Do Investment Incentives Attract More FDI? A Regression-Discontinuity Approach

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Abstract

This paper examines the role of an investment incentives scheme in foreign direct investment (FDI) attraction. The territorial distribution of FDI in the Czech Republic during 2001-2006 is analyzed on a panel of district-level data. The identification strategy is based on a regression-discontinuity approach as the scheme design introduces three unemployment thresholds differentiating the amount of the subsidy. The results indicate a positive effect and both economically and statistically significant effect for the first threshold. A shift from ineligibility to being eligible for the incentive scheme presents an increase of future FDI inflow per capita in a district by 8,000 CZK. However, the impact of more generous subsidies for remaining two thresholds is negligible. Among other FDI location factors, a connection to highway network and a common border with EU-15 are the most important.

Keywords: foreign direct investment, government expenditures, public incentives, regional distribution

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1 Introduction

Foreign direct investment (FDI) inflow is often regarded as a crucial element in economic development and job creation. This view is supported by empirical studies claiming FDI to be an important factor in strenghtening economic growth (Campos and Kinoshita [2002], Tondl and Vuksic [2003]). Improving economic environment leads to unemployment decrease and poverty alleviation. Since the unemployment rate is looked upon as the main indicator of overall labor market performance, FDI attraction ranks among important tools of today's policymaking.

In order to invoke FDI, governments employ various public incentives schemes. In the Czech Republic, a systematic approach in FDI promotion was adopted in 2001, providing foreign investors with a possibility to receive a financial subsidy per created vacancy or a retraining subsidy. A fundamental feature of the incentive system is that the exact amount of the subsidy is different across districts, offering higher investment incentives in districts with higher unemployment rate and, thus, motivating investors to locate in more distressed regions.

This paper attempts to assess the impact of an investment incentive scheme on FDI inflow and to estimate its magnitude and economic and statistical significance. Specifically, using aggregate district-level data, we inspect the size of an increase in average FDI per capita inflow caused by the incentive program. The identification strategy is based on an unemployment level threshold deciding whether a particular district is included or excluded from the investment incentives program. A regression-discontinuity approach is employed for estimating the jump in per-capita FDI at the threshold as districts can be assumed randomly assigned into treatment and control group near the cutoff point. The importance of other factors affecting FDI distribution is analyzed, too. This study, therefore, contributes to a discussion on FDI determinants and helps to discover the appropriateness of fiscal measures for FDI attraction based

on the experience of the Czech Republic.

The motivation for this study is threefold. First, the evaluation of the investment incentives impact proposes far-reaching practical implications. Understanding mechanisms behind foreign investors' decision process may improve policymakers' ability to direct FDI inflows into more distressed regions. The topic is highly policy-relevant not only for the case of the Czech Republic but it can be generally applied to any open developed economy. Second, from a social stance it is necessary to assess the efficiency of an incentive system as it absorbs a lot of public money from the state budget. On one hand, FDI inflow contributes to regional development and income growth (Wen [2007]), thereby improving local labor market conditions, which, in turn, decreases public spending on unemployment benefits and social assistance.[1] On the other hand, huge amounts of state subsidies require substantial budget spending. Thus, a rigorous evaluation of the true impact of the incentive scheme on local labor market is needed in order to compare its costs and benefits. Third, there is a lack of rigorous evaluation literature on investment incentives in case of the Czech Republic, but also in the whole Central European region topic is especially important for the case of the Czech Republic, given a lack of rigorous evaluation literature on investment incentives.

2 Literature survey

There exists a vast empirical literature focusing on FDI determinants yet the research analyzing specifically the role of investment incentives is not numerous.[2] In the case of Central European countries, this is partly given by the initial absence of clear and

[1] Knowledge spillovers are an important positive externality of FDI. They occur when domestic firms improve their know-how by technology imitation or knowledge diffusion or when domestic workers increase their skills through training programs in foreign companies (Crozet et al. [2004], Javorcik [2004]).

[2] See Bloningen (2005) for a comprehensive survey of literature on FDI determinants.

stable rules for investment incentive schemes and partly by a time delay needed for the incentive impact evaluation.

Empirical studies differ by a focus of their analysis - some concentrate on macro-economic variables (gross domestic product, inflation, unemployment, price level) while others emphasize institutional (political climate, law enforcement) or location factors (quality of infrastructure, human capital endowment, proximity of target markets). Another segmentation of the research regards a time dimension - studies use either a cross-section of countries or panel data. An advantage of panel datasets is that they allow the identification of important location determinants such as a policy change or agglomeration economies by exploiting a variation over time. Lastly, empirical literature concerning FDI determinants can be divided into between-country and within-country studies depending on whether it focuses on an international comparison or a regional analysis within a particular country.

Considering within-country studies, seminal papers on FDI inflow determinants come from the U.S., analyzing localization factors on state and county levels (Carlton [1983]; Coughlin et al. [1991]). Analogic studies emerged in other countries such as Brazil (Hansen [1987]) or China (OECD [2000]). These studies focused on the relation between the characteristics of a region and FDI inflow. In the case of the U.S., states with a higher per capita income and higher manufacturing activity attracted FDI while higher wages and higher taxes deterred it (Coughlin et al. [1991]). Specific to automotive-related industries, Smith and Florida [1994] find that agglomeration economies matter for Japanese manufacturing plants. New establishments preferred locations in close proximity to Japanese assemblers and higher overall manufacturing density. Surprisingly, contrary to the prevailing literature, higher wages and higher concentration of minorities are recognized as positive and significant determinants of FDI inflow.

Empirical evidence from Portugal (Guimaraes et al. [2000]) suggests that the strongest FDI location factor is service agglomeration and other significant influences include industry-level localization economies, urbanization economies and the distance from principal cities. On the other hand, local labor costs do not matter in foreign firms decision process. Basile [2004] investigates the location of FDI in Italy over the period 1986-1999 and claims that the main determinants differ according to the type of foreign entry mode. In case of acquisitions, foreign investors emulate the overall distribution of existing firms and consider high-unemployment regions as less attractive for their location. On the contrary, greenfield investments are not affected by agglomeration economies and view high-unemployment regions as signal of available labor force, thus attracting more greenfields. Overall, the author assesses that FDI to the southern part of Italy is below its potential and calls for the implementation of regionally diversified fiscal policies in order to overcome large regional differences in economic growth.

Turning to between-country approach, international studies on FDI determinants help to explain investor's initial decision when choosing a location. Among Central European countries, business environment, labor costs and the form of privatization process have shown to be the most important factors of FDI inflow during transition (Lansbury et al. [1996]). Similarly, Bevan and Estrin [2000] find labor costs, the speed of reforms and political signals to significantly affect levels of FDI prior to the EU accession. In a more recent work, Jurajda and Terrell [2009] study regional disparities in post-communist economies and, among other issues, analyze a regional pattern of FDI inflow. They find higher FDI inflow into regions with a high initial capital endowment (measured as a share of college educated people at the end of communism), however, with the exception of Ukraine, this relationship vanishes once the capital city is excluded.

