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German FDI in the Czech Republic – Employment effects in the home country

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Content

Abstract

Do investments in the Czech Republic lead to employment growth or employment losses in the German firms involved? To address this question, a unique database about German firms with foreign direct investment (FDI) in the Czech Republic and firms without FDI in any country has been established within the IAB-ReLOC project. By developing a new method for linking firm-level data with establishment-level data of the Institute for Employment Research (IAB), this database is now linked with the IAB employment data. As the exact dates of the investments in the Czech Republic are known, the employment development of firms with Czech affiliates and firms without FDI is compared for the same time periods. The analysis shows that the two observation groups actually develop differently. In the years after the investment, the employment of multinational enterprises (MNEs) in the home country shrinks relative to the employment of the reference group (non-MNEs). The negative trend continues for up to five years. However, not all types of jobs are affected adversely. The downward trend refers to medium- and low-skilled workers only, whereby the demand for high-skilled workers even increases after the investment.

Zusammenfassung

Haben Investitionen in der Tschechischen Republik zu Beschäftigungswachstum oder Beschäftigungsverlusten in den betroffenen deutschen Unternehmen geführt? Um diese Frage zu beantworten, wurde im IAB-ReLOC-Projekt eine einzigartige Datenbank deutscher Firmen mit ausländischen Direktinvestitionen (ADI) in der Tschechischen Republik und Firmen ohne ADI in allen Ländern aufgebaut. Durch die Entwicklung einer neuen Methode zur Verknüpfung von Daten auf Unternehmensebene mit Betriebsdaten des Instituts für Arbeitsmarkt- und Berufsforschung (IAB) wurde diese Datenbank nun mit den IAB-Beschäftigungsdaten verknüpft. Da über den Zeitpunkt der Investition in der Tschechischen Republik genaue Informationen vorliegen, kann die Beschäftigungsentwicklung von Firmen mit tschechischen Tochtergesellschaften und Firmen ohne ausländische Direktinvestitionen für die gleichen Zeitspannen verglichen werden. Die Analyse zeigt, dass sich die beiden Beobachtungsgruppen tatsächlich anders entwickeln. Ein Jahr nach der Investition schrumpft die Beschäftigung von multinationalen Unternehmen (MNEs) im Heimatland im Verhältnis zur Beschäftigung der Referenzgruppe (Nicht-MNEs). Der negative Trend setzt sich bis zu fünf Jahre fort. Allerdings sind nicht alle Kategorien von Arbeitsplätzen nachteilig betroffen. Der Abwärtstrend bezieht sich nur auf mittel- und geringqualifizierte Arbeitskräfte, währenddessen die Nachfrage nach hochqualifiziertem Personal nach der Investition sogar zunimmt.

JEL-Klassifikation: J23; F23; F66

Keywords: labor demand, multinational firms, foreign direct investment, offshoring, economic integration, skills

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1 Introduction

In recent years, the support for globalization and the backing of free trade relations has considerably slowed down. Election results in Europe and the US visibly point out that many people are scared by the consequences of market liberalization. Concerning the Western European economies, the fall of the Iron Curtain in 1989, the enlargement of the European Union (EU) in 2004 and the cross-border mobility of production factors have offered new business opportunities for companies based in the EU. Since the 1990s, Central and Eastern European Countries (CEEC) were one of the favorite destinations for international investments. This is not surprising as these markets are attractive for both primary motives for investing abroad. On the one hand, cost savings drive investors to Eastern Europe, where wages are still considerably lower than in Western Europe, attracting multinational enterprises (MNEs) to relocate activities to cheaper sites in the East of the continent. On the other hand, the rising purchasing power in the CEEC makes them an attractive candidate for the opening up of new markets. These advantageous conditions apply in particular for German firms investing in the Czech Republic, which shares a long common border with the neighboring country. While German multinationals acted as stabilizers for the Czech economy during the Great Recession of 2008/2009 (Moritz/Stockinger/Trepesch 2017), little is known about the impact of foreign direct investment (FDI) on the domestic labor market of the investing firms. Despite the obvious importance of this development for European countries' economies and societies, whether public fears concerning the relocation of jobs and the deterioration of the position in competition of manufacturing industries are really justified has so far not been fully assessed. One of the rare exceptions dealing with the German-Czech border is the study by Dustmann/Schönberg/Stuhler (2017), that focuses, however, on effects of immigration and commuting in the early transition years. Concerning the consequences of FDI on MNEs' domestic labor demand, a bulk of previous studies find positive or no significant effects, even if they differentiate in terms of target regions (see below). However, they rely on selective FDI databases, which underrepresent small and medium-sized parent companies and/or affiliates (Pflüger et al. 2013).

The contribution of this paper is the utilization of a unique database on German FDI in the Czech Republic, the main target for German investors among the CEEC in the recent decades. The dataset has been established within the IAB-ReLOC project and covers the total population of German affiliates and the corresponding German MNEs. It is based on the full Czech Commercial Register, including the dates of investment, and is therefore not subject to selectivity issues. Thus, although the analysis is restricted to a two-country relationship, it allows reliable conclusions on the impact of FDI, at least for the German-Czech case. Because it is linked to the employment data of the German Federal Employment Agency (BA), the merged database has a longitudinal dimension, which facilitates the identification of the effects on the German parent companies. Firms without FDI in any country linked to the BA establishment data in the same manner serve as a reference set. The effects of FDI are investigated by comparing these two groups with respect to their employment trends.

Our key finding is that German MNEs reduce their employment level after the investment. This leads to negative effects when they are compared to firms without FDI. These negative effects are driven by the decreasing demand for low- and medium-skilled workers. In contrast, MNEs' demand for high-skilled workers increases until shortly after the investment. The findings justify public concerns about offshoring and imply the risk of negative effects of investments to countries with lower labor costs on part of the workforce. However, it shows that a well-educated workforce can benefit from FDI even in case of great opportunities for cost reductions. In conclusion, the question arises as to how the interests of the losers of globalization can be preserved, e.g. through educational efforts and/or welfare state measures. The remainder of this article is structured as follows: Section 2 reviews the recent literature. Section 3 describes the data and explains the methodology. Section 4 presents the results, and Section 5 concludes with an outlook on future research.

2 Literature review

With the tremendous rise in FDI, a detailed investigation of its labor market effects is outstandingly crucial. Does FDI lead to job losses or to job growth on the domestic side? Which categories of jobs are affected? These are crucial questions for Germany and other advanced economies. By approaching this topic through theory, it is often distinguished between two types of foreign direct investment: horizontal FDI and vertical FDI (Pflüger et al. 2013). Vertical FDI is often supposed to affect the domestic workforce negatively. However, reducing a firm's production costs by exploiting comparative advantages and shifting part of its domestic jobs to a foreign affiliate can boost productivity and therefore increase demand for all activities maintained in the home country (Groizard/Ranjan/Rodriguez-Lopez 2014; Grossman/Rossi-Hansberg 2008). Similarly, there is no clear prediction in the case of horizontal FDI. In case of horizontal or market-motivated investments, the investing firm enlarges its market and thus needs more headquarters services, such as research and development, public relations, branding activities, the development of managerial activities or controlling (Markusen 2002). If at least a part of these headquarters services is conducted in the parent company, the demand of the investing firm for employees that can conduct these activities, which are more likely to be skill-intensive, increases. However, if the parent company is establishing manufacturing facilities in a foreign country to save transport costs and to serve the new market with an on-site plant, this market-motivated investment could also reduce the size of its domestic workforce when it replaces former exports in the foreign market (Barba Navaretti/Castellani/Disdier 2010). Various activities within the firm can thus be affected differently. Here, the division of activities within the corporate group is crucial. When German parent companies relocate low-skilled, labor-intensive production, such as assembling, from the home base to a country with lower labor costs, workers having so far executed these jobs become displaced. In contrast, jobs remaining in the home country can benefit from higher productivity and increasing worldwide sales. In this case, less-skilled workers are more likely to be affected negatively than highly qualified employees, who in turn might benefit from rising sales.

