	(0.001)
TAE	-0.002***	-0.001*	-0.003**	-0.002***
	(0.001)	(0.001)	(0.001)	(0.001)
employees hired	0.002*	0.004*	0.002	0.001
	(0.001)	(0.002)	(0.001)	(0.001)
investment	0.000	0.000	0.000	-0.000**
	(0.000)	(0.000)	(0.000)	(0.000)
good year	0.015**	0.018***	0.011*	0.019***
	(0.007)	(0.007)	(0.006)	(0.005)
unemployment rate	-0.013***	-0.018***	-0.030***	-0.012***
	(0.002)	(0.005)	(0.011)	(0.002)
constant	5.321***	5.292***	5.358***	5.248***
	(0.156)	(0.236)	(0.220)	0.135
observations	4,972	3,800	3,761	12,533
R^2 within	0.114	0.091	0.186	0.052

Author´s calculation based on the IAB Establishment Panel and data from the Federal Statistical Office (regional unemployment rate); pooled cross-section; robust standard errors in parentheses; ***/**/*: significant at 0.01/0.05/0.1 level. TAE: Temporary agency employees

In case of a very strong "stepping stone" transition of temporary agency workers to client firm employees in one particular year, a below-average share of temporary agency workers in this year could combine with a relatively large total number of employees in this firm. Since the existing literature denies a very strong stepping stone function, however, such a scenario, in which a negative coefficient might be compatible with a buffer function, is unlikely. At large, the findings contradict the hypothesis of a strong "buffer" or "stepping stone" function of temporary agency work at least regarding firm level performance over periods of three years.

Agency work assignments are usually considerably shorter than a whole year and possibly utilised as a buffer, if at all, to adjust to very short-term fluctuation in labour demand. Whether employing agency workers affects client firms over longer periods nevertheless, even if individual worker assignments are short, is examined in the following.

5.3 ATT and better cross-cycle performance for client firms?

Propensity score (kernel) matching was applied to calculate the average effects of treatment (being a client firm) on the treated (ATT) in terms of job and wage growth during (2009-2011) and after the crisis (2012-2014). Also, the ATT for client firms in 2009 regarding job and wage growth during 2012-2014 was explored.

The estimated results of logistic regressions used to calculate the propensity scores show that the likelihood of belonging to the group of client firms increased for larger industrial firms paying higher average wages (and reporting a "good business" year in the estimations for client firms from 2009 and 2012 regarding job and wage growth in the subsequent two-year period) (Table 6).

Drawing on propensity score matching, a significant ATT is found for client firms from 2009 and 2012 concerning subsequent job growth, i.e. in comparison with similar non-client firms, job growth was significantly higher among client firms during and after the crisis. Thus, it can be maintained that agency work served as a "buffer" during both periods. However, no significant ATT is found for client firms from 2009 regarding post-crisis job growth. The buffer function was therefore limited to a more short-term range.

Table 6
ATT (outcomes two-year job/wage growth) for clients during and after crisis
Logit estimation, Epanechnikov kernel matching

period	2009-2011		2012-2014		2012-2014	
growth in…	wages/empl.	jobs	wages/empl.	jobs	wages/empl.	jobs
client firm in….	2009	2009	2012	2012	2009	2009
	(1)	(2)	(3)	(4)	(5)	(6)
wages/employee (log)	0.351***	0.398***	0.371***	0.403***	0.224	0.266
	(0.133)	(0.121)	(0.136)	(0.125)	(0.172)	(0.163)
employees (log)	0.621***	0.618***	0.715***	0.697***	0.638***	0.648***
	(0.033)	(0.031)	(0.036)	(0.034)	(0.043)	(0.040)
apprentices	-0.017**	-0.010	-0.008	-0.011	-0.005	-0.007
	(0.008)	(0.007)	(0.007)	(0.007)	(0.010)	(0.010)
female	-0.003	-0.002	-0.004	-0.003	-0.003	-0.003
	(0.002)	(0.002)	(0.003)	(0.002)	(0.003)	(0.003)
part-time	-0.006*	-0.005	-0.007	-0.009**	-0.008*	-0.007*
	(0.003)	(0.003)	(0.003)	(0.004)	(0.004)	(0.004)
good year	0.451***	0.461***	0.323***	0.316***	0.054	0.072
	(0.091)	(0.086)	(0.092)	(0.088)	(0.116)	(0.111)
one location	-0.568**	-0.629***	-0.168	-0.102	-0.783**	-0.554*
	(0.243)	(0.243)	(0.204)	(0.194)	(0.336)	(0.312)
manufacturing	1.129***	1.051***	1.661***	1.663***	1.094***	1.127***
	(0.111)	(0.106)	(0.115)	(0.111)	(0.143)	(0.141)
North/NRW/South	Yes	Yes	Yes	Yes	Yes	Yes
regional wages/unempl.[1]	Yes	Yes	Yes	Yes	Yes	Yes
constant	-8.697***	-8.294***	-8.401***	-8.335***	-7.415***	-7.195***
	(1.058)	(0.949)	(1.091)	(0.972)	(1.374)	(1.264)
$\widehat{ATT}$	6.305	2.741*	5.508	2.300***	4.879	2.238
	(0.941)	(0.604)	(1.156)	(0.771)	(1.152)	(0.766)
observations	6,089	6,603	5,538	5,926	3,972	4,214
pseudo-R^2	0.2742	0.2595	0.341	0.332	0.270	0.266