Discussing policies aimed at FDI promotion, studies analyzing public incentives

together with agglomeration economies are rather sparse. Mayer [2004] examines agglomeration effects and regional policies impact on FDI in France and finds no evidence of any positive impact of regional policies on location choices. He claims the following factors are important FDI determinants: expected demand on the location (approximated by local macroeconomic factors such as regional GDP per capita or regional GDP growth rate), factor costs and agglomeration of previously located FDI. Similarly, Guagliano and Riela [2005] show a weak, albeit positive, impact of special industrial parks on FDI inflows for a case of Czech Republic, Hungary and Poland. Barrios et al. [2006] focus on the role of agglomeration economies and public incentives policy in dispersing FDI into more disadvantaged areas in Ireland and find a positive effect of promotion policy only for low-tech firms during the period of time when a more 'laissez-faire' approach to regional policy was introduced.

In case of the Czech Republic, one of rare attempts to address the issue of investment incentives is a study by Valachyová [2005]. She finds that FDI inflow into the Czech manufacturing sector has followed the geographical distribution of manufacturing industry at the beginning of transition. In addition, a larger greenfield FDI influx was observed in locations bordering Germany and Austria and regions with well-developed infrastructure and services. Also, a positive and statistically significant effect of industry-specific agglomeration was found. In other words, the location of foreign manufacturing plants is affected by the presence of either domestic or foreign firm in the same industry. The issue of investment incentives is tackled only marginally as the whole estimation is repeated for a subset of those investors that were given the incentive subsidy and a stability of coefficients is checked. Results remain significant for infrastructure and foreign firms agglomeration, implying a limited effect of the investment incentive program. The author concludes that it is difficult for the government to efficiently design an investment incentive scheme. However, based on the limited

evidence, no ultimate conclusion can be drawn due to the lack of data.

This study contributes to existing literature on policy-based FDI determinants as it analyzes the influence of institutional policy on FDI attraction on district-level FDI flows. The combination of a solid identification strategy and a policy importance makes this paper unique and highly relevant for a discussion on the role of governmental regional public policies in attracting foreign investment.

3 Institutional Background

First foreign capital flows into the Czech Republic started in 1989 when a system of a centrally-planned economy collapsed. Initially, a governmental stance towards FDI was rather indifferent but a necessity of foreign know-how and technology was soon recognized.[3]

A state support of FDI inflow began in 1998, providing foreign investors with an option to apply for a financial subsidy. However, the system lacked a transparency and a clear set of predefined rules as a decision process was at the discrection of the government. Therefore, the system was elaborated in 2000, when a formalized scheme of investment incentives was established.[4] Since then, three types of investment incentives have been implemented: the "investment incentives program focused on the manufacturing sector", the "job creation support program for regions worst affected by unemployment" and the "framework program for the support of technology centres and the strategic services".

The first and largest program started in May 1st, 2000, providing investors into

[3] A government agency CzechInvest was established in 1992 for FDI promotion and administration.

[4] An investment incentive law (no. 72/2000) became effective on May 1st, 2000, defining rules and eligibility conditions for foreign as well as domestic investors. The Czech Republic became the first among Central and Eastern European countries with a clear investment incentive system defined by law.

manufacturing sector with an income-tax relief, job-creation subsidies and training and retraining subsidies after meeting certain criteria (these were notably the minimum invested amount and the number of created vacancies - see Table 1 for the detailed overview of these conditions and the changes in the program).

The second program started on June 2nd, 2004 and ended on December 31st, 2007 and has been motivated by the intention to attract foreign manufacturing-sector enterprises to more distressed regions of the Czech Republic. Firms investing at least 10 mil. CZK and creating at least 10 vacancies were eligible for the financial support which took two forms - either direct subsidy for each created vacancy or the subsidy for the employee retraining (see Table 2 for more details about the program).

The third program has been designed for attracting R&D activities and knowledge-based investors. Technology centres have been defined as establishments oriented at innovation and periodic changes of products and strategic services have been specified as manufactures with a high added value in knowledge-intensive sectors (Table 3 summarizes important milestones of this program).

With the exception of the "framework program", grants varied across districts according to the local unemployment rate. Based on local unemployment rate during the previous year, districts were split into three groups: "high-unemployment", "medium-unemployment" and "low-unemployment" group. According to an initial design of the scheme, districts with the local unemployment rate exceeding the state average by more than 50 percent were classified as distressed ("high-unemployment") group. In this case, a foreign investor was eligible for 200 thousand CZK per each created vacancy. Districts with the local unemployment rate above 20 percent (and below 50 percent) of a country average were eligible for 120 thousand CZK per each created vacancy. Districts with above-average local unemployment rate (but smaller than 20 percent above the average) were eligible for 80 thousand CZK per each created vacancy. Remaining districts did

not qualify for the subsidy.[5] The assessment of eligible districts was performed every six months.

4 Methodology

Based on the theoretical literature, we identify a set of traditional FDI determinants, namely, human capital endowment proxied by the share of terciary educated productive labor force, industry structure of employment and local labor costs. A second set of explanatory variables includes a share of arable land on a total area of a district, a connection to main highways and a proximity to target markets. Also, the local unemployment rate, the vacancy rate and a time trend are included in the model. These observed factors explain a part of variation in district-level FDI inflow. The unexplained part is, consequently, used for the estimation of the impact of government FDI promotion policies on FDI inflow. This is performed using the regression discontinuity approach.

The impact of a human capital endowment is, ceteris paribus, expected to be positive. Its magnitude depends on the industry structure of FDI flows.

Industry structure of employment is measured as the share of employment in a manufacturing sector as the majority of foreign investment in the Czech Republic comes into a manufacturing sector.[6] Industry structure of a district is expected to attract industry-specific FDI flows (Guimaraes et al. [2000]). However, due to the aggregate nature of our data, we cannot differentiate between sectors; thus, we expect industry structure to have an ambiguous effect on FDI.

[5]Eligibility conditions changed a couple of times. The summary of scheme design changes is presented in Table 1. For example, after 2004 a legislatory change excluded districts with the unemployment rate U between U_avg and 1.25*U_avg from receiving direct subsidy per each created vacancy but still allowed them to qualify for retraining subsidy.

[6]The share of FDI in the manufacturing sector was more than one third of overall FDI in 2006.

Local labor costs are represented by a logarithm of local wages. Obviously, holding other independent variables the same, firms are expected to show a strong tendency to locate their labor-intensive production in districts with low labor costs (Basile [2004]). However, low wages might reflect low labor productivity, therefore, high wages are expected to decrease FDI flows only if differences in wages are not overweighed by differences in labor productivity.

A variable describing the share of arable land on the total area of a district is introduced because from the anecdotal evidence it is known that investors tend to prefer agricultural land for new establishments (hence the name greenfield investment).

In the empirical literature, distance is used to model trade costs. The impact of a proximity of neighboring markets on FDI depends on the size of these markets and the levels of exports to these countries. Germany and Austria are the main importers among neighboring countries, thereby justifying the use of a dummy for a common border with these countries. This dummy is expected to have a positive sign. On the same note, a good connection to target markets diminishes transportation costs and, thus, the dummy indicating a connection to main interstate highways is expected to have a positive sign.