Although underlying investment motives affect the type of impact on a firm's domestic employment, even the classification into horizontal FDI and vertical FDI provides no clear predictions about the employment effects. It is, therefore, principally essential to address this subject empirically. There are several empirical works based on firm-level, sectoral or regional data analyzing the effects of outward FDI on domestic employment (see Crinò 2009; Pflüger et al. 2013, for a comprehensive survey). Focusing on studies that compare MNEs with firms without FDI, there are also usually no negative, but rather positive effects of FDI on employment at home: see Barba Navaretti/Castellani/Disdier (2010) and Castellani/Mariotti/Piscitello (2008) for Italian MNEs, Barba Navaretti/Castellani/Disdier (2010) and Hijzen/Jean/Mayer (2011) for French MNEs, Hijzen/Inui/Todo (2007) for the case of Japan, and Becker/Muendler (2008), Wagner (2011) and Kleinert/Toubal (2007) for Germany. A study elaborated by Debaere/Lee/Lee (2010) reports negative effects on the domestic employment of MNEs. The authors find that Korean firms with their first investment in less advanced countries have smaller employment growth than domestic firms without FDI. For the three-year period following the investment, they estimate a 2 percent lower annual growth for Korean MNEs. In contrast, investments to more advanced countries do not lower the employment growth of Korean multinationals. Similar results are derived by Jäckle/Wamser (2010): in the three years after having invested abroad for the first time, German MNEs have a 4 percent lower annual employment growth than firms without FDI. As far as the skill composition is concerned, most studies provide evidence for skill upgrading in the course of FDI: see for example Head/Ries (2002) for the case of Japan, Hansson (2005) for the case of Sweden, and Geishecker/Görg/Maioli (2008) for Germany and the UK. Analyzing also German multinational enterprises, Becker/Ekholm/Muendler (2013) include the task classification by Autor/Levy/Murnane (2003). They find an educational upgrading as well as an increasing share of non-routine tasks of German MNEs after expanding their workforce in affiliates in low-income countries. Notably, with the exception of the CEEC, where the estimated coefficients are generally insignificant. In contrast, Castellani/Mariotti/Piscitello (2008) identify skill upgrading in the case of Italian multinationals only when they invest in the CEEC. In this context, the study by Marin (2004) should be mentioned. She refers to a survey among 660 German and Austrian investors in Eastern Europe. In contrast to other studies, she argues that German and Austrian multinationals are shifting high-skilled jobs and not low-skilled jobs to Eastern Europe, as she detects a great difference between the share of high-skilled employment of the parent companies and their Eastern European affiliates. However, there are basic differences in the education systems between these countries that have to be considered. In particular, the dual education system, which is much less established in Eastern European countries lacking practical education within firms, might play a role here.

There is so far no study on German FDI that is based upon a comprehensive and unbiased dataset, as small and medium-sized firms are generally underrepresented in the mostly used data sources. A standard problem of all studies that use the MiDi

database of the Deutsche Bundesbank is that they cover only investments in foreign affiliates with a balance sheet of more than 3 million Euro and at least a 10 percent ownership share of the German investor. In the past, the reported thresholds have been changed several times (see Pflüger et al. 2013). The databases provided by Bureau van Dijk, such as Amadeus, Markus, Orbis and Dafne, are also confined to rather large companies. Before launching the *Elektronischer Bundesanzeiger* in 2007, commercial data providers always had much more information about larger firms because information about their investments is published in business reports more often than that of medium-sized or small firms. To see the difference, in 2011, the databases of Bureau van Dijk as well as the MiDi database contained approximately 1,000 Czech companies with a German owner. In contrast, the IAB-ReLOC database covers approximately 3,900 Czech companies having a German owner by including many more small and medium-sized firms. The reason for this is the direct utilization of administrative data sources such as the Czech Commercial Register (see Hecht/Litzel/Schäffler 2013).

Moreover, there are other sources for possible biases: in their studies, Becker/Muendler (2008) and Becker/Ekholm/Muendler (2013) identify only the headquarters of each company in the data of the BA. They do not solve the problem that the BA data are available at the establishment level only and not at the firm level. They might miss establishments and thus relevant information as especially bigger companies can consist of several or even many establishments. If the employment of headquarters and their further establishments develop differently, the results become biased. This is all the more important in case of large firms and therefore in the context of multinationals.

3 Data and methodology

The dataset used for this analysis has been built up within the scope of the IAB-ReLOC project. It includes about 3,400 German companies with affiliates in the Czech Republic in 2010. As some German multinationals own more than one Czech affiliate, the number deviates from the above-mentioned 3,900 Czech firms with German investors. In order to derive a large and comprehensive database on FDI, the Czech Commercial Register was accessed, and any actively operating firm with a German ownership share of at least 25 percent was identified. The owners' names and addresses were used for a record linkage procedure that is described in detail by Schäffler (2014). It has to be considered that the BA data do not include a firm identifier. Therefore, it was necessary to apply a method that identifies ideally every establishment belonging to one of the ReLOC firms. On the basis of preprocessed names and addresses of establishments and firms, the record linkage was implemented as follows: first, the names and addresses of the ReLOC companies and the BA establishments were used for the linkage. Second, only firm and establishment names were used to identify any establishment belonging to one of the ReLOC firms. This is possible, as the BA data include for each establishment the associated firm name. The

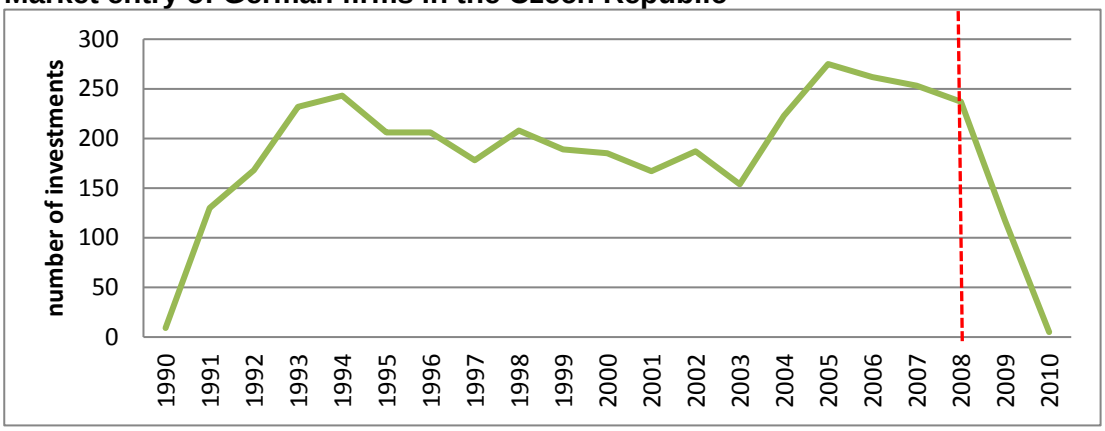
linkage with the establishment-level data of the BA resulted in 85 percent of the ReLOC companies in at least one assigned establishment. 30 percent of these firms consist of more than one establishment. Therefore, the share of multi-site establishments in this sample is relatively high. The same procedure was implemented for a reference group of approximately 9,500 firms without FDI in any country that was provided by the institute *TNS Infratest*, which conducted a company survey of the ReLOC firms (see Hecht/Litzel/Schäffler 2013; Hecht et al. 2017; Münich et al. 2014, for further details). The reference group is based on all firms listed in the German Commercial Register. When drawing the sample of reference firms, small firms were undersampled and medium-sized and large firms oversampled in order to ensure that the firms of the reference group are basically comparable to the multinational firms. The information whether a firm has a foreign affiliate refers to August 2010 and is retrieved from a commercial data provider using the same sources as Creditreform, Bureau van Dijk and Hoppenstedt, for example. It can be expected that for the vast majority the information about the non-existence of a foreign affiliate is valid also for the past. This is confirmed by the ReLOC survey, where only some 5 percent of the responding firms from the reference group indicated that they once were involved in capital participations abroad (Hecht et al. 2013). Of course, due to the lack of a comprehensive FDI database, the existence of a foreign affiliate cannot be ruled out completely. But in general, the share of multinationals in the total economy is still very small. According to the IAB Establishment Panel, though covering medium-sized and large plants (and thus also medium-sized and large firms) far above average (see Fischer et al. 2008, for example), only about 6 percent of German establishments were involved in FDI in 2010.

