The Impact of Regional Supply and Demand Conditions on Job Creation and Destruction

Raimund Krumm
Harald Strotmann

IAW-Diskussionspapiere

Das Institut für Angewandte Wirtschaftsforschung (IAW) Tübingen ist ein unabhängiges außeruniversitäres Forschungsinstitut, das am 17. Juli 1957 auf Initiative von Professor Dr. Hans Peter gegründet wurde. Es hat die Aufgabe, Forschungsergebnisse aus dem Gebiet der Wirtschafts- und Sozialwissenschaften auf Fragen der Wirtschaft anzuwenden. Die Tätigkeit des Instituts konzentriert sich auf empirische Wirtschaftsforschung und Politikberatung.

Dieses IAW-Diskussionspapier können Sie auch von unserer IAW-Homepage als pdf-Datei herunterladen:

> http://www.iaw.edu/Publikationen/IAW-Diskussionspapiere

ISSN 1617-5654

Weitere Publikationen des IAW:

- IAW-News (erscheinen 4x jährlich)
- IAW-Forschungsberichte

Möchten Sie regelmäßig eine unserer Publikationen erhalten, dann wenden Sie sich bitte an uns:

IAW Tübingen, Ob dem Himmelreich 1, 72074 Tübingen,
Telefon 07071 / 98 96-0
Fax   07071 / 98 96-99
E-Mail: iaw@iaw.edu

Aktuelle Informationen finden Sie auch im Internet unter:

> **http://www.iaw.edu**

THE IMPACT OF REGIONAL SUPPLY AND DEMAND CONDITIONS
ON JOB CREATION AND DESTRUCTION [1]

Regions are exposed to intensive competition to provide the most attractive location conditions for firms and their employees. Therefore, regional employment development depends to a decisive degree on the attractiveness of locations both on the supply and the demand side.

This paper gives an empirical analysis of the impact of regional conditions on regional manufacturing employment growth. Based upon a firm-level panel of manufacturing establishments in Baden-Wuerttemberg, Germany, which can be aggregated to regional panel data for forty-four counties, both the role of supply-side and demand-side conditions and a possible impact of characteristics of the regional industry structure on regional employment growth are analysed for the period from 1980 to 1999. Moreover, the paper examines whether the impact of regional conditions on regional net employment growth is driven by their impact on regional firm-level job creation and/or job destruction.

Our results indicate that supply-side conditions seem to be more important for regional employment growth than demand-side factors. While lower costs of production lead to higher regional employment growth due to lower job destruction, a better endowment with human capital and a higher regional R&D intensity stimulate employment growth by higher rates of job creation. Differences in regional firm size structure, export intensity, and other industry structure aspects are affecting job creation, but not job destruction. Moreover, the analysis reveals at least the tendency that regional location factors mainly influence either job creation or job destruction, but seldom both at the same time.

Keywords:
Regional development, employment growth, job creation,
job destruction, location conditions, manufacturing

JEL-Classification:
R11, R3, O18

---

1.   Introduction

For a region's competitiveness as well as for its economic power and employment situation, it is of the utmost importance that the firms located within the region are competetive on a national and international scale. Therefore, not only national economies but also smaller regional units find themselves in intensive competition to provide attractive location conditions for companies and their employees. Firms' decisions about location and investment as well as for their decisions to establish additional workplaces or to diminish employment are influenced by a lot of potential regional conditions. Already traditional economic location theories (see e.g., Launhardt 1882, Weber 1929, and Hotelling 1929) have stressed the special importance of the regional surroundings for firm strategies and performance. Moreover, the importance of regional conditions for the settlement and development of firms has been confirmed in empirical studies for a wide range of countries and time periods[2].

The aim of the paper is twofold: At first, using firm-level panel data of manufacturing establishments in Baden-Wuerttemberg, Germany, which are aggregated to regional panel data for forty-four counties, the impact of regional conditions on county-level manufacturing employment growth is empirically analyzed. Thereby, a special focus is met on the relative role of supply-side and demand-side conditions for regional manufacturing employment growth. Second, while the vast majority of existing studies only analyse the determinants of regional net employment growth, this paper takes a closer look behind the scenes at aggregate employment change by additionally decomposing net employment change into the gross components of job creation and job destruction. Thereby, the question is analysed as to whether the impact of different regional supply- and demand-side factors on employment growth is caused by affecting job creation and/or job destruction.

2.   Regional Determinants of Employment Growth - A Survey

From a theoretical point of view, there is no generally accepted systematization of possible regional determinants of employment growth. Therefore, to structure the analysis of location factors in this paper, both for the discussion of possible regional employment determinants suggested by economic theory and for the brief survey of existing empirical evi-

---

[2] For a small selection of the respective empirical papers covering various regional location factors, see Arauzo-Carod (2005), Audretsch and Dohse (2007), Devereux and Griffith (1998), or Hoogstra and van Dijuk (2004).

dence, the location factors are divided into supply-side factors, demand-side factors, and further aspects which are summarized as industry structure (see Table 1 for a survey).

Table 1: Determinants of regional employment development

Supply-side factors	Demand-side factors	Industry structure
Cost of production factors 　• Land prices 　• Wages Differences in regional tax burden Differences in regional factor 　endowments 　• Human capital 　• R & D resources Traffic infrastructure	Unemployment rate Wages Urbanisation: Population density	Average firm size Regional export quota Localisation: Sectoral concentration Tertiarisation degree Employment development in 　the service sector

Source: Authors' draft.

At first, important aspects of regional supply-side conditions are the costs of factors of production. In particular, wages as the cost for labour and the prices for land may vary to a great extent at a local level, and thus may be considered important aspects in explaining the spatial distribution of economic activity, and therefore of employment.

All else being equal, the higher the wage level and thus the costs of labour are, the more firms will try to substitute labour by capital or by relocating production to low-wage regions. Thus, c.p. a higher regional wage level can be expected to hamper regional employment growth. But as from a macro-perspective, the regional wage level does also have a demand-side aspect; the net effect of the wage level on regional employment is ambiguous[3] and will be discussed in more detail below.

Already traditional location theory argues that land prices can be of the utmost importance for regional employment growth, as land prices for industrial sites are a relevant cost component for firms[4]. Thereby — though higher prices reflect to a certain extent also a high demand for such sites relative to a given supply — higher land prices tend to constrain the expansion of existing firms as well as the settlement of new firms in a region, and thus have a negative impact on regional employment.

The cost for capital is less important as a regional determinant of employment growth, because capital is a very mobile factor of production, and financial markets are not limited to a decentralized local level.

---

[3] For a current paper referring to this topic, see Pierluigi and Roma (2008), for instance.
[4] See the model of Alonso (1960), for instance, that deals with the relevance of land prices for location choices of firms.

A second important aspect of regional supply-side conditions is possible regional differences in the tax burden that resident firms are confronted with. Devereux and Griffith (1998), Agostini (2007), and Büttner and Ruf (2005) demonstrate that high tax rates have a negative impact on investment and location decisions, respectively. The higher the rates of profit taxes levied on the regional or local level are, the higher will be the detrimental effect on regional employment[5].