The unemployment and vacancy rates describe the tightness of a local labor market. Since the dependent variables describes future FDI flows, current unemployment and vacancy rates can be considered as predetermined and endogeneity problem does not arise. A high unemployment rate signalizes a large pool of available workforce and is expected to attract FDI inflow. On the contrary, a high vacancy rate indicates the lack of available workers and deters new FDI.[7] The inclusion of the time trend captures an intertemporal variation in FDI levels.

A variation in FDI across districts can be divided into three parts: variation caused

[7]High levels of both the unemployment and vacancy rates indicate a skill mismatch when there is a disporportion between skills supplied by labor force and skills demanded by firms.

by the incentive scheme, observed variation explained by abovementioned determinants and unobserved variation. Formalizing this, we obtain

$$\Delta FDI_{total} = \Delta FDI_{inc} + \Delta FDI_{obs} + \Delta FDI_{unobs}. \quad (1)$$

RD approach inherently assumes that districts used for the estimation are similar enough to claim that the gap in outcome variable can be attributed to the assignment. In other words, for these districts we assume $\Delta FDI_{unobs} = 0$. Thus, equation (1) becomes

$$\Delta FDI_{total} = \Delta FDI_{inc} + \Delta FDI_{obs}, \quad (2)$$

filtering out the part of explained variation from the total mean difference, the estimate of the incentive scheme impact is obtained.

The purpose of government FDI promotion policies is to positively influence the propensity of investors to locate in areas preferred by the government[8] and, therefore, one should expect the sign of incentive dummies to be positive. Ceteris paribus, higher classification of the district in terms of the eligibility for incentives should be positively related to incoming FDI. The design of the incentive scheme introduces three cutoff points and, therefore, classifies the Czech districts into four categories: districts with the largest potential investment subsidy (districts with the unemployment rate at least 50 percent above the average), districts with medium potential investment subsidy (districts with the unemployment rate at least 25 percent above the average), districts with the smallest potential investment subsidy (districts with above-average unemployment rate) and ineligible districts. However, the marginal subsidized amount at these thresholds differs, which can affect the magnitude of the impact on the outcome variable.[9]

[8] Usually governments offer more generous incentives in case of allocating FDI in more distressed regions (i.e. regions suffering from above-average unemployment rate) as is the case of the inspected program.

[9] A marginal amount of direct financial subsidy per created vacancy is 80,000 CZK, 40,000 an

5 Data

The analysis uses various data sources. The information about a foreign direct investment on a district level is obtained from the Czech National Bank and covers annually a period 1998-2007. The data contains financial amounts of foreign direct investments into the Czech Republic according to OECD definition (OECD [1996]).[10] Overall FDI consists of basic capital (deposit of non-resident in the form of fixed assets), reinvested earnings (profit not distributed as dividends) and other capital (loans from home company). The stock of FDI in a year t is defined as the cumulative amount of FDI starting from 1989 to the end of the particular year. FDI flows are calculated on a net basis as an outcome of credit and debit capital transactions between direct investors and their foreign affiliates.[11] As a measure of incoming FDI we consider only the direct equity capital inflow since we are interested primarily in the analysis of new firms into the Czech Republic.[12] Moreover, due to a privatization of financial institutions and large one-off sales of state-owned enterprises, Prague (as a main recipient of these FDI transactions) is excluded from the analysis. Similarly, Brno and Ostrava districts are excluded as they were main recipients (together with Prague) of FDI from the "framework program". This program was aimed at strategic services investment and was not restricted only to above-average unemployment rate. Since we are interested solely in the effect of the first two investment incentive programs which differentiated districts according to the local unemployment rate, three largest cities are not considered for

80,000 at the first (average unemployment), the second (1.25*average unemployment) and the third cutoff point (1.5*average unemployment), respectively. Marginal requalification subsidy at these cutoff points is 25 percent, 5 percent and 5 percent of requalification subsidy, respectively.

[10] Capital investment abroad is regarded as an FDI if the purpose is to establish permanent equity relation with a target company. The share of a foreign investment must be at least 10 per cent of the target firm's basic capital (and can be also 100 per cent).

[11] Hence, there exists a possibility of a negative FDI flow in case that some component of FDI is negative and not offset by the remaining components (reverse investment or disinvestment).

[12] That means, other two components of FDI (reinvested profit and remaining capita)l are not cosidered as they are influenced by internal decisions of firms and not directly related to the existence of incentives scheme.

the analysis.

Other data sources are the Unemployment registry containing District Labor Offices (DLO) district-level data on unemployment and the Czech Statistical Office (CSO) data with the information on industry structure, educational structure, wages and geographic characteristics (a share of arable land).

Investment incentives data are from the government agency CzechInvest[13] and the Ministry of Labor and Social Affairs. It contains the list of subsidized investment projects as well as the list of districts eligible for state support.

6 Descriptive Statistics

Figure 1 shows the evolution of a total FDI stock in the Czech Republic during 90's. Each box represents a regional distribution of the FDI stock during a particular year. An upward trend reveals a steady increase of the FDI stock, the persistence of regional variation and the dominance of Prague in FDI allocation.[14] In absolute terms, while an overall stock of FDI in the Czech Republic was 429.2 billion CZK at the end of 1998 (Prague 201.5 billion CZK), by the end of 2006 it was 1,667 billion CZK (Prague 885 billion CZK). Thus, Prague absorbs approximately one half of overall foreign investments in the Czech Republic. This disproportion is even magnified if per capita levels are considered. Table 4 displays FDI inflows per capita in the three largest cities (Prague, Brno and Ostrava) as compared with the rest of the Czech Republic. It can be observed that yearly flows exhibit a decreasing trend, but a regional inequality remains high. This justifies removing Prague, Brno and Ostrava from the analysis as it is affected by large one-off transactions and privatization, which would bias our esti-

[13] State agency promoting foreign direct investment.

[14] The box plot characterizes a distribution of the FDI stock - the median is represented by the white line inside the box, the quartiles by the edges of each box, the extreme values (thin lines extending from each box) and the outlier (Prague).

mation of FDI determinants. Moreover, these districts host the majority of investment supported by the "framework program for the support of technology centres and the strategic services" which is not a subject of our analysis as the focus is put only on the first two programs that introduce the eligibility thresholds.

In the light of defined eligibility categories, it is worth inspecting which regions yielded the highest potential subsidy. Table 5 shows the evolution of the unemployment rate in the Czech Republic over time. After a recession during late 90's, the unemployment rate increased the most in regions of North Bohemia (Ústecký) and North Moravia (Moravskoslezský) a stayed at high levels ever since. Thus, investors locating in those regions had an opportunity to obtain the most generous subsidy from the state.

Looking at the regional dimension of FDI, Table 6 displays an FDI inflow across regions during 2000-2007 and compares overall FDI inflow with the supported FDI inflow and state investment subsidy. Two main characteristics can be observed from the table: first, except for Central Bohemia and Moravskoslezsky region, a vast majority of investment inflow during 1999-2006 was supported by the state; second, for some regions the size of supported projects exceeds the realized FDI inflow. This observation can be attributed to inaccurate assessment of the future investment or the delay in a realization of the project awarded with a financial subsidy.[15]

FDI inflow per capita by the districts' eligibility for the financial subsidy after the implementation of the incentive scheme is shown in Table 7. An interesting finding is that the inflow of basic capital is increasing in a group of ineligible districts but decreasing among eligible districts (with the exception of the "highest-unemployment" group where the values seem to be affected by large one-off capital transactions). However, simple comparison of means is not sufficient for the estimation of the impact. We need

[15]The expected invested amount is reported by a firm when applying for investment incentive (i.e. prior to the realization of the investment) and might be inaccurate.

to adopt a correct identification strategy for assessing the effect of the incentive scheme at the margin (a cutoff point).