The data linkage results in 81,524 establishment IDs – 51,539 assigned to the multinational group and 29,985 to the reference group – that are recorded since the start of the notification process (January 1, 1973). These establishments are merged with data from the Employment History (BeH) and the Establishment History Panel (BHP) for the period from 1985 to 2010. Both IAB datasets are based on worker and plant characteristics that come from the notification process of the social security system. The BeH covers the total population of employees liable to social security contributions including individual characteristics such as education and wages. The wage data are censored at the upper earnings limits of the compulsory social security system (e.g., 66,000 € in Western Germany, 2010). To address this, an imputation procedure suggested by Card/Heining/Kline (2013) to correct the top-coded values is applied. Regarding the skill characteristics, which are sometimes reported mistaken or missing, the imputation algorithm suggested by Fitzenberger/Osikominu/Völter (2006) is used. Firm-level information on employment and wages is then derived by aggregating individual-level information. The BHP contributes further plant characteristics such as the main industry, the location and the date of foundation. It includes for each year any establishment with at least one employee liable for social security contributions, and since 1998 any establishment with at least one employee in marginal part-time employment as of June 30 (Gruhl/Schmucker/Seth 2012). For firms with more than

one establishment, a possible approach to derive firm-level information is to choose the region and industry that covers the highest proportion of firm employment.

Eastern German establishments are included in the IAB data since 1991. However, due to the time needed for the introduction of the employment notification procedure in Eastern Germany, they cannot be assumed to be recorded sufficiently complete before 1993 (Gruhl/Schmucker/Seth 2012). As a result of the sell-off of Eastern German firms through the *Treuhand* and various motives, which played a decisive role for investors particularly coming from Western Germany, aggregating establishments across both former separated regions also includes employment shifts that are not driven by an increasing demand for labor but by access to funds or low-priced real estates, for example. Therefore, for the following analysis, Eastern German plants are excluded as the investigation starts many years before the reliable coverage of Eastern German establishments and due to the very specific circumstances of the former communist economy and its economic units. This means that for each firm only its locations in Western Germany are taken into consideration, which affects mainly companies having their headquarters in Eastern Germany, but also some multi-site companies from Western Germany that set up Eastern German locations. Moreover, for the latter, the foundation of Eastern German plants could be even regarded as an investment similar to that in the Czech Republic. In general, the engagement of Eastern German investors in the Czech Republic is very low and compared to Western Germany far below average (see Schäffler/Hecht/Moritz 2017). Only about 10 percent of the German affiliates in the Czech Republic have an owner from Eastern Germany. After excluding Eastern German establishments, for an observation period from 1985 until 2010, there are about 6,800 firms from the reference group and 2,500 MNEs that appear at least once. Concerning the entry dates of the German multinationals in the Czech Republic, there are two peaks (Figure 1): a first one in the mid-1990s in the course of the initial wave of cross-border investments, and a second one shortly after the Czech accession to the European Union, which occurred in May 2004. The sharp decline after 2008 can be seen as an artefact that does not reflect the real development, as due to time lag many firms were not yet listed in the Czech Commercial Register.

Figure 1
Market entry of German firms in the Czech Republic



Source: Authors' own calculations from IAB-ReLOC database.

Table 1 reports summary statistics for the sample of firms with FDI in the Czech Republic and the reference group. For the MNE sample, the values are calculated for the first observation when they become multinational. For instance, when the date of investment is May 20, 2001, firm characteristics are based on June 30, 2001. Because the actual investment date is not recorded or not unambiguously identifiable in the Czech Commercial Register in some cases, the number of observations is below 2,500. There are some cases where the MNE does not occur in the IAB data before or in the year of the investment. The reason is that the ReLOC sample refers to investors in 2010 only. This gives rise to specific cases that cannot be treated properly and, therefore, should be excluded: before the firm in the MNE sample appeared as owner in the Czech Commercial Register, another investor that is affiliated with the recent one was already registered in the Czech Commercial Register, whereas the recent owner did not exist yet when the previous investor conducted the investment. Especially in this case, the proper observation unit would be the whole corporate group, which is not available. Therefore, the MNE sample is restricted to those firms that have already been recorded in the IAB data before or in the year of the investment. For firms from the reference group, any observation from 1990 to 2010 is included. On average, firms without FDI are clearly smaller than firms from the MNE sample.[1] Moreover, MNEs pay slightly higher wages and employ a higher share of employees with tertiary education and a lower share of medium-skilled and low-skilled workers. Low-skilled employees are those without vocational training or a high school degree. Medium-skilled employees have a vocational qualification or high school degree. Employees with a degree from a university or a technical college are classified as high-skilled. Regarding the industry affiliation, the groups do not differ remarkably.

[1] The large difference in firm size becomes considerably smaller when firms above the 99th percentile of the reference group, i.e. firms with more than 1,701 full-time employees, are dropped. This is related to the exclusion of some exceedingly large multinationals. Other firm characteristics barely change. The fact that there is not too much difference left comes also from the above-mentioned sample adjustment of the reference group.

Although the mean number of employees in MNEs is relatively high, compared to the MiDi database, it is small. To see the difference, in the sample of multinationals used by Becker/Muendler (2008), average employment is approximately 2,600. As already mentioned, the MiDi database includes larger FDI projects only. This is of special relevance here because of the common border between country of origin and destination country of FDI. For that reason, the transaction and information costs are lower in the joint border region, and thus small and medium-sized German firms can also afford to set up relatively small foreign affiliates in the Czech Republic (see Hecht 2017). This assessment is supported by Buch et al. (2005), who find that foreign affiliates of German companies are on average remarkably small in the CEEC. They interpret this finding as evidence that small and medium-sized German firms take particular advantage of nearby investment locations.