Differences in regional factor endowments can also be considered important supply-side factors affecting regional employment. According to modern economic growth theory (see, e.g., Lucas 1988), a region's endowment with human capital and thus the skill structure of the labour supply is one of the most important driving forces for production and employment. This hypothesis has been confirmed by numerous empirical studies. Farhauer and Granato (2006), for instance, show that high qualifications of employees and good human capital endowment, respectively, have a positive impact on the regional employment performance[6]. For positive regional growth effects of high school graduates, see Poelhekke (2009), for instance.

According to theoretical models of economic growth, a good regional endowment with research and development (R&D) resources is a competitive advantage for a region and thus can stimulate regional output and employment[7]. Audretsch and Dohse (2007) for instance illustrate that firms located within R&D intensive regions have a better chance of enlarging employment than firms in other regions. In this context, the importance of inter-firm knowledge spillovers is emphasized. However, the greater the geographical distance between the firms, the lower will be the spillover intensity (see Funke and Niehbuhr 2005). Thus, regional employment is fostered especially by the respective R&D resources within the region.

Good regional traffic infrastructure is also important for the competitiveness of the local industries. For some industries, transport connections or accessibility to motorways, rail-

---

[5] See Kohlhase and Ju (2004) for the impact of property taxes on location decisions of firms. However, one must not neglect the fact that regional or local taxes can be used to finance public goods such as traffic infrastructure. See Gabe and Bell (2004), who show that a high provision of local public goods that goes along with high local tax rates possibly attracts more firms than in the case when both parameters are low.

[6] Cheng (2006) analyzes the relative role of human capital and wages and argues that high quality of human capital over-compensates for the significance of high wages.

[7] Therefore, R&D policy may foster regional employment growth. In this context, Koo and Kim (2009) emphasize that such a policy only works if it does not neglect the specific regional environment, such as the regional industry structure. In addition, a R&D policy aimed at regional employment growth should distinguish between different types of subsidized R&D activities, as Koski (2008) points out.

way transportation, waterways, or air traffic are of outstanding importance. This hypothesis is confirmed by a wide range of empirical studies[8].

Besides regional supply-side conditions, differences in regional demand conditions may also be relevant in explaining regional employment growth.

The higher the purchasing power of the local population is, the higher the demand for goods and services produced by local firms might be. Thus, the firms in the respective region might profit through increased sales, which would stimulate additional employment. However, as the demand for goods and services is usually not limited to a certain region, this might contradict the hypothesis of a close relationship between regional demand and regional employment growth.

At first, one might think of using the regional wage-level which has been introduced as an important supply-side determinant and also as a proxy for demand-side conditions because it also includes a demand-side aspect. However, regional purchasing power does not only depend on the regional wage-level, but also on the number of persons employed at this wage-level, which again brings into play the supply-side aspect of wages. A priori, it cannot be said whether the supply-side or the demand-side effect dominates regional employment growth, but against the background of the previous arguments, one might expect that the supply-side effects of wages will be more important. This hypothesis is confirmed by many existing empirical studies that conclude that the cost push effect dominates the purchasing power effect (see, e.g., Suedekam and Blien 2007 or Pierluigi and Roma 2008). Taking this into account, one can expect that a high regional wage level tends to have a negative effect on regional employment. This is even more likely to hold in the special case of industrial employment, because employees and private households, respectively, seldom demand manufacturing goods directly.

The level of regional unemployment can also be interpreted as a proxy for regional purchasing power, which also affects regional production and employment. Since high unemployment implies low purchasing power and therefore a low demand for goods, it might hamper regional production and employment. But there may be indirect compensatory effects of a high regional unemployment, because high unemployment lowers the regional wage-level and therefore might foster employment. A special aspect is how the unemployment level influences the foundation of new firms, and therefore the creation of new jobs in a

---

[8] See, e.g., Coughlin and Segev (2000), De Vor and de Groot (2009), or Jiwattanakulpaisarn et al. (2008), each of the latter analyse the significance of highway infrastructure for regional employment growth. The effect of traffic congestion on employment growth is analyzed by Hymel (2009).

region. Corresponding empirical studies, however, indicate mixed findings in this respect (see Brixy and Grotz (2006), for instance).

A region's employment level can also be influenced by its settlement structure. If there is a spatial concentration of economic activity in a region, so-called agglomeration effects can occur. One of these effects, "urbanisation economies", results from the general spatial concentration of population and economic activity (see, for instance, O'Sullivan 2003). There can be urbanisation advantages, such as the availability of extensive sales markets, as well as urbanisation disadvantages, such as overcrowding. Thus, the impact direction of urbanisation effects on regional employment growth is a priori not unique. A common proxy for urbanisation effects is the level of regional population density. Hoogstra and van Dijk (2004) argue that an increasing population density might favour regional employment, since urbanisation benefits still dominate urbanisation costs if a critical threshold is not crossed. After exceeding a certain threshold, however, the net urbanisation effect becomes negative. Consequently, whether a higher population density induces a positive or negative impact on regional employment may depend on the specific case and the concrete situation[9].

Whereas urbanisation economies refer to spatial concentration of population and economic activity in general, "localisation economies", as the second kind of agglomeration effects, result from the spatial clustering of firms in the same or related industries[10]. This leads to our third general category of regional determinants of regional employment growth, the regional industry structure. One concept to measure localisation economies and sectoral concentration is the Herfindahl-Index, which is close to 1 if there is a high concentration of industries within a region and close to 0 if a large variety of different industries is of similar importance[11].

The interaction of the regional manufacturing and the service sector might also help explain regional employment growth. However, from a theoretical point of view, an increase in tertiarisation (defined as the service sector's share of all sectors with regard to employment or value added) can stimulate or hamper regional employment growth in the manufacturing sector, since the relationship between the services and the manufacturing sector may be complementary or substitutionary. An example of the latter would be the case of outsour-

---

[9] Strotmann (2007) analyses the impact of regional agglomeration on new-firm survival in German manufacturing and shows that the risk of failure of start-ups in agglomerated regions is about 30% higher than the corresponding risk in rural areas.

[10] For localisation economies, see, among others, the empirical study by Hoogstra and van Dijk (2004). For aspects with regard to localisation economies calculated using direct measures of physical distances between pairs of firms rather than with respect to pre-specified geographical units, see, e.g., Cainelli and Lupi (2010).

[11] See Almeida (2007) for selected aspects referring to economic structure and regional development, and Drucker (2009) for associations between industrial concentration and regional employment growth.

cing economic activities from the manufacturing to the service sector. The other way round the employment level in the manufacturing sector might be stimulated by the employment growth in the service sector because of its demand for investment goods from manufacturing.

Numerous empirical studies indicate that regional employment growth might also depend on a region's firm size structure. Farhauer and Granato (2006) argue that the highest employment potential can be expected from smaller and medium-sized firms, i.e., regions characterized by small-scale firms might favour regional employment growth. Studies such as Fritsch et al. (2006) referring to start-ups and their employment contribution find that regional economic surroundings dominated by smaller firms produce more employment than a regional economic environment dominated by large-scale firms.

Regional employment growth may also be influenced by the export intensity of regional firms. A high regional export quota indicates that the regional firms are realizing a considerable part of their sales abroad. Provided that competition in external markets is more intensive than in home markets and an engagement abroad is more costly than at home, respectively, exporting firms are usually more productive and competitive than firms that restrict their sale activities to the internal market (see Helpman et al. 2004). As a consequence, highly competitive firms might have a better employment performance, so a high regional export quota favours regional employment.