Author´s calculation based on IAB Establishment Panel and data from the Federal Statistical Office (regional wages/unempl.); pooled cross-section; sample comprises 5th – 95th percentile of dependent variables; standard errors in parentheses;,[1]average wages: est. 1, 3, 5, unempl. rate: 2, 4, 6; ***/**/*: significant 0.01/0.05/0.1 level

Since a significant ATT was found concerning job growth, for this outcome a further analysis separates by terciles of regional unemployment in 2012 (Table 7). In this analysis it is shown that the ATT is limited to regions with medium and high unemployment. The descriptive statistics propose that balanced samples were constructed (Table 8). In regions with high and medium unemployment, but not in regions with low unemployment, client firms recruited more

personnel than similar non-clients and found this higher recruitment to be sustainable after the crisis (estimations 1-3 in Table 7).

Table 7
ATT (outcome job growth 2012-2014) for clients, by terciles of regional unemployment
Logit estimation, Epanechnikov kernel matching

tercile of unemployment rate 2012	low	medium	high	low	medium	high
client firm in….	2012	2012	2012	2009	2009	2009
	(1)	(2)	(3)	(4)	(5)	(6)
wages/employee (log)	0.225	0.461**	0.561**	-0.033	0.324	0.560**
	(0.226)	(0.217)	(0.218)	(0.290)	(0.283)	(0.284)
employees (log)	0.849***	0.722***	0.534***	0.660***	0.674***	0.639***
	(0.062)	(0.058)	(0.058)	(0.068)	(0.072)	(0.073)
apprentices	0.004	-0.026*	-0.011	0.019	-0.025	-0.017
	(0.012)	(0.014)	(0.014)	(0.015)	(0.018)	(0.022)
female	-0.011**	0.003	-0.002	-0.002	0.002	-0.008
	(0.004)	(0.004)	(0.004)	(0.005)	(0.006)	(0.006)
part-time	-0.008	-0.014**	-0.003	-0.014*	-0.011	0.003
	(0.006)	(0.006)	(0.005)	(0.007)	(0.008)	(0.007)
good year	-0.546***	0.147	0.218	-0.094	-0.009	0.309
	(0.151)	(0.151)	(0.163)	(0.186)	(0.196)	(0.210)
one location	-0.231	0.117	-0.638**	0.949*	0.048	-0.851
	(0.315)	(0.344)	(0.372)	(0.556)	(0.485)	(0.631)
manufacturing	1.404***	1.781***	1.865***	0.807***	1.361***	1.325***
	(0.192)	(0.195)	(0.203)	(0.235)	(0.251)	(0.259)
North/NRW/South	Yes	Yes	Yes	Yes	Yes	Yes
regional unempl.	Yes	Yes	Yes	Yes	Yes	Yes
constant	-6.983***	-9.769***	-9.133***	-4.213*	-9.843***	-9.231***
	(1.829)	1.819	(1.744)	(2.332)	(2.391)	(2.270)
$\widehat{ATT}$	2.205	3.304**	3.720***	1.107	2.721	3.156*
	(1.548)	(1.305)	(1.272)	(1.238)	(1.324)	(1.579)
observations	1,971	2,005	1,950	1,424	1,369	1,421
pseudo-R^2	0.386	0.321	0.293	0.272	0.230	0.296