Table 1
Basic firm characteristics

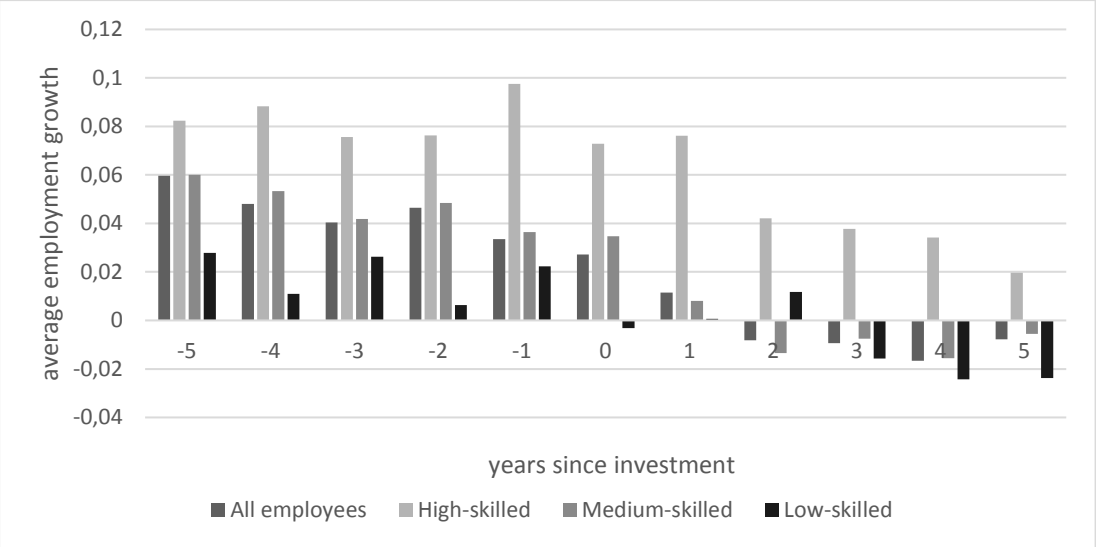
	Reference (n=6,800)		MNE (n=2,145)	
Variable	**Mean**	**Std. dev.**	**Mean**	**Std. dev.**
number of total employed	186.62	417.47	672.36	5,803.53
average daily gross wage	83.38	36.82	96.38	43.47
average wage high-skilled	149.77	71.54	160.45	63.74
average wage medium-skilled	81.84	29.83	91.27	36.01
average wage low-skilled	55.05	23.69	61.71	29.92
share of high-skilled	0.09	0.15	0.14	0.19
share of medium-skilled	0.76	0.20	0.73	0.21
share of low-skilled	0.14	0.16	0.12	0.15
share of manufacturing firms	0.43	0.50	0.46	0.50
share of service firms	0.46	0.50	0.43	0.50

Note: Wages and skill-specific shares are calculated on the basis of full-time employees.
Source: Authors' own calculations from IAB-ReLOC database.

Turning toward the MNEs and their evolution close to the investment, we can state that they increased their employment prior to the investment (see Figure 2). The growth rates are calculated on the basis of full-time employees, but there are no notable differences when part-time and minor employment is considered. To ease the interpretation by constructing positive and negative growth equally, the average of the values in *t* and *t-1* are in the denominator. The range of values lies between -2 and 2, instead of -1 and +∞, and creates symmetry around zero (Davis/Haltiwanger/Schuh 1996: 190). It is striking that the employment growth fundamentally changes shortly after the investment. On average (each firm gets the same weight whether large or small), it even becomes negative two years after the investment. The average growth rate for all observations since the investment – this includes also the one from the year of investment – is nearly zero (0.06 %). Starting one year after the investment yields mean growth below zero (-0.5 %). However, this pattern does not apply for

each skill group in the same manner. There are remarkable differences in the employment trends. For all skill groups, the number of employees increased before the investment. Afterwards, jobs for medium-skilled and low-skilled workers decreased, while the growth rate for high-skilled employment remained clearly positive. The average over all observations since the investment reveals employment losses for low-skilled workers (-0.8 %), but not for medium-skilled workers (0.1 %) as their stock still increased in the year of investment. By starting one year after the investment, mean growth of medium-skilled employment was also negative (-0.6 %).

Figure 2
Employment growth of MNEs – Skill groups



Source: Authors' own calculations from IAB-ReLOC database.

To summarize, the reduction of the workforce after the investment occurred for low- and medium-skilled employees. At this point, it should be noted again that the ReLOC sample represents a positive selection of German firms with investments in the Czech Republic because it is based on investors that had an affiliate in 2010. MNEs that had invested in the past but had been liquidated or closed down their Czech affiliate in the meanwhile are not part of this sample. Therefore, it is necessary to use a reference group consisting of firms operating in 2010 as well. Whether the conclusions also apply in a multivariate setting that allows one to control for other firm characteristics will be the subject of the following econometric investigation.

In our estimation approach, employment *L*, i.e. the number of employees of firm *i* in year *t* is regressed on its lagged value (*t-1*) and the average wage *w* (in *t* and *t-1*), both transformed into natural logs:

$$\ln(L_{it}) = \beta_0 + \beta_1 \ln(L_{it-1}) + \beta_2 \ln(w_{it}) + \beta_3 \ln(w_{it-1}) + \sum_{k=1}^{n} \eta_k X_{ikt-1} + \sum_{j=1}^{11} \gamma_j \, inv\_j + \pi_i + v_{it}$$

X represents further firm controls *k*. For a better comparability of firms, the share of high-skilled employees and routine-intensive occupations in *t-1* and firm age is included. Routine-intensive occupations include unskilled manual occupations, unskilled services and unskilled commercial and administrative occupations. Firm age

is calculated as the number of days since the first occurrence in the BHP. This characteristic is left-censored as the BHP starts on June 30, 1975. For firms with at least one establishment that has existed since the beginning, a dummy named *BHP_1975* obtains the value 1, while the age variable is set to zero. Furthermore, dummies for year, region, industry and legal form are incorporated. The regional dummies refer to spatial planning regions, a functional aggregation of districts to 96 regions based on commuting linkages. On the basis of the firm names, six dummies are created that control for the legal form. Industry dummies are based on 31 subsections. Each variable is calculated at the firm level. In case of two or more establishments per firm, the number of employees is totaled. For firm wage, averages are calculated. For firms with more than one establishment, the region and industry that covers the highest proportion of firm employment is chosen. In the fixed-effects estimations, π denotes the time-invariant firm fixed effect.

The main interest is on dummies indicating the years since or until the investment (*inv_j*). These investment dummies are designed to cover an observation period of eleven years, starting five years before and ending five years after the investment. The dummy *investment in this year* takes on the value 1 if the investment is less than one year ago. For instance, when the date of investment is March 1, 2001, firm characteristics are based on June 30, 2001. In the subsequent year (June 30, 2002), the dummy *investment 1 year ago* takes on the value 1, and so on. In case of investors with more than one Czech affiliate and different investment dates, which applies to 235 cases, this time frame refers to the first investment. The observation period is chosen in this way because part of the effects might not arise directly after the investment, but some years later. Mapping the preceding trend is useful for understanding the development afterwards and for obtaining a complete picture. Planning to invest abroad could induce adjustments in advance. In addition to this period of eleven years, no observation of the MNE group is considered in the following estimations. Consequently, for observations of the MNE group, there is always one investment dummy that obtains the value 1. In contrast, only firms without any kind of FDI serve as reference. For them, the investment dummies are always set to zero. Thus, the coefficient of each investment dummy indicates ceteris paribus the percentage difference regarding the employment level between the MNE and the reference group in the respective period.