3.   The Data

To empirically analyse the impact of regional supply- and demand-side conditions on manufacturing employment growth in Germany, we use establishment-level panel data for the manufacturing sector in the state of Baden-Wuerttemberg as the starting point[12]. To create this establishment-level panel dataset, we combine two sources of official German industrial statistics. The first contains information on the population of all manufacturing establishments with at least twenty employees and on establishments which are part of an enterprise with at least twenty employees. These data are taken from monthly reports of manufacturing firms. The second data source contains information from annual reports of small manufacturing establishments, covering all establishments with less than twenty employees. From these

---

[12] Baden-Wuerttemberg is one of the largest German states (Bundeslaender). In 2008, it accounted for 13% of the German population, 15% of German GDP, and 16% of German exports. In addition, the state is host to the largest and the seventh-largest German firms — Daimler AG and Robert Bosch GmbH. Its GDP is larger than that of countries such as Sweden, Denmark, or Austria. The manufacturing sector is of above-average importance in Baden-Wuerttemberg, accounting for 27% of total employment (Germany: 19%) and 34.6% of gross value added (Germany: 23.1%).

reports, a longitudinal dataset is created that comprises the total population of manufacturing establishments (with a very good coverage of small establishments)[13] in the period from 1980 to 1999. Although this panel dataset contains relatively few variables, it comprises in total more than 21,000 establishments, offers a high quality of data, and allows for tracking of individual establishments over time. For the purpose of our paper, having an establishment-level panel is important for calculating regional job flows and thus regional rates of job creation and job destruction.

Baden-Wuerttemberg consists of forty-four different counties ('Kreise'), including nine urban counties ('kreisfreie Städte') and thirty-five counties dominated by rural areas ('Landkreise'). To create our dependent variable "annual manufacturing net employment growth in region i in period t", regional, establishment-level employment information is aggregated at the county-level. Regional rates of gross job creation are calculated by dividing the sum of newly created jobs on the establishment-level in [t;t+1] by total employment in t. Analogously, regional rates of firm-level gross job destruction are calculated by dividing the number of jobs lost from [t;t+1] by total employment in t. Thus, the rate of regional net employment change equals the difference between regional job creation and regional job destruction rates.

To analyse the possible role of regional determinants on regional employment growth as well as on regional job creation and job destruction, information on regional supply- and demand side conditions[14] in the manufacturing sector can partly be calculated based upon the establishment-level panel. Moreover, we add regional county-level data from other sources of German statistics. Table 2 gives an overview of the regional indicators used and the corresponding data sources.

To account for differences in regional supply-side conditions, the regional costs of labour are either measured by average regional monthly salary for clerks (in 1.000 €) or by the average regional monthly wages for workers (in 1.000 €). The costs for building land are measured by the average price for building land in € per 100 m². To analyse a possible impact of the local profit tax level on regional employment growth, we include the average profit tax rate levied at the local level as an explaining variable. Regional human capital endowment is proxied by the share of low-skilled workers or employees from total employment subject to social security contributions. Regional R&D-intensity is measured by the share of persons employed in R&D from total employment. To account for a possible impact of traffic

---

[13] Only handcraft firms with fewer than twenty employees are missing from the data.
[14] In contrast to our analysis of location factors on the county-level, i.e., the regional scale, the approach of Arauzo-Carod (2005) is geared to the local scale.

infrastructure on regional net employment growth, we use regional data on average driving times to the next opportunity to enter the motorway or to the next international airport.

Table 2: Operationalisation of determinants of regional employment growth

Determinants of regional employment growth	Operationalization via …	Data source (see below)
Supply-side factors	Prices for building land [in 100 € per m²]	(2)
	Average regional monthly salary [in 1.000 € per clerk]	(1)
	Average regional monthly wage [in 1.000 € per worker]	(1)
	Average rate of local profit tax [local multiplying factor on tax base rate]	(2)
	Share of low-skilled employees from total employment subject to social security [in %]	(3)
	Share of persons employed in R&D from all employees subject to social security [in %]	(2)
	Driving time to the next motorway slip road, truck-railway terminal and international airport, respectively [in minutes, each]	(4)
Demand-side factors	Average regional monthly salary [in 1.000 € per clerk]	(1)
	Average regional monthly wage [in 1.000 € per worker]	(1)
	Population density [in 100 inhabitants per km2]	(2)
	Unemployment rate [in %]	(3)
Industry structure	Average firm size [in average number of employed persons]	(1)
	Regional export quota [in share "export turnover/total turnover"]	(1)
	Sectoral concentration [as Herfindahl-Index value, based on sectoral employment]	(1)
	Tertiarisation degree [in % of total employment]	(3)
	Employment development in the service sector [in % growth rate]	(3)

Source: Authors' composition.

The data for the empirical analyses were collected from the following sources:

(1) *Establishment-level panel data for the manufacturing sector* in the state of Baden-Wuerttemberg. The data were provided by the Statistical Office Baden-Wuerttemberg to the authors, thereby taking into account the rules of confidentiality. For the purpose of this paper, firm-level data have been aggregated to county-level data.

(2) *County-level data from German/Baden-Wuerttemberg official statistics.* (www.statistik-bw.de). If not directly available, the data were delivered to the project from the Statistical Office of Baden-Wuerttemberg.

(3) *County-level data from the German Federal Employment Agency.* (www.pub.arbeitsagentur.de/hst/ services/statistik/interim/index.shtml) The data were delivered to the project from the Statistical Office of Baden-Wuerttemberg.

(4) *Public access county-data from the Federal Office for Building and Regional Planning (INKAR data):*

www.bbsr.bund.de/nn_21272/BBSR/DE/Veroeffentlichungen/INKAR/INKAR__node.html?__nnn=true.

Demand-side conditions in the following analyses will at first be measured by the regional unemployment rate. Moreover, the regional wage level, which has been introduced as a supply-side variable, also has a demand-side interpretation. Possible urbanisation effects are considered by including the regional population density as a regressor, and localisation effects of regional industry concentration by the Herfindahl index at the two-digit level. As further control variables for the regional industry structure, we include average firm size and regional manufacturing export shares. Moreover, to control for possible regional complementarities or substitutional effects between manufacturing and service sector, we use the degree of tertiarisation (measured on employment basis) and employment growth in the service sector as additional regressors.

4.   Empirical Findings

The following empirical analysis is mainly focused on the two questions: First, to what degree is regional employment growth in the manufacturing sector driven by supply- and demand-side conditions?[15] Second, is the impact of regional conditions on employment growth caused by stimulating either regional job creation and/or regional job destruction? To answer these questions, we present in section 4.1 some descriptive evidence on employment growth, job creation and job destruction in Baden-Wuerttemberg. We will then examine regression-based evidence on the link between regional economic conditions and regional employment growth in section 4.2. In section 4.3, we will then have a look behind the scenes of net employment growth, analysing the impact of regional supply and demand conditions on regional job creation and job destruction.

4.1   Descriptive Evidence

In the 1980s, the first decade of the period considered in the following empirical analysis, regional manufacturing employment growth was rather heterogeneous in Baden-Wuerttemberg. While half of the forty-four counties suffered from a reduction of manufacturing employment, the other half of the counties experienced rising manufacturing employment. In the 1990s, however, manufacturing employment development was much worse in Baden-Wuerttemberg: Only six out of forty-four counties observed an increase in regional

---

[15] The effects of various local supply- and demand-side conditions on employment growth in the producer service sector rather than in the manufacturing sector are analysed by Di Giacinto and Micucci (2007).

manufacturing employment. While in the decade of the 1980s the average annual rates of county-level employment growth ranged from +1.8% to -2.2%, the corresponding range in the 1990s was from 0.8 to -4.5%.