7 Identification Strategy

An unemployment threshold set by the Czech government is assumed to be a source of exogenous variation. The identification strategy is based on this threshold in eligibility and a regression discontinuity design is exploited for the estimation of the incentive scheme impact.[16] The design provides an opportunity to answer the main question whether the programs favoring more distressed regions are effective or not.

The identification strategy is based on a regression discontinuity (RD) method (Imbens and Lemieux [2007], Lee and Lemieux [2009]) which is used for the estimation of the policy impact in the absence of a randomized controlled experiment. The estimation explores the impact of the discontinuity in an assignment variable (the unemployment rate) on the outcome variable (the average FDI per capita in a district during three years following the year essential for eligibility criterion). The main assumption justifying the use of RD design is that the assignment variable is observed and the assignment rule is ex-ante known (sharp RD design). By the design of the investment incentive scheme, this assumption is satisfied. The second key assumption is that the outcome variable is continuous and smooth function of the assignment variable in the absence of the treatment. While there exists no statistical way to test this assumption, the inspection of an outcome variable and an assignment variable prior to an implementation of the incentive scheme suggest that the RD approach is justified.

[16] Since the 'framework program' did not impose any restriction on the eligibility of districts to receive funds, it is not possible to construct a suitable control group therefore the evaluation concerns only the first two programs and does not relate to assessment of 'the framework' program. Nevertheless, the bias is considered negligible as the first two programs received the vast majority of the overall investment incentives. Also, the bulk of the resources spent in the 'framework' program went to Prague, Brno and Ostrava and these districts are excluded from the analysis.

Our empirical analysis has two stages. In the first stage, we estimate the following specification of FDI determinants:

$$\begin{aligned} FDI_{it} &= \alpha + \beta_1 COL_{it} + \beta_2 MANUF_{it} + \beta_3 AGRI_{it} + \beta_4 HIGHWAY_{it} + \beta_5 EU15_{it} + \\ &+ \beta_6 \ln(w)_{it} + \beta_7 u_{it} + \beta_8 v_{it} + \gamma t + \alpha \epsilon_{it}, \end{aligned} \tag{3}$$

where FDI_{it} is a three-year average basic capital inflow per capita in a district i starting in period t, COL_{it} is a share of terciary educated productive labor force, $MANUF_{it}$ is a share of employment in manufacturing sector, $AGRI$ is a share of arable land, $HIGHWAY$ indicates a presence of a highway, $EU15$stand for the common border with the EU-15 (Austria and Germany), $\ln(w)$ is a logarithm of local wage level, u is the local unemployment rate, v_{it} is the local vacation rate, t is a time trend and ϵ_{it} is a noise term.

In the second stage, we estimate the impact using RD estimation. Regression discontinuity is implemented using the Stata command *rd*, described in Nichols [2007]. Local linear regressions are estimated at both sides of the cutoff and the estimated impact of the treatment is defined as the difference between estimates of the outcomes on each side of the cutoff. The discontinuity is analyzed for three cutoff points - the average unemployment rate, 25 percent and 50 percent above the average unemployment rate, respectively. At each threshold the magnitude and significance of the discontinuity in the outcome variable is estimated. The standard error is obtained by the bootstrapping technique. Tables 8 and 9 show Czech districts eligible for the incentive scheme at least for some period of time during 2000-2007. One can notice that some district moved from one eligibility group to another or that they even shifted from eligibility to ineligibility. If such a shift occurs more than once, it can hinder a proper assessment of the scheme impact due to a possible time distribution of FDI inflow. Thus, we con-

struct a subsample of districts which did not experience more than one shift between four eligibility categories and estimated the impact on this subsample for a robustness check.

Three alternative measures of the outcome variable are considered. First, the unadjusted three-year average basic capital inflow is used. Second, the impact on the three-year average basic capital inflow adjusted for the variation explained by estimating equation (3) is calculated. Third, the second specification is estimated on a subset of district as described above. The analysis helps to uncover the role of investment incentives in allocation decision of foreign investors and, specifically, to answer the question whether regions favored due to the framework of incentive system tend to host more FDI than similar regions without such a support.

8 Results

Table 10 reports regression estimates of the impact of local district characteristics with future FDI inflow. As can be seen, signs of all explanatory variables are as expected except for the share of employment in manufacturing sector (we argued that the overall impact is ambiguous) and the vacancy rate. However, the effect is statistically significant only in the case of the highway connection and the border with EU-15. This finding indicates the orientation of new foreign establishments on export and emphasizes the importance of easy access to target markets. Common borders with Austria or Germany increase yearly FDI inflow per capita by almost 2,000 CZK. Similarly, a connection of a district to main highway network represents even greater comparative advantage in attracting FDI as the presence of highway increases FDI inflow by almost 2,400 CZK yearly.

Using predicted dependent values, we filter out the variation in FDI inflows explained

by the observed covariates. Restricting the sample to specified bandwidths around discontinuity points ensures that districts are similar to each other and the remaining variation in FDI inflow can be attributed to the eligibility for the incentive scheme.

Table 11 provides results of a regression-discontinuity estimates based on three unemployment thresholds. The first three columns present the impact on unadjusted FDI inflow per capita, next three columns the impact on FDI inflow per capita adjusted by explained variation and the last three columns report estimates on a subsample restricted to districts not moving between different eligibility categories more than once. Results show a similar pattern for all three measures of the dependent variable, however, we consider the last specification as decisive for the assessment of the impact.[17]

The effect of the incentive scheme is the strongest in case of the first discontinuity point (the average unemployment). Contrasting average FDI inflow on both sides of the unemployment threshold, we find that FDI inflow per capita is higher by 8,000 CZK for districts with above-average unemployment rate as compared to districts with below-average unemployment rate. This impact is both economically and statistically significant. Figure 2 visually illustrates the jump induced by the incentive scheme.

On the contrary, the middle unemployment threshold shows no significant effect in FDI attraction as the RD estimate approaches zero (Figure 3). This finding may be explained by the fact that while the marginal FDI at the first threshold is 80,000 CZK per created vacancy and 25 percent of retraining expenses, incremental value at the second threshold is only 40,000 CZK and 5 percent of retraining expenses. Similarly, an insignificant, albeit slightly negative, effect is found for the third unemployment threshold (50 percent above the average unemployment rate). Considering rather generous incremental incentive at the third threshold (80,000 CZK per vacancy and 5 percent of

[17] As argued before, multiple shifts between respective eligibility categories may distort the estimates since the dependent variable is calculated as a mean of next three years (to allow a gradual effect of the eligibility for the incentive scheme).

retraining expenses), this observation is somewhat surprising (Figure 4). A potential explanation may be that the most distressed regions are viewed as inferior because of the high unemployment rate and foreign investors are not willing to locate in such a "stigmatized" labor market even if compensated with a generous subsidy.