Information about capital stock or firm output is not available. Both characteristics are part of a firm's labor demand, but in the short run, they can be assumed constant. If there is further unobservable firm heterogeneity that influences the employment level in *t*, at least part of it will be caught by its lagged value. In addition, due to the approach of comparing MNEs with firms from a suitable reference group, the results would only be biased if unobserved determinants of firm-specific labor demand, such as capital or total factor productivity, changed diversely across both groups within one year given the other control variates. To utilize the unique database and to evaluate the effects of the investment based on the total population of German affiliates, pooled

OLS and fixed-effects estimations are applied. Some comparable studies use propensity score matching or combine propensity score matching with diff-in-diff estimations (Barba Navaretti/Castellani/Disdier 2010; Debaere/Lee/Lee 2010). According to Angrist/Pischke (2009), the differences between matching and regression are unlikely to be of major empirical relevance when the treatment is binary. Regression can be seen as a type of propensity-score weighting, so the difference is mostly in the implementation. Both methods are control strategies where the conditions for causality are based on the same assumptions. What distinguishes this approach is confounding on the pre-year characteristics. In the case of matching and diff-in-diff regressions, the construction of the control group is based on pre-treatment characteristics. Therefore, it must be assumed that unobservable characteristics are time-constant for the respective estimation period. The ReLOC database, however, does not include the firms' capital stock, for example, which is an important explanatory variable. Assuming it to be constant for many years might be too strong. Moreover, firms need to respond at any time on changing conditions. Therefore, it seems to be most appropriate to build estimations on changes from one year to another.

4 Results

Table 2 reports the estimation outcome obtained for the development of total employment. The first two columns show the results of the pooled OLS estimations. Apart from the investment dummies, all explanatory variables have the expected signs and are in the expected range. The coefficient of lagged employment is close to 1, indicating a highly persistent employment level of German firms. Therefore, moving the lagged dependent variable to the left side of the equation would yield almost identical results for all other explanatory variables. As a consequence, the coefficients of the investment dummies can also be interpreted as differences in employment growth. The wage in *t* representing the costs of employment affects the firms' labor demand negatively. By including recent employment costs, the wage in *t-1* becomes a measure for productivity and impacts future labor demand positively. Turning toward the eleven investment dummies (see column (1)), the coefficients covering the years until the investment are mostly insignificant. The investment, however, marks a turning point. One year after the investment, the labor demand of German multinationals is significantly below that of the reference group. During the five years after the investment, the estimated differences between MNEs and non-MNEs range from -1.5 percent to -3.1 percent. In an alternative specification, the dummies indicating the period before the investment and those indicating the period afterward are replaced by one dummy to calculate the average difference (Table 2, column (2)). The indication of a positive development prior to the investment (significant at the 10 % level) points to self-selection of the most productive firms into investment. This is in line with theoretical considerations by Helpman/Melitz/Yeaple (2004), who show that only the most productive firms conduct FDI. Assuming a monotonic relationship between productivity and firm size as, for example, conducted by Antras/Helpman (2004), there is a positive correlation between firm size and the decision to invest abroad. Hence, MNEs

are not only basically larger at the date of investment but still increase their employment five years before their foreign engagement. Despite these plausible arguments for a selection effect, there is also an alternative explanation. Maybe multinational firms back up their domestic workforce because they need more headquarters services already in advance for planning and building up their foreign subsidiary. Again, in comparison to the reference group, the MNEs' employment significantly falls after the investment. A difference of 2.3 percent per year indicates a total loss of 11.5 percent. Accordingly, there is clear evidence for a negative trend after the investment. What is striking is the similarity to the results in the study by Debaere/Lee/Lee (2010) on Korean MNEs. They find, for a period of three years since the investment, a 2 percent lower annual growth for multinationals compared to firms without FDI, when they set up affiliates in less developed countries, which is a similar situation as in our case of German investments in the transition economy of the Czech Republic. In the columns (3) and (4) of Table 2, fixed-effects estimations are applied.[2] The results are similar to those in the first two columns, where the negative coefficients of the investment dummies tend to be slightly larger in magnitude. At the same time, the positive coefficients of the investment dummies are smaller. Accordingly, the outcome of the fixed-effects estimations does not support the former findings of an overall positive trend before the investment. Asymptotically, in the case of pooled OLS, the coefficient of the lagged dependent variable is biased upwards, and in the case of fixed-effects estimation, it is biased downwards (Nickell 1981). The same applies to the investment dummies when their coefficient is below zero. When the coefficient is above zero, this ranking is inverted (Harris/Mátyás/Sevestre 2008). This means that the coefficients of the investment dummies from pooled OLS and fixed-effects estimations indicate an upper and lower bound for reliable results.

Several sensitivity checks (first, including Eastern German establishments; second, substituting full-time employment by the number of full-time equivalents; third, dropping exceedingly large firms and fourth, additionally, small firms; fifth, splitting the MNE sample into three cohorts of equal length) confirm the robustness of our findings. When adding investment dummies for further years, such as *inv_since_6* and *inv_since_7*, the coefficients' signs are still negative, but they are not significant. Being aware that the ReLOC database includes no information about investments in other countries, we can at least suppose that negative effects occur up to five years after the investment. After that, there are no further job losses. It is often argued that efficiency-seeking investments might lead to positive effects in the long run, as it takes some time until gains in efficiency and competiveness are realized. In line with this, some studies find evidence for a positive impact in case of FDI in low-income countries that arises after some time lag (Barba Navaretti/Castellani/Disdier 2010;

[2] Compared to the pooled OLS regressions, the observation period in case of the fixed-effects estimations starts one year earlier to identify the coefficients for each of the eleven investment dummies. The different basis of the observations included in the estimations also affects the results for the coefficients of the covariates.

Hijzen/Jean/Mayer 2011). In the case of German direct investment in the Czech Republic, there is no evidence for an increase of total firm employment in the long run. Even the extension of the observation period until ten years reveals no positive significant coefficient of the investment dummies.

According to theory and empirical evidence, different types of jobs are assumed not to be affected in the same manner. On the one hand, it is easier to offshore routine activities and therefore relatively more medium-skilled and low-skilled jobs. On the other hand, markedly in the early years of the transition process, the technological and educational level lagged behind that of Western economies. Therefore, it is unlikely that German firms preferred to relocate working steps that require many high-skilled workers. Moreover, firms that realize efficiency gains by reducing costs of production are able to cut prices, which increases their sales (in case all other determinants remain constant). Due to the expansion, more service activities are required, such as management, marketing, and R&D services. In the case of an expansion of these activities in the domestic headquarters, multinational enterprises are exporters of knowledge-based services (Markusen 2002). If it is planned that the affiliate obtains other inputs and complementary products from the parent company for its production, the demand for the respective workers at home increases further (Barba Navaretti/Castellani/Disdier 2010). In our German-Czech case, German inputs are supposed to be more skill-intensive.