Author´s calculation based on IAB Establishment Panel and data from the Federal Statistical Office (regional wages/unempl.); pooled cross-section; sample comprises 5th – 95th percentile of dependent variables; standard errors in parentheses; ***/**/*: significant 0.01/0.05/0.1 level

Firms from high-unemployment regions (but not from regions with low or medium unemployment) that had recruited agency workers during the crisis (in 2009) also grew significantly faster in terms of jobs after the crisis (estimation 6).

There are several reasons why hiring agency workers during the crisis may make a greater difference regarding overall firm-level job growth after the crisis in high- than in low-unemployment regions. First of all, in regions with high unemployment the share of agency workers

among the total workforce is higher (Table 1, see above) and there may be a greater reservoir of suitable workers willing to accept employment under temporary agency conditions.

Table 8
Propensity score matching - descriptive statistics (matched) for covariates (outcome job growth 2009-2011/ 2012-2014)
Logit estimation, Epanechnikov kernel matching

base year	2009			2012		
	means		difference	means		difference
	treated	controls	t-values	treated	controls	t-values
all regions						
wages/employee	7.8	7.8	1.60	7.9	7.9	1.27
employees (log)	5.0	5.0	0.83	4.9	4.9	0.01
apprentices	4.7	4.7	-0.07	4.4	4.4	-0.04
female	32.2	32.9	-0.57	30.2	30.4	-0.18
part-time	13.2	13.8	-0.74	13.6	14.5	-1.19
good year (dummy)	0.5	0.5	0.52	0.5	0.5	1.10
one loc. (dummy)	0.3	0.4	-1.39	0.4	0.5	-1.12
manufacturing	0.6	0.6	0.79	0.7	0.7	1.12
North (dummy)	0.2	0.2	-0.10	0.3	0.2	0.44
NRW (dummy)	0.1	0.1	0.29	1.4	1.8	-2.10**
South (dummy)	0.4	0.4	-0.43	0.4	0.4	1.23
unemployment rate	9.6	9.5	0.55	7.6	7.8	-1.90*
high unemployment						
wages/employee	7.8	7.7	0.70	7.8	7.8	0.75
employees (log)	4.8	4.7	0.29	4.5	4.5	0.23
Apprentices	4.8	4.7	0.19	3.7	3.9	-0.32
Female	32.4	34.1	-0.69	30.2	30.0	0.07
part-time	15.1	16.7	-0.76	13.5	14.5	-0.59
good year (dummy)	0.5	0.5	-0.00	0.5	0.5	0.11
one loc. (dummy)	0.0	0.0	-1.16	0.0	0.1	-0.89
manufacturing	0.6	0.6	0.80	0.7	0.7	0.38
North (dummy)	0.3	0.3	-0.01	0.3	0.3	-0.16
NRW (dummy)	0.1	0.1	0.30	0.2	0.2	-0.23
South (dummy)	0.0	0.0	-0.68	0.0	0.0	0.20
unemployment rate	14.7	14.7	-0.04	12.3	12.6	-1.57

Author´s calculation based on IAB Establishment Panel and data from the Federal Statistical Office (regional unemployment rate); pooled cross-section; sample comprises 5th – 95th percentile of dependent variables; standard errors in parentheses;,***/**/*: significant 0.01/0.05/0.1 level

Particularly in regions with high unemployment, it may have made a crucial difference affecting post crisis performance whether firms sustained a higher level of employment during the crisis. Agency work therefore may have helped to overcome an undesirable reluctance to hire among

firms located in regions with a high unemployment rate. High reluctance to hire during the crisis may, in fact, have affected firms in high-unemployment regions as part of a self-fulfilling prophecy, making it more difficult for them to grow and prosper at a rate that would represent their true potential after the crisis.

While apparently there was no treatment effect on client firms from low-unemployment regions in terms of post-crisis job growth, the ATT for post-crisis growth in high-unemployment regions was even stronger among client firms from 2012. After the crisis, client firms from 2012 also grew faster than non-clients in terms of jobs than non-clients in regions within the medium (but not in regions from the bottom) tercile of unemployment.