Comparing estimates for different bandwidths and different forms of the dependent variable the following findings emerge. First, in case of the first threshold, a short bandwidth shows a more pronounced impact of the incentives scheme. This is in line with the assumption that the effect is the strongest at the margin. Second, the RD estimate for the unadjusted measure of the dependent variable exhibits a higher variation across bandwidths than the adjusted measure. This indicates observed heterogeneity of districts around the thresholds. Once this observed variation is removed, RD estimates show a more consistent trend.

Summarizing, we find that the effect of investment incentive scheme is large and significant for the first threshold, however, it provides no extra motivation for foreign investors in the other two unemployment thresholds.

9 Conclusion

This research has an ambition to unveil location decisions of foreign investors and identify main determinants of district-level disparities in FDI distribution in the Czech Republic during 2001-2006. Softening regional disparities and new job creation in areas with above-average unemployment brings a substantial relief for public spending in terms of unemployment benefits and social assistance. Quantifying the impact of financial incentives on FDI location decisions helps to uncover the true effect of these policies and sheds more light on the justification of investment incentives provided by the government.

The incentive effect of investment support scheme starting in 2001 is assessed on a dataset in which FDI flows are merged with labor market indicators such as the unemployment rate, the share of employment across industries, educational structure and geographic characteristics. Based on the knowledge of administrative design of the scheme in each year, three unemployment thresholds are identified. They are the source of exogenous variation as they are set institutionally and differentiate the level of state subsidy. These thresholds are various multiples of the state average of the unemployment rate and districts with higher unemployment receive more generous subsidy. The design of the investment incentive scheme allows the identification strategy to be based on differences around cutoff discontinuity points. Regression-discontinuity approach is employed in order to estimate the impact of each eligibility group.

Regression-discontinuity estimates are positive and both economically and statistically significant for the first threshold (the average unemployment rate). Specifically, a district with the unemployment rate "just above" the state average experience an FDI inflow per capita higher by 8,000 CZK than a district "just below" the state average. However, the effect vanishes at the second threshold (1.25 x the average unemployment), which can be attributed to smaller marginal subsidy. Despite relatively generous marginal subsidy at the third unemployment threshold (1.5 x the average unemployment rate), the results provide a no evidence of the incentive effect on the third threshold either.

We also find that a good and fast connection to target markets is one of the crucial FDI determinants in the Czech Republic. District connection to main highway network increases yearly FDI inflow by 2,400 CZK and a location on the border with Germany or Austria by 2,000 CZK. This finding suggests a predominant export orientation of foreign establishments and is in line with observed FDI composition as the majority of FDI comes into a manufacturing sector.

Various specifications of the outcome variable and different length of the bandwidth are applied for a robustness check. A more pronounced impact is found for shorter bandwidths, however, the sign and economic significance of the estimates does not change.

References

[1] Barrios S., Gorg H., Strobl E., 2006. Multinationals' Location Choice, Agglomeration Economies and Public Incentives. International Regional Science Review, 29 (1), 81-107.

[2] Basile R., 2004. Acquisitions Versus Greenfield Investment: The Location of Foreign Manufacturers in Italy. Regional Science and Urban Economics, 34, 3-25.

[3] Bevan A. A., Estrin S., 2000. The Determinants of Foreign Direct Investment in Transition Economics. Working paper 342, William Davidson Institute.

[4] Bloningen B. A., 20005. A Review of the Empirical Literature on FDI Determinants, Working Paper 11299, NBER, 1-37.

[5] Campos N. F., Kinoshita Y., 2002. Foreign Direct Investment as Technology Transferred: Some Panel Evidence from the Transition Economies. Working Paper 438, William Davidson Institute.

[6] Carlton D. W., 1983. The Location and Employment Choices of New Firms: An Econometric Model with Discrete and Continuous Endogenous Variables. The Review of Economics and Statistics, 65 (3), 440-449.

[7] Coughlin C. C., Terza J. V., Arromdee V. , 1991. State Characteristics and the Location of Foreign Direct Investment Within the United States. The Review of Economics and Statistics, 73 (4), 675-683.

[8] Crozet M., Mayer T., Mucchielli J.-L., 2004. How Do Firms Agglomerate? A study of FDI in France. Regional Science and Urban Economics, 34 (1), 27-54.

[9] Guagliano C., Riela S., 2005. Do Special Economic Areas Matter in Attracting FDI? Evidence from Poland, Hungary and Czech Republic. Working Paper 21, ISLA.

[10] Guimaraes P., Figueirendo O., Woodward D., 2000. Agglomeration and the Location of Foreign Direct Investment in Portugal. Journal of Urban Economics, 47 (1), 115-135.

[11] Hansen E. R., 1987, Industrial Location Choice in Sao Paolo, Brazil. A Nested Logit Model. Regional Science and Urban Economics, 17 (1), 89-108.

[12] Imbens G., Lemieux T., 2007. Regression Discontinuity Designs: A Guide to Practice. Working Paper 13039, NBER.

[13] Javorcik B.S., 2004. Does Foreign Direct Investment Increase the Productivity of Domestic Firms? In Search of Spillovers through Backward Linkages. American Economic Review, 94 (3), 605-627.

[14] Jurajda Š., Terrell C., 2009. Regional Unemployment and Human Capital in Transition Economies. The Economics of Transition, 17 (2), 241-274.

[15] Lansbury M., Pain N., Smidkova K., 1996. Foreign Direct Investment in Central Europe since 1990: An Econometric Study. National Institute Economic Review, 156, 104-113.

[16] Lee D. S., Lemieux T., 2009. Regression Discontinuity Designs in Economics, Working Paper 14723, NBER, 1-103.

[17] Mayer T., 2004. How Do Firms Agglomerate? A study of FDI in France. Regional Science and Urban Economics, 34 (1), 27-54.

[18] Nichols A., 2007. Causal Inference with Observational Data. Stata Journal 7 (4), 507-541.

[19] OECD, 1996. Benchmark Definition of Foreign Direct Investment. OECD, Paris.

[20] OECD, 2000. Main Determinants and Impacts of Foreign Direct Investment on China's Economy. Working Papers on International Investment (2000/4), OECD, Paris.

[21] Smith D. F., Florida R., 1994. Agglomeration and Industrial Location: An Econometric Analysis of Japanese-Affiliated Manufacturing Establishments in Automotive-Related Industries. Journal of Urban Economics, 36, 23-41.

[22] Tondl G., Vuksic G., 2003. What Makes Regions in Eastern Europe Catching Up? The Role of Foreign Direct Investment. Human Resources and Geography, Working Paper 51, IEF, Vienna.

[23] Valachyová J., 2005. The Essays on Foreign Investments and Economic Geography: Empirical Investigation of the Czech Manufacturing Sector. PhD thesis, CERGE-EI, 1-95.

[24] Wen M., 2007. Foreign Direct Investment, Regional Market Conditions and Regional Development: A Panel Study on China. Economics of Transition, 15 (1), 125-151.