Table 2
Regression results – total employment

Dependent variable: ln(employment (t))												
	pooled OLS						fixed effects					
	(1)			(2)			(3)			(4)		
	coef.		SE	coef.		SE	coef.		SE	coef.		SE
before investment				0.007	*	0.004				-0.005		0.008
investment in 5 years	0.018	*	0.009				0.002		0.011			
investment in 4 years	0.006		0.009				-0.005		0.010			
investment in 3 years	-0.005		0.008				-0.016		0.010			
investment in 2 years	0.007		0.008				-0.006		0.010			
investment in 1 year	0.009		0.008				0.000		0.010			
investment in this year	0.008		0.008	0.008		0.009	0.001		0.011	0.001		0.011
investment 1 year ago	-0.015	**	0.007				-0.016		0.010			
investment 2 years ago	-0.031	***	0.007				-0.032	***	0.010			
investment 3 years ago	-0.024	***	0.006				-0.028	***	0.010			
investment 4 years ago	-0.028	***	0.008				-0.035	***	0.011			
investment 5 years ago	-0.016	**	0.007				-0.029	***	0.011			
after investment				-0.023	***	0.004				-0.027	***	0.009
ln(employment (t-1))	0.973	***	0.001	0.973	***	0.001	0.784	***	0.006	0.784	***	0.006
ln(wage (t))	-0.273	***	0.027	-0.273	***	0.027	-0.319	***	0.026	-0.319	***	0.026
ln(wage (t-1))	0.288	***	0.027	0.288	***	0.027	0.222	***	0.022	0.222	***	0.022
share of high-skilled (t-1)	0.061	***	0.013	0.061	***	0.013	0.115	***	0.032	0.115	***	0.032
share of routine (t-1)	0.013	***	0.005	0.013	***	0.005	0.014		0.017	0.014		0.017
ln(age (t))	-0.093	***	0.003	-0.093	***	0.003	-0.032	***	0.004	-0.032	***	0.004
BHP_1975	-0.804		0.027	-0.804		0.027						
ln(plants (t-1))	0.018	***	0.002	0.018	***	0.002	0.037	***	0.006	0.037	***	0.006
constant	0.861	***	0.033	0.861	***	0.033	1.692	***	0.272	1.693	***	0.272
Observations	152,741			152,741			158,176			158,176		
Number of firms	8,796			8,796			8,796			8,796		
R-squared	0.970			0.970								
R-squared within							0.728			0.728		
R-squared between							0.977			0.977		
R-squared overall							0.953			0.953		

Note: coef.: coefficient, SE: standard error; *,**,*** significant at the 10/5/1 percent level respectively; standard errors are clustered at firm level; including dummies for industry, region, legal form and year.

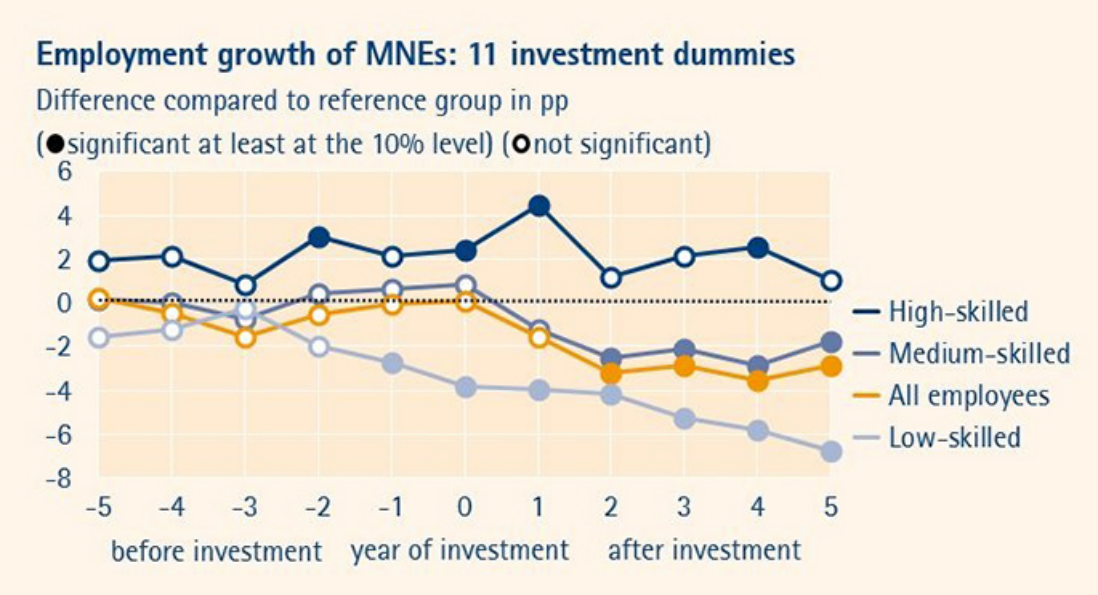
Source: Authors' own calculations from IAB-ReLOC database.

Following the basic model, there are several options to identify skill-specific effects. One is to focus on relative measures, such as the share of wage costs of the respective skill group in the total wage bill (Hansson 2005; Head/Ries 2002) or the share of workers related to a skill group in total employment (Ekholm/Hakkala 2006; Hijzen/Görg/Hine 2005). Another opportunity is to estimate the labor demand for different skill levels separately (Bajo-Rubio/Díaz-Mora 2015; Driffield/Love/Taylor 2009; Elia/Mariotti/Piscitello 2009). The advantage of the latter is that it allows to identify the impact on skill-specific labor demand in absolute terms and not only in relation to other skill groups. Moreover, it is more comparable to the estimations for total employment, so we can draw conclusions on what drives the results for total employment. Thus, the number of employees for each skill group serves as dependent variable, setting up on the estimation equation for total employment. As a firm's labor demand for a factor of production is affected by the costs of each input, wages for other skill groups are included as explanatory variables too. To consider that some firms do not employ workers of all skill types, dummies are created taking the value 1 when there is no employee in the respective skill group. The natural log of the skill-specific wage is

then set to 0. Interactions between these dummies proved to be insignificant for the results and are therefore not included. Figure 3, Figure 4 and Table 3 to Table 5 present the results. The skill-specific trends are clearly different. In comparison to the reference group, the demand for high-skilled employment significantly increases in the period before the investment, whereas there are only some occasional indications in the same direction for medium- and low-skilled employees. In the fixed-effects estimations, the positive trend for high-skilled employment remains significant, albeit to a lesser extent. The demand for high-skilled labor still increases in the years after the investment. In contrast, a negative development is observable for medium-skilled and low-skilled employment. This outcome shows a skill-upgrading process before and, in particular, after the investment. These findings are supported by regressions with the share of high-skilled labor as dependent variable. Prior to the investment, high-skilled employment in the multinational firms is the factor that gains also in relative terms. Afterwards, the proportion of high-skilled workers still increases, while low- and medium-skilled employment decreases.