It remains difficult to assess whether faster post-crisis job growth in client firms of high-and medium-unemployment regions has combined with a greater increase in earnings and competitiveness among client firms. After all, no significant ATT was found with respect to growth in wages per employee. However, while in the sample comprising all firms, the ATT for growth in wages per employee is not significant at a desirable statistical level, the results do suggest an above-average productivity growth among client firms (estimations 1, 3, and 5 in Table 6). A scenario, in which higher-level recruitment by client firms in regions with high or medium unemployment was gained by a corresponding reduction in productivity, is therefore unlikely.

6 Conclusions

It was the goal of this analysis to explore whether temporary agency employment is utilised by client firms as a “buffer“and whether the potential buffer function varies by the regional economic context. An initial regional-level review outlines a strong correlation between the utili-

sation of temporary agency work and basic characteristics of the regional economy, as measured at the level of municipal districts (Kreise) in Germany. After the crisis (2012-2014), growth in the share of agency workers was faster in regions that had not relied on agency work to a large extent in 2012.

The first step of the firm-level analysis draws on a cross-sectional approach analysing growth in jobs and average wages in relation to basic characteristics of client firms (including the share of agency workers among their workforce). Contrary to the "buffer" hypothesis, between-firm comparison suggests that hiring from temporary agencies during and after the crisis rather preceded a subsequent job cut in client firms. The second step, comprising a within-firm view based on fixed-effects panel regressions, also reveals only limited evidence that may be interpreted as a buffer effect of temporary agency employment.

A third step examines job and productivity growth in client firms in comparison with similar non-client firms using a propensity score matching procedure. An average treatment effect on the treated (ATT) is found for post-crisis job growth in client firms that hired agency workers during the crisis in regions with high unemployment levels. In these firms, total employment between 2012 and 2014 grew by about 3 percentage points faster than in comparable non-client firms from these regions. No such effect is measured using the sample for regions with low unemployment rates. In regions with high and medium unemployment rates, an ATT for the period 2012-2014 is also found for client firms from 2012.

It appears that in regions with high unemployment in particular, agency work during and after the crisis did provide client firms with a "buffer", since they recruited more employees liable to social security than similar non-client firms after the crisis. Non-client firms in high-unemployment regions were thus more reluctant to hire. It can be argued, that client firms would have been able to recruit those same workers directly, had there been no temporary employment agencies in the first place. However, it is possible that for specific firms and workers job placement is performed more efficiently by temporary work agencies than by other agents. Firms might not have found suitable workers as easily and, for want of an efficient placement infrastructure, workers might have even left regions with high unemployment, in spite of an existing demand for their labour within the region, if there had been no agencies.

The study of evolutionary "paths" along which industrial location decisions may predetermine further investment and agglomeration over long periods is a research focus of the literature on economic geography (Martin and Sunley 2006). In this literature, it has been pointed out that regions with a strong focus on old industries may suffer from disruption such that dominance of outdated industrial sectors may combine with a desire among decision-makers at the regional political and administrative level to preserve old activities rather than to encourage and support adaptation to change. Reluctance to hire, in spite of a newly emerging demand for labour after the crisis of 2008/2009, may be part of the range of problems that are more common among regions with high or medium unemployment than in the most prosperous regions.

Quite possibly, in some regions with a lack of highly competitive industrial cores, particularly in East Germany, a "nudge" such as that provided by temporary agencies, which apparently has lowered the barriers to recruiting workers, may activate potentials that would otherwise remain dormant. Of course, the regional characteristics and the territorial entities (municipal districts)

considered in this analysis are too coarse to qualify as the basis of an elaborate study on regional path dependencies. Nevertheless, regional variation in the "buffer" function of temporary agency work suggests that agencies represent an aspect of labour market flexibility that helps firms from specific sectors and regions to adapt to economic change more than others. In prosperous regions and industries utilisation of agency work is likely to combine with "free-riding" by many client firms that would have recruited anyway but take the opportunity to cut wages and to shift towards flexible, short-term recruitment. Since agency workers are assigned to client firms mainly for short-term spells, much of its potential "buffer" function will correspond to short-term fluctuation in labour demand over days, weeks or months rather than years. For specific sectors and regions, however, apparently the role of agency work is more crucial.

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