Figure 1: Realized stock of foreign direct investment in the Czech Republic

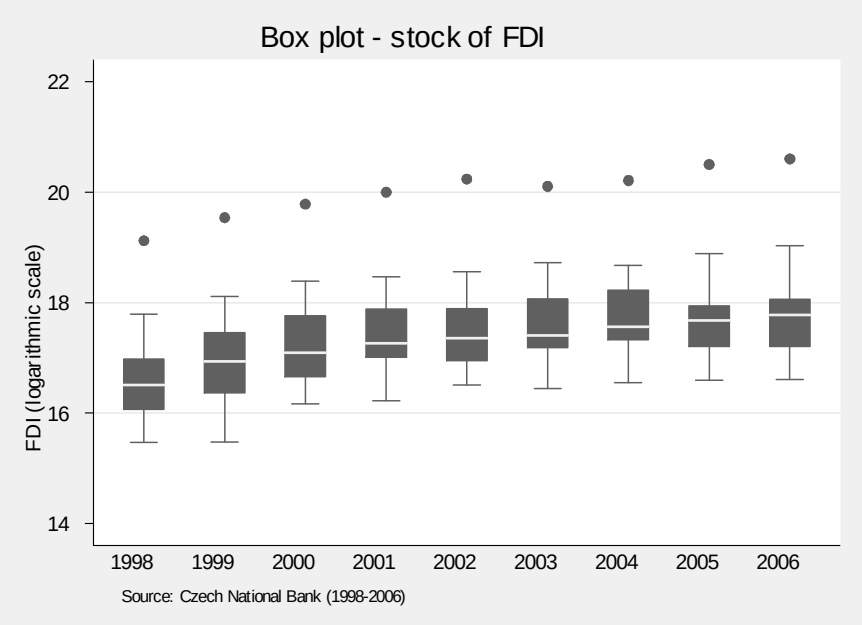


Figure 2: Regression discontinuity at the first unemployment threshold

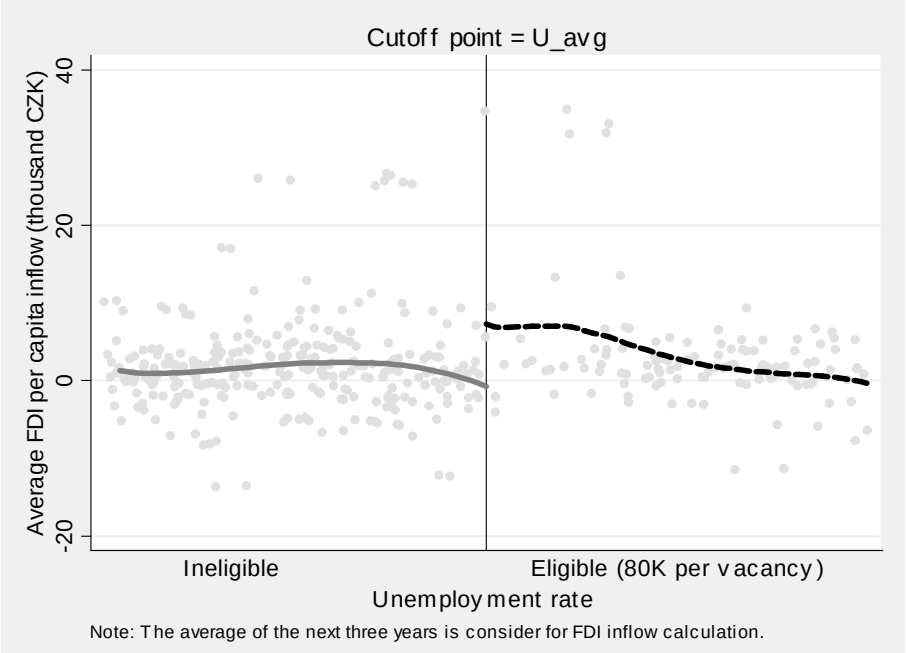
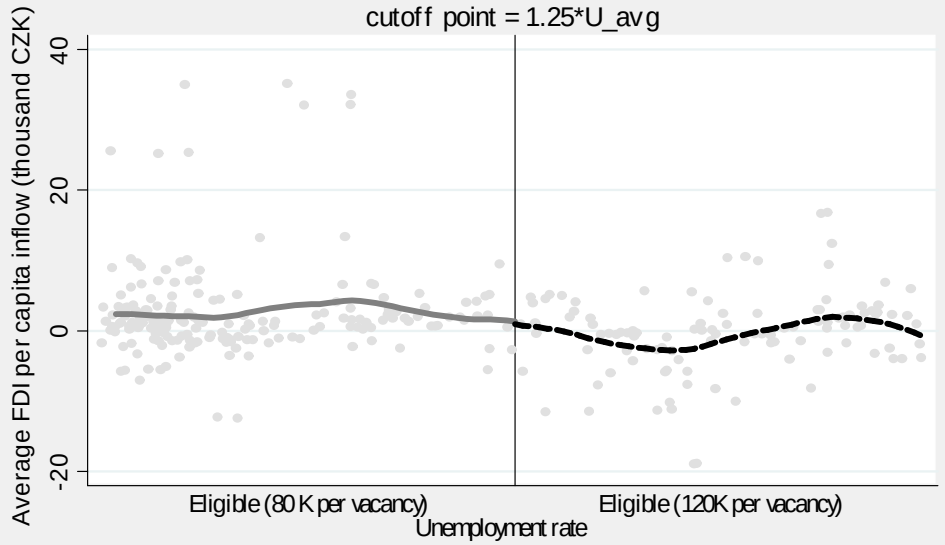
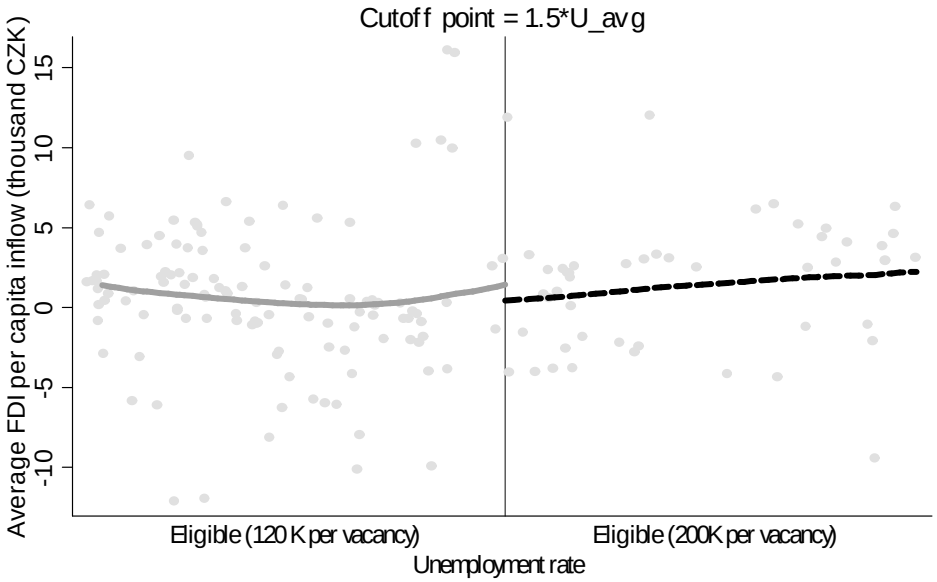


Figure 3: Regression discontinuity at the second unemployment threshold



Note: An alternative cutoff point was considered for year 2006 (1.2*U_avg) due to a change in scheme design. The average of the next three years is considered for FDI inflow calculation.