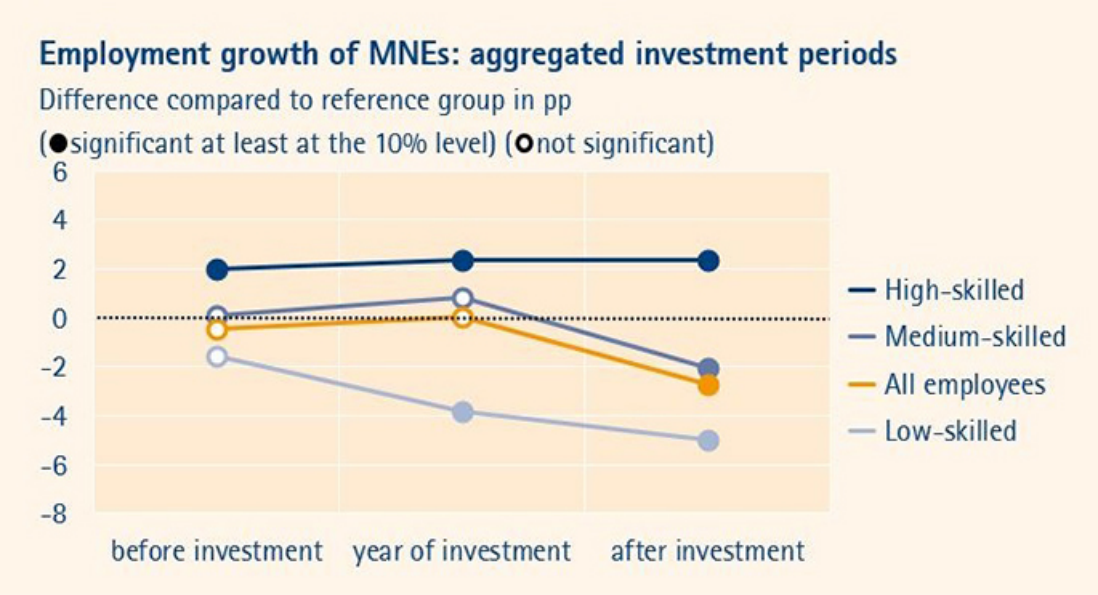
The results do not support the findings by Marin (2004), who argues that German firms are relocating high-skilled jobs to the CEEC, but are in line with most other studies that find evidence for skill upgrading (Castellani/Mariotti/Piscitello 2008; Geishecker/Görg/Maioli 2008; Hansson 2005; Head/Ries 2002). The fact that not only low-skilled labor, but also medium-skilled employment seems to be substantially affected by the negative trend suggests additional explanatory power by the task-based approach, which was initially used to explain the polarization in the US and UK labor markets, where high-income and low-income jobs had higher growth rates than those in the middle of the income distribution (Acemoglu/Autor 2011; Autor/Katz/Kearney 2006; Goos/Manning 2007). Whether jobs can be performed by computers or can be relocated to foreign locations depends on their routine content. The basic idea is that there is no perfect correlation between job substitutability and skills. There are low-skilled jobs that cannot be replaced because they include personal interactions and physical presence, for example. Therefore, there are many jobs in the low-income segment of the labor market that are not at risk of being relocated to foreign countries, such as cleaning, catering, hairdressing and security services. Instead, many jobs for medium-skilled workers, such as administrative clerks or even highly trained specialists are easily offshorable (Blinder 2009). The proportion of computer users is especially high among those with secondary education (see Spitz-Oener 2008), which makes their jobs vulnerable for being relocated abroad if no physical presence is needed.

Figure 3
Fixed-effects regression coefficients for year dummies



Source: Authors' own calculations from IAB-ReLOC database.

Figure 4
Fixed-effects regression coefficients for three time periods



Source: Authors' own calculations from IAB-ReLOC database.

Table 3
Regression results – high-skilled employees

Dependent variable: ln(high-skilled employment (t))												
	pooled OLS						fixed effects					
	(1)			(2)			(3)			(4)		
	coef.		SE	coef.		SE	coef.		SE	coef.		SE
before investment				0.025	***	0.004				0.020	*	0.011
investment in 5 years	0.034	***	0.011				0.019		0.014			
investment in 4 years	0.030	***	0.010				0.021		0.014			
investment in 3 years	0.011		0.009				0.008		0.013			
investment in 2 years	0.034	***	0.009				0.030	**	0.013			
investment in 1 year	0.019	**	0.009				0.022		0.013			
investment in this year	0.017	**	0.008	0.017	**	0.008	0.024	*	0.013	0.023	*	0.013
investment 1 year ago	0.034	***	0.008				0.044	***	0.013			
investment 2 years ago	-0.003		0.008				0.012		0.013			
investment 3 years ago	0.005		0.008				0.021		0.013			
investment 4 years ago	0.009		0.008				0.026	*	0.013			
investment 5 years ago	-0.006		0.009				0.010		0.014			
after investment				0.009	**	0.004				0.024	**	0.011
lagged dependent (t-1)	0.959	***	0.001	0.959	***	0.001	0.745	***	0.004	0.744	***	0.004
ln(wage high-skilled (t))	-0.090	***	0.008	-0.090	***	0.008	-0.103	***	0.008	-0.103	***	0.008
ln(wage high-skilled (t-1))	0.085	***	0.008	0.085	***	0.008	0.065	***	0.007	0.065	***	0.007
ln(wage med.-skilled (t))	0.068	***	0.019	0.068	***	0.019	0.038	*	0.020	0.037	*	0.020
ln(wage med.-skilled (t-1))	-0.002		0.019	-0.002		0.019	0.005		0.017	0.005		0.017
ln(wage low-skilled (t))	0.052	***	0.007	0.052	***	0.007	0.052	***	0.007	0.052	***	0.007
ln(wage low-skilled (t-1))	-0.031	***	0.007	-0.031	***	0.007	-0.008		0.006	-0.008		0.006
no medium-skilled (t)	-0.046		0.075	-0.047		0.075	0.084	***	0.024	0.084	***	0.024
no medium-skilled (t-1)	0.262	***	0.076	0.263	***	0.076	0.013		0.022	0.013		0.022
no low-skilled (t)	0.084	***	0.023	0.084	***	0.023	-0.150	*	0.081	-0.150	*	0.081
no low-skilled (t-1)	-0.033		0.022	-0.033		0.022	0.216	***	0.072	0.216	***	0.072
ln(age (t))	-0.039	***	0.003	-0.039	***	0.003	-0.018	***	0.006	-0.018	***	0.006
BHP_1975	-0.349	***	0.027	-0.350	***	0.027						
ln(plants (t-1))	0.018	***	0.002	0.018	***	0.002	0.042	***	0.007	0.042	***	0.007
constant	0.112	***	0.040	0.114	***	0.040	0.458		0.299	0.461		0.299
Observations	101,202			101,202			102,372			102,372		
Number of firms	7,150			7,150			7,155			7,155		
R-squared	0.953			0.953								
R-squared within							0.735			0.735		
R-squared between							0.959			0.959		
R-squared overall							0.916			0.916		

Note: coef.: coefficient, SE: standard error; *,**,*** significant at the 10/5/1 percent level respectively; standard errors are clustered at firm level; including dummies for industry, region, legal form and year.

Source: Authors' own calculations from IAB-ReLOC database.