Counties with better manufacturing employment performance in the 1980s on the average also experienced better employment performance in the 1990s. The Bravais-Pearson coefficient of correlation of regional average employment growth in the 1980s and the 1990s is 0.666 (P-value: 0.000). This clearly indicates that structural reasons at the regional level are responsible for differences in employment performance.

Looking behind the aggregate net development of manufacturing employment illustrates that average regional gross job creation rates remained rather stable from the 1980s to the 1990s; the median is 4.2 in both periods. The decline in regional net employment growth from the 1980s to the 1990s has therefore been caused by a large increase in regional job destruction rates: While in the 1980s the median regional job destruction rate has been 4.0%, it rose to 6.1% in the 1990s (see Figure 1).

Figure 1: Distribution of average regional job creation and job destruction rates in forty-four counties of Baden-Wuerttemberg in the 1980s and the 1990s
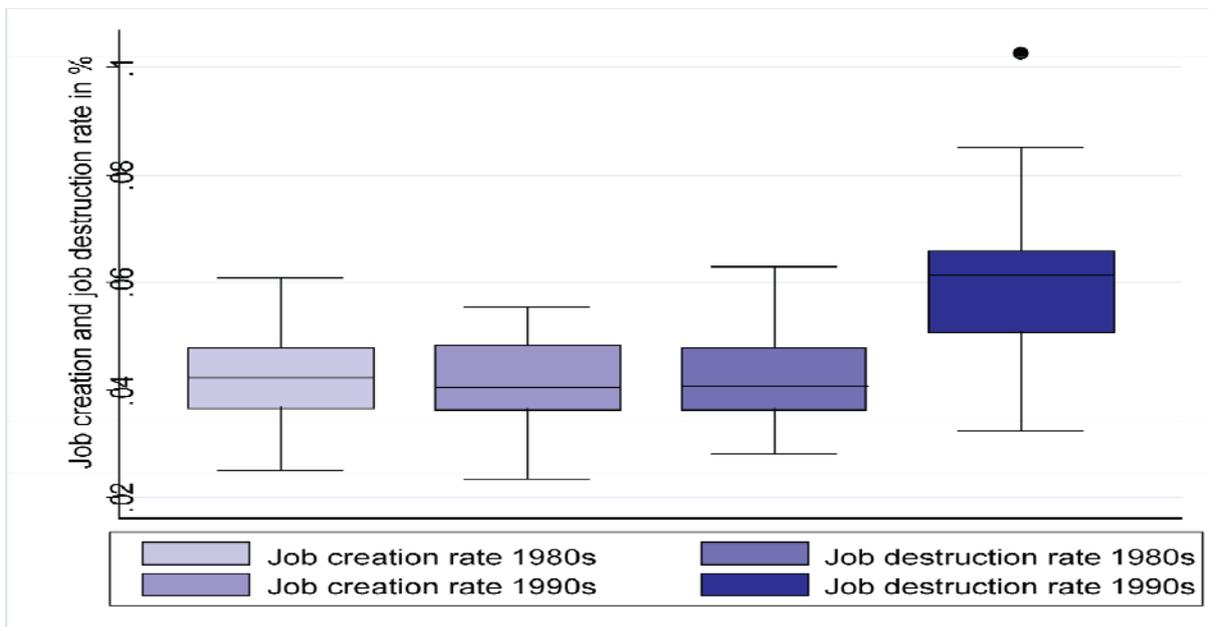
Source: Author's calculations.

4.2 Regional determinants of net employment growth

In this section, regional differences in manufacturing employment growth shall be explained by regional supply- and demand-side conditions. Thus, our empirical model is based on equation (1).

$$(1) \quad y_{it} = \beta' X + \mu_i + \gamma_t + v_{it}$$

This equation specifies the effect of time-varying regional supply- and demand-side conditions and industry structure (X) on manufacturing employment growth y_{it}, controlling for county-level fixed effects μ_i and time fixed effects γ_t. While the county-level fixed effects capture time-constant unobserved heterogeneity, time fixed-effects control for macroeconomic developments that are identical across regions. v_{it} is the error term and has to satisfy the assumptions of the error term in a classical regression model (see, e.g., Wooldridge 2002). Descriptive statistics for all variables included in the analyses are given in Table 3.

Table 3: Descriptive statistics at the county-level, 1980 to 1999

	N	Mean	Median	Standard deviation	Minimum	Maximum
Regional net employment change	792	-0.0040	-0.0008	0.0374	-0.1656	0.1437
Regional job creation rate	792	0.0460	0.04261	0.02364	0.0069	0.1768
Regional job destruction rate	792	0.0500	0.04555	0.02357	0.0087	0.1833
Price for building land [in 100 EUR / m²]	836	0.8158	0.5826	0.7809	0.0787	5.8362
Average salary per clerk [in 1.000 € per clerk]	836	5.508	5.471	1.244	3.252	8.987
Unemployment rate	836	0.0616	0.0610	0.0191	0.0133	0.1390
Share of R&D employees	792	0.0182	0.0111	0.0204	0.0022	0.1168
Driving time to the next motorway slip road [in minutes]	836	16.14	13.65	9.56	4.00	41.10
Average of multiplying factor on local tax base rate	836	3.3106	3.2337	0.2643	2.9893	4.450
Population density [in 100 inhabitants per km²]	836	4.8900	2.5219	5.6663	0.9240	28.9113
Sectoral concentration (Herfindahl index)	836	0.0975	0.0705	0.0795	0.0276	0.55937
Tertiarisation degree (Employment basis)	836	0.4475	0.4286	0.1138	0.2423	0.7762
Employment growth in the service sector	836	0.0223	0.0205	0.0220	-0.0419	0.0949
Average firm size (Employment basis)	836	83.74	73.97	37.28	36.04	220.23
Export quota manufacturing sector	836	0.2927	0.2871	0.0791	0.1023	0.6323
Share of low-skilled employees	748	0.3077	0.2974	0.0624	0.1890	0.5282

Source: Authors' own calculations.

Simple tests of joint significance of the county-specific and year-specific effects confirm that panel estimation with individual effects is preferred to pooled OLS estimation. A Hausman (1978) test for correlation of individual effects favours fixed effects compared to random individual effects, assuming that the individual effects and the other explaining variables are uncorrelated. Furthermore, considerations with respect to the contents support the choice of a fixed effects model. While random effects models are considered appropriate in particular for small samples of panel data, in this study the total population of forty-four counties is analysed (see Baltagi 2001).

To test for the relevance of spatial autocorrelation between the counties, both tests on global and local spatial autocorrelation were undertaken. Thereby, both Moran's I and Geary's c indicate that only in the 1990s is there at least some evidence for positive spatial autocorrelation, but that over time and on an annual basis, there is no significant evidence for systematic global autocorrelation (see Figure 2). Tests for local autocorrelation confirm even for the 1990s in the vast majority of counties, there is no significant spatial autocorrelation.