Figure 4: Regression discontinuity at the third unemployment threshold



Note: The average of the next three years is considered for FDI inflow calculation

Table 1: The overview of legislatory changes in investment incentives scheme.

Year	Law/ Act	Job creation Support	Requalification
1998-2000	No Law 298/1998 – decree 844/1998 – decree	Investment incentives officially started At the discretion of the government Condition: green-field investment (min 25 mil. USD) green-field investment (min *10 mil. USD)*	At the discretion of the government
2000	72/2000 – investment incentives law, February 24th, 2000 Valid from May 1st, 2000	*Investment at least 350 mil. CZK* *If Ur>1.25*U at least 175 mil. CZK* Condition Ur>U Government decides about the amount of the subsidy	*Investment at least 350 mil. CZK* *If Ur>1.25%U at least 175 mil. CZK* Condition Ur>U Government decides about the amount of the subsidy
	134/2000 – enactment, May 3rd, 2000	Subsidy 200,000 CZK/vacancy if Ur>1.5*U, 120,000 CZK/vacancy if Ur>1.25U 80,000 CZK/vacancy if Ur>1.0*U If Ur>U and #vac./firm>1000 + gravity region – the amount of subsidy according to neighboring region with highest Ur	Subsidy (% of requalification expenses) 35% for Ur>1.5*U, 30% for Ur>1.25*U 25% for Ur>1.0*U +10% increase for disabled person →Dtto
2001	453/2001 – change of investment incentives law, November 29th, 2001	Investment at least 350 mil. CZK If Ur>1.25*U at least 175 mil. CZK, *If Ur>1.5*U at least 100 mil. CZK*	No change
2002	103/2002 - enactment, February 27th, 2002	Subsidy 200,000 CZK/vacancy if Ur>1.5*U 120,000 CZK/vacancy if Ur>1.25U 80,000 CZK/vacancy if Ur>1.0*U *+10% for disabled person or LTU (>12 months) person*	Subsidy (% of requalification expenses) 35% for Ur>1.5*U, 30% for Ur>1.25*U, 25% for Ur>1.0*U *+10% increase for disabled person or LTU (>12 months) person* *Condition Ur>U and #vac./firm >1000* *Subsidy 35% for special training and 60% for general training*
2004	May 1st, 2004 – Law amendment	*Investment at least 200 mil. CZK* *If Ur>1.25*U at least 150 mil. CZK, If Ur>1.5*U at least 100 mil. CZK*	
	515/2004 – enactment, September 21st, 2004, valid form October 1st, 2004	Subsidy 200,000 CZK/vacancy if Ur>1.5*U *+ 50,000 CZK/vacancy for disabled person employed for at least 1 year* *100,000 CZK/vacancy for Ur>1.25*U only for disabled persons*	Subsidy (% of requalification expenses) *35% for Ur>1*U*
	578/2004 enactment (changing 515/2004), October 21st, 2004	Subsidy 200,000 CZK/vacancy if Ur>1.5*U + 50,000 CZK/vacancy for disabled person or *LTU (>12 months) persons* employed for at least 1 year *100,000 CZK/vacancy for Ur>1.25*U +25,000 CZK/vacancy for disabled person or >3 months unemployed persons employed for at least 1 year*	No change
2006	338/2006 enactment, Changing 515/2004, June 21st, 2006	Subsidy 200,000 CZK/vacancy if Ur>1.5*U *200,000 CZK/vacancy if Ur>1.2*U if neighbour with Ur>1.5xU* *100,000 CZK/vacancy for Ur>1.2*U 80,000 CZK/vacancy for Ur>1.0*U* *+ 10% for disabled person or LTU (>12 months) person*	No change
2007	159/2007 – law, June 2nd, 2007	*Investment at least 100 mil. CZK*	No change
2008	68/2008 enactment, hanging 578/2004 and 338/2006, February 4th, 2008	Subsidy *50,000 CZK/vacancy if Ur>1.5*U*	Subsidy (% of requalification expenses) *35% for Ur>1,5*U*

Note: The Table presents the list of numerous legislatorial changes concerning investment incentives scheme. Ur stands for the district unemployment rate, U for the overall unemployment rate in the Czech Republic.

Table 2: The overview of the Job creation support program for 'regions worst affected by unemployment'.

Year	Law/ Act	Job creation Support	Requalification
2004	June 2nd, 2004 – enactment 566/2006 Program valid till December 31st, 2006	*Investment at least 10 mil. CZ & at least 10 vacancies created* Condition Ur>1.5*U Subsidy 200,000 CZK/vacancy	*Investment at least 10 mil. CZK & at least 10 vacancies created* Condition Ur>1.5*U Subsidy (% of requalification expenses) 35% for Ur>1.5*U
2006	287/2006 enactment Program prolonged till December 31st, 2007	No change	No change
2007	758/2007 enactment Program terminates December 31st, 2007	No change	No change

Note: This program supplements the investment incentives scheme and is aimed at investors who do not qualify for the investment incentives according to the law 72/2000. Investor can apply only for one type of subsidy, therefore, applying for the support through this program excludes him from participating in investment incentives scheme.

Table 3: The overview of the 'framework' program supporting technology centres and strategic services.

Year	Law/ Act	Job creation Support	Requalification
2002	573/2002 – enactment June 5th, 2002	*Technological Centres and Strategic Services* 2 separate programs	*Technological Centres and Strategic Services*
2003	1238/2003 – enactment December 10th, 2003	Program supporting Technological Centres and Strategic Services 1 joint program	Program supporting Technological Centres and Strategic Services
2007	217/2007 – enactment March 12th, 2007	Continuation of the program	

Note: This program is aimed at attracting knowledge-intensive investments and is not constrained to any unemployment threshold.

Table 4: Average FDI per capita inflow in the Czech Republic (thousand CZK)

Year	Czech Republic	3 largest cities	Rest
1999	11.56	39.72	5.21
2000	9.46	35.66	3.58
2001	4.10	11.66	2.43
2002	3.06	6.68	2.26
2003	3.62	10.80	2.03
2004	6.70	33.06	0.88
2005	9.59	41.18	2.60
2006	9.05	35.90	3.11

Note: For the calculation of average FDI per capita inflow were considered three years following the year pivotal for eligibility decision. Three largest cities are represented by the districts of Prague, Brno and Ostrava.

Table 5: Unemployment rate in Czech regions over time (% of labor force).