Table 4
Regression results – medium-skilled employees

Dependent variable: ln(medium-skilled employment (t))												
	pooled OLS						fixed effects					
	(1)			(2)			(3)			(4)		
	coef.		SE	coef.		SE	coef.		SE	coef.		SE
before investment				0.006	*	0.004				0.001		0.008
investment in 5 years	0.010		0.009				0.002		0.010			
investment in 4 years	0.005		0.007				0.000		0.010			
investment in 3 years	-0.003		0.007				-0.007		0.009			
investment in 2 years	0.010		0.008				0.004		0.010			
investment in 1 year	0.008		0.008				0.006		0.010			
investment in this year	0.012		0.009	0.012		0.009	0.009		0.010	0.008		0.010
investment 1 year ago	-0.016	**	0.007				-0.012		0.010			
investment 2 years ago	-0.027	***	0.007				-0.025	**	0.010			
investment 3 years ago	-0.019	***	0.007				-0.021	**	0.010			
investment 4 years ago	-0.024	***	0.008				-0.029	***	0.011			
investment 5 years ago	-0.009		0.007				-0.018	*	0.010			
after investment				-0.019	***	0.004				-0.021	**	0.008
lagged dependent (t-1)	0.957	***	0.001	0.957	***	0.001	0.761	***	0.006	0.761	***	0.006
ln(wage high-skilled (t))	0.044	***	0.005	0.044	***	0.005	0.036	***	0.005	0.036	***	0.005
ln(wage high-skilled (t-1))	-0.034	***	0.005	-0.034	***	0.005	-0.024	***	0.005	-0.024	***	0.005
ln(wage med.-skilled (t))	-0.262	***	0.024	-0.262	***	0.024	-0.309	***	0.024	-0.309	***	0.024
ln(wage med.-skilled (t-1))	0.260	***	0.024	0.260	***	0.024	0.217	***	0.021	0.217	***	0.021
ln(wage low-skilled (t))	0.092	***	0.007	0.092	***	0.007	0.085	***	0.006	0.085	***	0.006
ln(wage low-skilled (t-1))	-0.084	***	0.006	-0.084	***	0.006	-0.055	***	0.005	-0.055	***	0.005
no high-skilled (t)	0.037	*	0.020	0.038	*	0.020	0.024		0.020	0.024		0.020
no high-skilled (t-1)	-0.053	***	0.020	-0.053	***	0.020	-0.050	***	0.019	-0.050	***	0.019
no low-skilled (t)	0.144	***	0.019	0.144	***	0.019	0.140	***	0.020	0.140	***	0.020
no low-skilled (t-1)	-0.179	***	0.019	-0.179	***	0.019	-0.129	***	0.018	-0.129	***	0.018
ln(age (t))	-0.076	***	0.003	-0.076	***	0.003	-0.029	***	0.004	-0.029	***	0.004
BHP_1975	-0.665	***	0.025	-0.664	***	0.025						
ln(plants (t-1))	0.022	***	0.001	0.022	***	0.001	0.032	***	0.006	0.032	***	0.006
constant	0.777	***	0.031	0.777	***	0.031	1.433	***	0.224	1.433	***	0.224
Observations	146,945			146,945			148,513			148,513		
Number of firms	8,706			8,706			8,707			8,707		
R-squared	0.972			0.972								
R-squared within							0.719			0.719		
R-squared between							0.977			0.977		
R-squared overall							0.955			0.955		

Note: coef.: coefficient, SE: standard error; *,**,*** significant at the 10/5/1 percent level respectively; standard errors are clustered at firm level; including dummies for industry, region, legal form and year.

Source: Authors' own calculations from IAB-ReLOC database.

Table 5
Regression results – low-skilled employees

Dependent variable: ln(low-skilled employment (t))												
	pooled OLS						fixed effects					
	(1)			(2)			(3)			(4)		
	coef.		SE	coef.		SE	coef.		SE	coef.		SE
before investment				0.004		0.005				-0.016		0.011
investment in 5 years	0.001		0.011				-0.016		0.014			
investment in 4 years	0.008		0.011				-0.012		0.014			
investment in 3 years	0.019	**	0.010				-0.003		0.013			
investment in 2 years	-0.001		0.009				-0.020		0.013			
investment in 1 year	-0.008		0.010				-0.027	**	0.014			
investment in this year	-0.013		0.011	-0.013		0.011	-0.038	**	0.015	-0.038	**	0.015
investment 1 year ago	-0.009		0.010				-0.040	***	0.014			
investment 2 years ago	-0.009		0.010				-0.041	***	0.015			
investment 3 years ago	-0.016		0.011				-0.053	***	0.015			
investment 4 years ago	-0.018	*	0.011				-0.058	***	0.015			
investment 5 years ago	-0.023	**	0.011				-0.068	***	0.016			
after investment				-0.014	***	0.004				-0.050	***	0.012
lagged dependent (t-1)	0.950	***	0.001	0.950	***	0.001	0.736	***	0.004	0.736	***	0.004
ln(wage high-skilled (t))	0.008		0.005	0.008		0.005	-0.001		0.005	-0.001		0.005
ln(wage high-skilled (t-1))	-0.001		0.005	-0.001		0.005	-0.003		0.005	-0.003		0.005
ln(wage med.-skilled (t))	-0.217	***	0.026	-0.217	***	0.026	-0.262	***	0.027	-0.263	***	0.027
ln(wage med.-skilled (t-1))	0.147	***	0.025	0.147	***	0.025	0.081	***	0.023	0.081	***	0.023
ln(wage low-skilled (t))	-0.284	***	0.016	-0.284	***	0.016	-0.304	***	0.017	-0.304	***	0.017
ln(wage low-skilled (t-1))	0.288	***	0.016	0.288	***	0.016	0.248	***	0.014	0.248	***	0.014
no high-skilled (t)	-0.047	**	0.024	-0.047	**	0.024	-0.085	***	0.024	-0.086	***	0.024
no high-skilled (t-1)	0.026		0.024	0.025		0.024	-0.016		0.024	-0.016		0.024
no medium-skilled (t)	-0.979	***	0.104	-0.979	***	0.104	-1.158	***	0.116	-1.159	***	0.116
no medium-skilled (t-1)	0.642	***	0.100	0.642	***	0.100	0.361	***	0.092	0.361	***	0.092
ln(age (t))	-0.032	***	0.004	-0.032	***	0.004	0.042	***	0.007	0.042	***	0.007
BHP_1975	-0.291	***	0.030	-0.291	***	0.030						
ln(plants (t-1))	0.025	***	0.002	0.025	***	0.002	0.073	***	0.007	0.073	***	0.007
constant	0.640	***	0.042	0.640	***	0.042	1.177	***	0.211	1.180	***	0.212
Observations	115,374			115,374			116,584			116,584		
Number of firms	7,539			7,539			7,547			7,547		
R-squared	0.945			0.945								
R-squared within							0.611			0.611		
R-squared between							0.952			0.952		
R-squared overall							0.902			0.902		

Note: coef.: coefficient, SE: standard error; *,**,*** significant at the 10/5/1 percent level respectively; standard errors are clustered at firm level; including dummies for industry, region, legal form and year.

Source: Authors' own calculations from IAB-ReLOC database.

5 Conclusions

Among the CEEC, the Czech Republic provides great opportunities for both cost-reduction investments and extension of a firm's international market share. German firms exploit these benefits most frequently. So far, the effects on the domestic employment of German multinationals investing in the CEEC are not clear-cut. By using data based on the total population of German affiliates in the Czech Republic, existing studies are complemented, and the evaluation of the labor market effects of FDI is fostered. The central result is that after the investment, the total labor demand of German multinational firms decreases compared to firms without FDI. The negative development continues for some years. Five years after the investment, MNEs' domestic

employment has fallen by 11.5 percent. Whether the domestic workforce is affected negatively depends on the skill level. The multinational firms even increase their number of high-skilled employees shortly after the investment. In contrast, medium- and low-skilled jobs are reduced. Concerning policy implications of our findings, the question arises as to how counteract these negative impacts of offshoring, be it through financial subsidies or education measures, for example (see IMF/World Bank/WTO 2017).

What might be the next steps? Due to the rich database and its linkage to the employment data of the IAB, there are several opportunities for further research. One is to focus on regional aspects and take a closer look at locations of parent and daughter companies. A basic question in this regard is whether space matters and employment effects vary with the distance to the Czech market or affiliate. While taking advantage of factor price differentials is less profitable when transport costs are high, market-motivated investments are more likely at larger distances. This could lead to different effects on MNEs, above all in border regions, where incentives for vertical FDI are specifically high. Another subject is the identification of the wage effects of FDI on workers employed by German MNEs. In contrast to the analysis performed in our paper, this issue has to be conducted at the individual level to control for workers' heterogeneity. Finally, referring to the volatility of labor demand, another approach is to include the refinements from the literature on tasks, in order to investigate the relative job security of employees in multinational firms. Whether this distinction provides further insights will also be a valuable issue.

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