Figure 2:   Moran's I for annual county-level employment change, 1980-1999
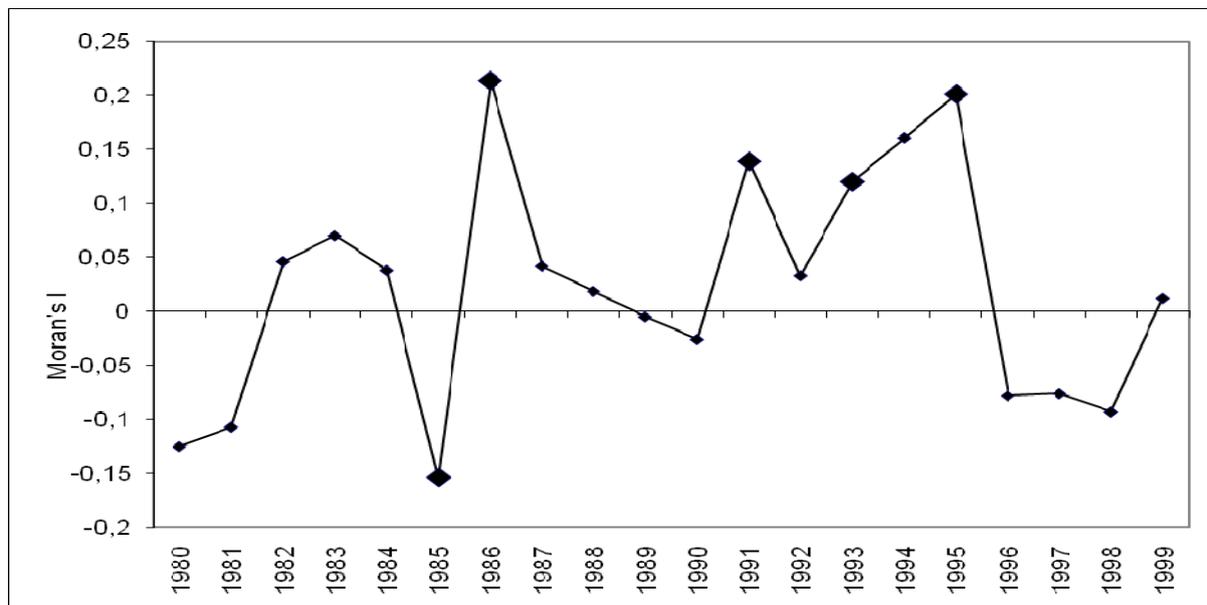
Source: Author's calculations.
   Large symbols indicate statistical significance at a 95% level of significance. Values for 1988 and 1994 were interpolated because of changes in the classification of industries.

We thus estimate equation (1) using fixed effects panel regressions. Thereby, we follow Arellano (1987) and compute robust standard errors that allow for both heteroskedasticity and autocorrelation of arbitrary form. To check the sensitivity of the results, in particular with respect to multicollinearity, we estimate a variety of different model specifications and we

present different sets of results. To account for endogeneity of, for example, the regional wage level or of the regional unemployment rate, we lag all explaining variables by one period, thus explaining growth in [t; t+1] by the level of the explaining variables in t-1. As effects of R&D might take longer to be effective, we included up to three lags of the R&D-variable into our regressions. Estimation results of our preferred models are presented in Table 4.

Table 4: Determinants of regional manufacturing employment growth from 1980 until 1999 in counties in Baden-Wuerttemberg; results from panel estimates with fixed effects, clustered standard errors robust against autocorrelation of unknown form

	(1)	(2)	(3)	(4)	(5)
Price for building land in 100 EUR / m², t-1	0.005	0.007	0.007	0.006	0.007
	[0.333]	[0.130]	[0.179]	[0.186]	[0.175]
Average salary per clerk (t-1)	-0.017*	-0.016*	-0.015	-0.016	-0.017*
	[0.068]	[0.071]	[0.101]	[0.105]	[0.067]
Average of multiplying factor on local tax base rate (t-1)	-0.042*	-0.037	-0.040*	-0.039*	-0.034
	[0.073]	[0.114]	[0.085]	[0.087]	[0.146]
Share of R&D employees (t)	-0.825***	-0.875***	-0.822***	-0.817***	-0.802***
	[0.000]	[0.000]	[0.000]	[0.000]	[0.000]
Share of R&D employees (t-1)	1.382*	1.425*	1.279*	1.312*	1.489*
	[0.089]	[0.080]	[0.094]	[0.076]	[0.060]
Share of R&D employees (t-2)	-0.670	-0.667	-0.822	-0.824	-0.764
	[0.498]	[0.497]	[0.395]	[0.394]	[0.432]
Share of R&D employees (t-3)	1.244**	1.282**	1.367**	1.377**	1.345**
	[0.050]	[0.041]	[0.028]	[0.025]	[0.032]
Share of low-skilled employees		-0.277*	-0.285**	-0.283**	-0.263*
		[0.052]	[0.035]	[0.033]	[0.052]
Unemployment rate (t-1)	0.001	0.002	0.001	0.001	0.001
	[0.367]	[0.280]	[0.346]	[0.347]	[0.351]
Population density (t-1)	-0.004	0.005	0.005	0.005	0.002
	[0.421]	[0.404]	[0.358]	[0.375]	[0.704]
Sectoral concentraton (Herfindahl index)	-0.034	-0.036	-0.012		
	[0.352]	[0.307]	[0.697]		
Tertiarisation degree (employment basis)	-0.001	-0.117	-0.066	-0.062	-0.073
	[0.989]	[0.236]	[0.518]	[0.546]	[0.466]
Employment development in the service sector	-0.123*		-0.105	-0.105	-0.114*
	[0.054]		[0.105]	[0.104]	[0.077]
Average firm size (employment basis)	-0.001***	-0.001***	-0.000**	-0.000**	-0.001***
	[0.008]	[0.008]	[0.037]	[0.035]	[0.006]
Export quota manufacturing sector	0.094*	0.087			0.077
	[0.090]	[0.114]			[0.128]
Constant	0.257**	0.329***	0.337***	0.334***	0.314**
	[0.022]	[0.008]	[0.006]	[0.006]	[0.011]
Year effects	63.6	69.2	86.8	87.0	70.2
(P-value of the test on joint significance)	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Test on joint significance of the R&D variables	14.2	15.2	12.3	11.2	13.0
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
R² (within)	0.775	0.777	0.775	0.775	0.777
R² (between)	0.153	0.118	0.190	0.162	0.023
R² (overall)	0.305	0.259	0.210	0.224	0.306
Number of observations	616	616	616	616	616
Number of counties	44	44	44	44	44
F-test for the model	274.5	310.2	228.5	176.6	168.2
	[0.000]***	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Share of total variance explained by individual effects	86,9%	82,1%	84,6%	83,9%	80,5%

Robust p-values in parentheses, adjusted for clustering
* / ** / *** significant at a 10%/5%/1% level of significance

Source: Authors' own calculations.

In general, the estimation results illustrate that supply-side factors proved to be more important for regional manufacturing net employment growth in Baden-Wuerttemberg from 1980 to 1999 than demand-side factors.

In detail, a higher regional wage-level and higher local profit tax ("Gewerbesteuer") rate both tend to hamper a county's manufacturing employment growth. A significant impact of prices of building land on regional manufacturing net employment change, however, cannot be found when controlling for other explaining variables.

Differences in the regional endowment with production factors play an important role in explaining interregional differences in manufacturing employment growth. The results confirm that both a good regional endowment with human capital and a high regional R&D intensity tend to stimulate employment development. The higher the share of low-skilled workers or employees, the worse regional manufacturing growth has been. As we included the share of R&D employees from total employment in t to t-3 into our regressions, the effect of the level of R&D intensity in t-3 on employment growth in [t; t+1] can be measured as the sum of the four estimated coefficients. A test on significance shows that the medium-term impact of a high R&D intensity in t-3 on employment growth in [t;t+1] is positive and highly significant.

While several characteristics of the regional supply-side conditions are thus relevant for regional manufacturing employment growth, the estimation results do not find a significant impact of a county's demand-side conditions on regional employment growth. Neither the level of regional unemployment nor the population densities are significantly when correlated with regional employment growth[16]. While supply-side factors in the form of cost components directly affect a firm's employment, demand factors depicting purchasing power of private households in the region seem less relevant for manufacturing firms. A possible reason is that manufacturing goods are usually sold to other firms rather than to private households and, in addition, the sales are rarely restricted to the region where the manufacturing firm is located. This particularly holds for Baden-Wuerttemberg, where the manufacturing industry is characterised by an outstanding export quota. This implies that manufacturing production in Baden-Wuerttemberg strongly depends on foreign demand. This at least may partly explain why demand-side location factors do not play a significant role for manufacturing employment growth here.

In terms of the characteristics of regional industry structures, the estimation results confirm for Baden-Wuerttemberg that regional differences in firm size structure are important

---

[16] Thus, we also do not find empirical evidence for significant urbanisation effects for Baden-Wuerttemberg in the time period from 1980 to 1999.

for explaining interregional growth differences in manufacturing: The smaller average regional firm size is, the higher is the growth rate of manufacturing employment, all else being equal. This can be interpreted as a hint that small firms play a very important role in regional employment development. Regions that are characterized by firms highly integrated into foreign trade (measured by export share from turnover) c.p. experience significantly higher rates of manufacturing employment growth than regions with a lower export quota. This underlines the fact that an increasing trade openness of the firms located within the region stimulates regional manufacturing employment growth.

The results do not confirm the existence of relevant localisation effects, since the estimated coefficients for sectoral concentration variables are never significantly different from zero. Moreover, there is no relationship between the regional degree of tertiarisation and regional employment growth. However, the results indicate that there is a substitutive negative relationship between regional employment growth in manufacturing and in the service sector when controlling for macroeconomic effects by year fixed effects: Regions with a higher rate of employment growth in services show a significantly lower rate of employment growth in manufacturing at the same time[17].

The rather high level of within-R^2 of 0.78 observed for all different estimations can mainly be explained by the inclusion of year dummies to control for changes in macroeconomic conditions. A test of joint significance of the year effects confirms that they are highly significant. Though the values for the between-R^2 are much lower, up to 19% of the dispersion of growth rates between the counties can be explained by differences in the observed regional characteristics. This implies, however, that more than 80% of the variance of the dependent variable must be traced to unobserved individual county effects.

Indicators for traffic infrastructure could not be included into our fixed effects panel regressions above, since there was no time-varying information available and since including information for a single year would lead to estimation problems because of perfect collinearity with the county-fixed effects. Simple correlation analysis of the estimated county-specific fixed effects from our panel regressions with our variables on traffic infrastructure, however, indicates that a better quality of regional traffic infrastructure also stimulates regional employment growth. For three different measures of traffic infrastructure (driving times to the next motorway slip road, truck-railway terminal, and international airport, respectively), the Bravais-Pearson coefficient of correlation shows a significant negative relationship between

---

[17] The question of whether this result is based on the outsourcing phenomenon is among other issues dealt within the next section.

driving time and the county-level fixed effects. This is underscored when one considers the Spearman rank correlation coefficient, which is also always negative and, in most cases, significantly different from zero (see Table 5).

Table 5: Correlation between unobserved county-specific fixed effects and different indicators for traffic infrastructure

driving time to the next motorway slip road		driving time to the next truck-railway terminal		driving time to the next international airport	
Bravais-P.	Spearman	Bravais-P.	Spearman	Bravais-P.	Spearman
-0,30*	-0,42***	-0,37**	-0,31**	-0,28*	-0,23
(0,05)	(0,00)	(0,01)	(0,04)	(0,07)	(0,13)

* / ** / *** significant at a 10%/5%/1% level of significance

Source: Federal Office for Building and Regional Planning, Authors' calculations.

4.3 Are the results driven by regional firm level job creation or job destruction?

In section 4.2 the impact of regional conditions on regional manufacturing net employment growth has been analyzed. In the following, the availability of establishment-level panel data is used to examine whether a better regional development of manufacturing employment is either be driven by a higher regional rate of gross job creation or a lower regional rate of gross job destruction. Thus, the effects of regional supply- or demand-side conditions on net employment growth considered in section 4.2 may either be caused by their impact on job creation and/or on job destruction. Thereby, job creation comprises the job expansion in existing firms, the foundation of new firms and the moving in of firms from other regions while job destruction may consist of job reductions in existing firms, the closure of firms or the moving out of firms into other regions (see Davis et al. 1996 for details on the concept of job creation and destruction).

From the estimation results presented in Table 6, some rather general conclusions can be drawn, first with respect to the role of regional characteristics for gross job creation and gross job destruction.

The estimation results indicate that with respect to the variables, observed regional differences in gross job destruction can mainly be explained by regional differences in local profit taxe rates and wage-levels. Moreover, the estimated coefficients for the year dummies and the test of their joint significance illustrate that business cycle effects are very important for job destruction. But the majority of regional characteristics considered do not have a statistically significant impact on the rate of regional gross job destruction.

Table 6: Determinants of regional manufacturing gross job creation and destruction from 1980 until 1999 in counties in Baden-Wuerttemberg; results from panel estimates with fixed effects, clustered standard errors robust against autocorrelation of unknown form

	Job creation		Job destruction	
	(1)	(2)	(1)	(2)
Price for building land in 100 EUR/ m², t-1	0.000	0.001	-0.006	-0.006
	[0.871]	[0.796]	[0.107]	[0.126]
Average salary per clerk (t-1)	-0.005	-0.006	0.010	0.011*
	[0.431]	[0.373]	[0.131]	[0.094]
Average of multiplying factor on local tax base rate (t-1)	-0.003	0.000	0.037**	0.034*
	[0.851]	[1.000]	[0.026]	[0.059]
Share of R&D employees (t)	-0.312***	-0.305**	0.511***	0.497***
	[0.010]	[0.014]	[0.000]	[0.000]
Share of R&D employees (t-1)	0.976	1.068	-0.302	-0.421
	[0.168]	[0.017]	[0.456]	[0.308]
Share of R&D employees (t-2)	-0.286	-0.248	0.535	0.517
	[0.685]	[0.727]	[0.291]	[0.305]
Share of R&D employees (t-3)	0.616*	0.590	-0.751	-0.755
	[0.092]	[0.104]	[0.186]	[0.174]
Share of low-skilled employees	-0.165*	-0.153	0.120	0.109
	[0.087]	[0.102]	[0.255]	[0.279]
Unemployment rate (t-1)	0.000	0.000	-0.001	-0.001
	[0.888]	[0.865]	[0.241]	[0.262]
Population density (t-1)	0.012**	0.010**	0.006	0.008
	[0.030]	[0.024]	[0.253]	[0.104]
Sectoral concentration (Herfindahl-indes)	0.007		0.019	
	[0.787]		[0.378]	
Tertiarisation degree	0.029	0.019	0.095	0.092
	[0.711]	[0.803]	[0.154]	[0.179]
Employment development in the service sector	-0.102**	-0.107**	0.004	0.007
	[0.026]	[0.141]	[0.927]	[0.862]
Average firm size (employment basis)	-0.000***	-0.000***	0.000	0.000
	[0.003]	[0.000]	[0.888]	[0.712]
Export quota manufacturing sector		0.049		-0.029
		[0.102]		[0.495]
Constant	0.099	0.087	-0.238**	-0.226**
	[0.150]	[0.214]	[0.014]	[0.024]
Year effects	23.9***	20.2***	44.3***	38.2***
(P-value of the test on joint significance)	[0.000]	[0.000]	[0.000]	[0.000]
Test on joint significance of the R&D variables	5.1***	5.5***	11.3***	13.6***
	[0.002]	[0.001]	[0.000]	[0.000]
R² (within)	0.513	0.516	0.697	0.698
R² (between)	0.053	0.043	0.143	0.136
R² (overall)	0.001	0.004	0.177	0.143
Number of observations	616	616	616	616
Number of counties	44	44	44	44
F-test for the model	151.7	104.3	178.5	181.1
	[0.000]***	[0.000]***	[0.000]***	[0.000]***
Share of total variance explained by individual effects	96,7%	96,0%	91,7%	94,1%

Robust p-values in parentheses, adjusted for clustering

* / ** / *** significant at a 10%/5%/1% level of significance

Source: Authors' calculations.

The regional gross job creation rate, in contrast, depend neither on the cost of production factors nor on the average rate of local profit taxes. But a county's endowment with human capital and its R&D intensity stimulate regional job creation. Moreover, regional firm size structure and a county's openness to trade have a significant effect on job creation, but no

significant effect on job destruction: The more the local firm structure is characterized by small firms, the higher is the regional rate of job creation. And a higher export quota of the county's manufacturing firms correlates with higher rates of job creation, though the effect is at best rudimentarily significant.

Regions with better employment development in the service sector have significantly smaller rates of job creation in manufacturing, while they do not differ with respect to manufacturing job destruction. This lack of impact of employment growth is very interesting, since it indicates that outsourcing from manufacturing to the service sector cannot be the main reason for the negative impact on regional net employment growth in the manufacturing sector. Instead, the negative development of manufacturing employment in the case of a growing service sector employment reveals itself — on the manufacturing sector side — in the shape of weaker job creation and not in the shape of higher job destruction.

Summarizing these results with respect to the initial question of whether the effects of regional conditions on manufacturing net employment growth are driven by their impact on job creation and/or job destruction, one can at first confirm that — as already noted for net employment growth — supply-side characteristics are important for job creation and job destruction, while demand-side conditions seem to be of less importance both for job creation and job destruction. Only agglomeration effects measured by a region's population density tend to stimulate regional job creation to a certain degree.

Moreover, the results illustrate that the negative impact of the regional costs of production on employment growth is mainly driven by higher rates of job destruction, while there is no significant impact on job creation rates. In contrast, however, the positive impact of human capital and regional R&D intensity on net employment growth is mainly caused by significantly larger job creation, while job destruction is not different. For all industry structure variables that were shown to play a significant role for net employment growth in section 4.2, the respective effect is solely driven by the job creation side. Thus, regions with a smaller average firm size structure, with higher export quotas, and with worse employment development in the service sector have significantly higher rates of job creation, but they do not differ with respect to job destruction.

These results indicate the tendency that a regional location factor (or industry structure aspect) that influences job creation does not simultaneously affect job destruction, and vice versa.

5   Concluding remarks

It was the aim of this paper to conduct an empirical analysis of the regional determinants of regional manufacturing employment development. Moreover, based upon the calculation of gross job, the question arises as to whether the impact of different regional supply- and demand side factors on employment growth is caused by affecting job creation and/or job destruction.

Summarizing the main results, the preceding analyses indicate that in Baden-Wuerttemberg, Germany, for the time period from 1980 to 1999, regional supply-side factors were of greater relevance for aggregate manufacturing net employment change than were regional demand-side conditions. Moreover, by looking behind the scenes of aggregate regional employment growth, the analyses show that different supply-side factors that are important for net employment growth are indeed of different relevance for job creation and job destruction: Whereas high regional labour costs and high local profit tax rates increase job destruction, the respective location factors do not significantly influence the job creation side. The opposite holds true for a region's endowment with human capital and regional innovation, which both mainly affect job creation. In contrast to the supply-side, regional location factors of the demand side can neither be shown to influence job creation nor job destruction. Differences in regional firm size structure, export intensity, and other industry structures that are shown to be important for regional net employment growth are affecting job creation, but not job destruction. These findings indicate that no regional location factor or industry structure aspect influences both job creation and job destruction.

Since the results presented have been derived for regional employment growth in the manufacturing sector, the obvious question arises of whether these results are also valid for employment growth in the service sector. In particular, the low importance of demand-side factors might partly be explained by the focus of this paper on manufacturing employment, the more so as Baden-Wuerttemberg has an above average export quota. A respective analysis of the determinants of net employment change, job creation, and job destruction for the German service sector would, however, require the availability of similarly comprehensive firm-level employment data for the service sector, which so far is not possible.

References

Agostini, C. "The Impact of State Corporate Taxes on FDI Location". *Public Finance Review* 35 (2007): 335-360.

Almeida, R. "Local Economic Structure and Growth". *Spatial Economic Analysis* 2 (2007): 65-90.

Alonso, W. "A Theory of the Urban Land Market". *Papers and Proceedings of the Regional Science Association* 6 (1960): 149-157.

Arauzo-Carod, J.M. "Determinants of Industrial Location: An Application for Catalan Municipalities". *Papers in Regional Science* 84 (2005): 105-119.

Arellano, M. "Computing Robust Standard Errors for Within-groups Estimators". *Oxford Bulletin of Economics and Statistics* 49.4 (1987): 431-443.

Audretsch, D. and D. Dohse. "Location: A Neglected Determinant of Firm Growth". *Review of World Economics* 143 (2007): 79-107.

Baltagi, B. H. *Econometric Analysis of Panel Data.* 2nd ed. Chichester: Wiley & Sons, 2001.

Brixy, U. and R. Grotz. "Regional Patterns and Determinants of New Firm Formation and Survival in Western Germany". Nürnberg. 2006. IAB Discussion Paper No. 5.

Büttner, T. and M. Ruf. "Tax Incentives and the Location of FDI: Evidence from a Panel of German Multinationals". Frankfurt/M. 2005. Deutsche Bundesbank Discussion Paper 17.

Cainelli, G. and C. Lupi. "Does Spatial Proximity Matter? Micro-evidence from Italy". Ed. De Lisio and R. Leoncini. *Internationalization, Technological Chance and the Theory of the Firm* (forthcoming 2010).

Cheng, S. "The Role of Labour Cost in the Location Choices of Japanese Investors in China". *Papers in Regional Science* 85 (2006): 121-138.

Coughlin, C. and E. Segev. "Location Determinants of New Foreign-owned Manufacturing Pants". *Journal of Regional Sciences* (2000): 323-351.

Davis, S.J., Haltiwanger, J.C. and Schuh, S. *Job Creation and Destruction.* Cambridge, Mass.: MIT Press, 1996.

Devereux, M. P. and R. Griffith. "Taxes and the Location of Production: Evidence from a Panel of U.S. Multinationals". *Journal of Public Economics* 68 (1998): 335-367.

De Vor, F. and H. L. F. de Groot. "Agglomeration Externalities and Localized Employment Growth: the Performance of Industrial Sites in Amsterdam". *The Annals of Regional Science* (forthcoming 2009).

Di Giacinto, V. and G. Micucci. The Producer Service Sector in Italy: Long-term Growth and its Local Determinants. 2007. Bank of Italy, Temi di Discussione Working Paper, No. 643.

Drucker, J. *Trends in Regional Industrial Concentration in the United States* (CES 09-06, Center for Economic Studies).

Farhauer, O. und N. Granato. "Regionale Arbeitsmärkte in Westdeutschland. Standortfaktoren und Branchenmix entscheidend für Beschäftigung". 2006. IAB-Kurzbericht Ausgabe Nr. 4, 24.3.2006.

Fritsch, M., U. Brixy and O. Falck. "The Effect of Industry, Region and Time on New Business Survival – A Multi-Dimensional Analysis." *Review of Industrial Organization* 28 (2006): 285-306.

Funke, M. and A. Niebuhr. "Regional Geographic Research and Development Spillovers and Economic Growth: Evidence from West Germany." *Regional Studies* 39.1 (2005): 143-153.

Gabe, T.M. and K.P. Bell. "Tradeoffs between Local Taxes and Government Spending as Determinants of Business Location". *Journal of Regional Science* 44 (2004): 21-41.

Helpman, E., M. Melitz and S. Yeaple. "Export versus FDI with heterogeneous firms." *American Economic Review* 94. (2004): 300-317.

Hoogstra, G. J. and J. van Dijk. "Explaining Firm Employment Growth: Does Location Matter?" *Small Business Economics* 22 (2004): 179-192.

Hotelling, H. "Stability in Competition." *Economic Journal.* 39 (1929): 41-57.

Hymel, K. "Does Traffic Congestion Reduce Employment Growth?" *Journal of Urban Economics* 65 (2009): 127-135.

Jiwattanakulpaisarn, P., R. B. Noland, D. J. Graham and J.W. Polak. "Highway Infrastructure and State-level Employment: A Causal Spatial Analysis." *Papers in Regional Science* 88 (2008): 133-159.

Kohlhase, J. E. and X. Ju. "Firm Location in a Polycentric City: The Effects of Taxes and Agglomeration Economies on the Location Decisions". *Environment and Planning C*: *Government and Policy* 25 (2007): 671-691.

Koo, J. and T.-E. Kim. "When R&D Matters for Regional Growth: A Tripod Approach". *Papers in Regional Science* 88 (2009): 825-840.

Koski, H. "Public R&D Subsidies and Employment Growth – Microeconomic Evidence from Finnish Firms". 2008. The Research Institute of the Finnish Economy, Elinkeinoelämän Tutkimuslaitos, Discussion Papers, Keskusteluaiheita, No. 1143.

Launhardt, W. "Die Bestimmung des zweckmäßigen Standorts einer gewerblichen Anlage". *Zeitschrift des Vereins deutscher Ingenieure* 26 (1882): 105-116.

Lucas, R.E. "On the Mechanics of Economic Development". *Journal of Monetary Economics*, 22 (1988): 3-42.

O'Sullivan, A. *Urban Economics*, Boston et al., 2003.

Pierluigi, B. and M. Roma. "Labour Cost and Employment across Euro Area Countries and Sectors". 2008. Frankfurt/Main. ECB Working Paper No. 912.

Poelhekke, S. "Human Capital and Employment Growth in German Metropolitan Areas: New Evidence". 2009. DNB Working Paper No. 209.

Strotmann, H. "Entrepreneurial Survival". *Small Business Economics* 28.1 (2007): 87-104.

Suedekum, J. and U. Blien. "Stimulating Employment Growth with Higher Wages? A New Approach to Addressing an Old Controversy". *Kyklos. International Review for Social Sciences,* 60 (2007): 441-464.

Weber, A. *Theory of the Location of Industries*. Chicago, 1929.

Wooldridge, J. M. *Econometric Analysis of Cross Section and Panel Data*, Cambridge, Mass., 2002.

IAW-Diskussionspapiere

Die IAW-Diskussionspapiere erscheinen seit September 2001. Die vollständige Liste der IAW-Diskussionspapiere von 2001 bis 2007 (Nr. 1-36) finden Sie auf der IAW-Internetseite www.iaw.edu/publikationene/iaw-diskussionspapiere.

IAW-Diskussionspapiere seit 2008:

Nr. 37   (Dezember 2007)
Neue Ansätze zur flächenschutzpolitischen Reform des Kommunalen Finanzausgleichs
Raimund Krumm

Nr. 38   (Januar 2008)
Banking Globalization: International Consolidation and Mergers in Banking
Claudia M. Buch / Gayle L. DeLong

Nr. 39   (Januar 2008)
Multiplicative Measurement Error and the Simulation Extrapolation Method
Elena Biewen / Sandra Nolte / Martin Rosemann

Nr. 40   (Juni 2008)
Das Konzept des „Regionalen Gewerbeflächenpools" aus ökonomischer Sicht
Raimund Krumm

Nr. 41   (Juli 2008)
Openness and Income Disparities: Does Trade Explain the 'Mezzogiorno' Effect?
Claudia M. Buch / Paola Monti

Nr. 42   (August 2008)
Flächenschutzpolitische Implikationen eines Regionalen Gewerbeflächenpools
Raimund Krumm

Nr. 43   (September 2008)
Mikroökonomische Determinanten und Effekte von FDI am Beispiel Baden-Württemberg
Christian Arndt / Anselm Mattes

Nr. 44   (September 2008)
The Impact of Macroeconomic Factors on Risks in the Banking Sector: A Cross-Country
 Empirical Assessment
Olga Bohachova

Nr. 45   (Oktober 2008)
Effects of Dismissal Protection Legislation on Individual Employment Stability in Germany
Bernhard Boockmann / Daniel Gutknecht / Susanne Steffes

Nr. 46   (November 2008)
Trade's Impact on the Labor Share: Evidence from German and Italian Regions
Claudia M. Buch / Paola Monti / Farid Toubal

Nr. 47   (März 2009)
Network and Border Effects: Where Do Foreign Multinationals Locate in Germany?
Julia Spies

Nr. 48   (März 2009)
Stochastische Überlagerung mit Hilfe der Mischungsverteilung (Stand: 18. März 2009 – Version 49)
Gerd Ronning

Nr. 49   (April 2009)
Außenwirtschaftliche Verbindungen der deutschen Bundesländer zur Republik Österreich
Anselm Mattes /Julia Spies

Nr. 50   (Juli 2009)
New Firms – Different Jobs? An Inquiry into the Quality of Employment in Start-ups and Incumbents
(Stand: 28. Juli 2009 – Version 1.3)
Andreas Koch / Jochen Späth

Nr. 51   (Juli 2009)
Poverty and Wealth Reporting of the German Government: Approach, Lessons and Critique
Christian Arndt / Jürgen Volkert

IAW-Diskussionspapiere