	1995	1999	2003	2007
Prague	0.28	3.18	3.90	2.81
Stredocesky	2.73	6.90	7.21	5.36
Pardubicky	2.65	8.05	8.70	6.81
Kralovehradecky	2.07	6.93	10.22	5.60
Liberecky	2.34	7.74	9.20	7.42
Ustecky	5.80	14.74	17.42	14.00
Karlovarsky	1.82	8.14	10.22	9.25
Plzensky	2.35	6.93	7.28	5.60
Jihocesky	2.05	6.20	6.41	5.84
Zlinsky	2.74	8.11	10.33	8.00
Vysocina	3.65	8.47	8.55	7.14
Jihomoravsky	3.03	9.00	11.12	8.88
Olomoucky	4.61	11.39	11.96	8.97
Moravskoslezsky	5.73	13.54	16.40	12.87
Czech Republic	3.07	8.62	9.92	7.76

Note: Regional unemployment rates for years 1995, 1999 and 2003 were calculated by merging together district corresponding to a particular region according to structural division as of 2007 (there was a change in regional structure starting June 2004).

Table 6: FDI inflow, supported FDI and investment incentives during 2000-2007

(mil. CZK)	FDI	Supported FDI	Paid incentives
Central Bohemia	157,888	80,618	761
South Bohemia	47,552	16,096	5
Plzensky	32,756	20,749	18
Karlovarsky	5,129	6,860	45
Ustecky	52,848	88,784	2,455
Liberecky	39,630	23,525	6
Kralovehradecky	17,474	19,853	11
Pardubicky	18,798	25,994	11
Vysocina	57,035	29,977	55
South Moravia	45,374	35,062	540
Olomoucky	10,846	33,905	1,090
Zlinsky	31,627	14,570	25
Moravskoslezsky	139,389	38,062	1,360

Note: Prague is excluded because of its special status of capital city affecting FDI reporting (privatization, headquarters of foreign companies). FDI represents average yearly FDI inflow, supported FDI stands for the overall amount of planned investment (filled in the application for investment incentive) and paid incentives is the sum of total financial state subsidy during 2000-2007.

Table 7: Average FDI per capita inflow by district unemployment (thousand CZK)

Year	U < U_avg	U_avg < U < 1.25*U_avg	1.25*U_avg < U < 1.5*U_avg	1.5*U_avg < U
2001	2.43	4.05	2.08	1.40
2002	2.09	4.64	0.56	1.92
2003	2.55	4.49	1.37	-1.14
2004	1.88	2.11	-1.15	-2.51
2005	3.57	1.39	-2.54	4.71
2006	3.24	2.49	-2.71	10.96

Note: For the calculation of average FDI per capita inflow were considered three years following the year pivotal for eligibility decision. According to a change in scheme design, for the year 2006 an alternative grouping is used as 1.25*U_avg is replaced by 1.2*U_avg. Prague, Brno and Ostrava are excluded as FDI flows to metropolitan areas are specific and contain distortions (privatization of banks in case of Prague, larger concentration of service industry as compared with the rest of the Czech Republic).

Table 8: The list of districts eligible for investment incentives for the whole period.

	2000	2001	2002	2003	2004	2005	2006	2007
Sokolov	L	M	M	M	M	M	M	M
Děčín	H	H	H	H	H	H	H	H
Chomutov	H	H	H	H	H	H	H	H
Litoměřice	M	M	M	M	M	M	M	M
Louny	H	H	H	H	H	H	M	H
Most	H	H	H	H	H	H	H	H
Teplice	H	H	H	H	H	H	H	H
Ústí nad Labem	H	H	H	H	H	M	H	H
Svitavy	M	M	M	M	M	M	M	M
Hodonín	H	H	H	H	H	H	H	H
Třebíč	M	M	M	M	M	M	M	M
Znojmo	M	M	M	M	M	M	H	H
Bruntál	H	H	H	H	H	H	H	H
Frýdek-Místek	H	H	H	H	M	H	M	M
Karviná	H	H	H	H	H	H	H	H
Nový Jičín	M	M	M	M	M	M	M	H
Břeclav	L	L	L	L	L	L	M	M
Přerov	H	H	H	H	M	M	M	M
Kroměříž	L	L	L	L	L	L	M	M
Šumperk	M	M	M	M	M	M	M	M
Jeseník	H	H	H	H	H	H	H	H
Vsetín	L	L	L	L	L	L	M	M
Opava	M	M	M	M	L	L	M	M
Olomouc	M	M	M	M	L	L	L	L

Note: H stands for district with the unemployment rate above 1.5*U_avg, M for districts with the unemployment rate between 1.25*U_avg and 1.5*U_avg and L for districts with the unemployment rate between U and 1.25*U_avg.

Table 9: The list of districts eligible for investment incentives at least during some years.

	2000	2001	2002	2003	2004	2005	2006	2007
Kladno	L	L	L	L	L			
Kolín	L	L	L	L	L			
Kutná Hora	M	M	M	M	M			
Nymburk	L	L	L					
Český Krumlov						L	L	L
Karlovy Vary			L	L	L	L	L	L
Česká Lípa	L					L		
Liberec					L			
Chrudim	L	L		L				
Prostějov	L	L	L	L		L		
Vyškov	L	L	L	L	L			

Note: H stands for district with the unemployment rate above 1.5*U_avg, M for districts with the unemployment rate between 1.25*U_avg and 1.5*U_avg and L for districts with the unemployment rate between U and 1.25*U_avg.

Table 10: Regression results: explaining FDI inflow per capita

	coef.	st.d.	P-value
TERCIARY	0.108	(0.181)	0.549
MANUF	-0.021	(0.055)	0.709
AGRI	0.042	(0.029)	0.149
HIGHWAY	2.399***	(0.896)	0.008
EU15	1.996*	(1.005)	0.047
log(WAGE)	-0.021	(4.817)	0.997
u_rate	0.034	(0.119)	0.773
v_rate	0.573	(0.819)	0.484
t	0.134	(0.176)	0.447
const	-2.267	(45.624)	0.960
N	814		
R-sq. (adj.)	0.02		

Note: Linear regression explaining heterogeneity in FDI inflow per capita based on observables. The variable TERCIARY indicate the share of college educated population, MANUF stands for the employment share in a manufacturing sector, AGRI indicates the share of agricultural land on the total area of a district, HIGHWAY is a dummy indicating the presence of state highway, EU15 indicates the border with Austria or Germany, u_rate is the unemployment rate and v_rate is the vacancy rate. Significance levels: *** 0.1%, ** 1 %, * 5%.

Table 11: RD estimates of the impact of being elibible for an investment incentive scheme on future FDI inflow

	Specification								
FDI per capita inflow	Unadjusted FDI			Adjusted FDI			Adjusted FDI + Subset		
Bandwidth	short	medium	long	short	medium	long	short	medium	long
Impact_U_avg	14.820	9.663	4.958	13.176	8.046	4.049	10.571	8.072	8.116
standard error	(7.947)*	(5.043)*	(2.926)*	(7.058)*	(4.559)*	(2.453)*	(8.253)	(4.713)*	(4.154)*
bandwidth	0.272	0.543	1.087	0.272	0.543	1.087	0.55	1.1	2.2
N_used	44	89	172	44	89	172	49	120	290
Impact_1.25	-4.072	-2.723	-0.437	-1.810	-1.419	0.290	-1.623	-0.362	0.036
standard error	(2.125)*	(1.643)	(1.346)	(2.917)	(2.102)	(1.634)	(3.321)	(2.634)	(1.850)
bandwidth	0.332	0.665	1.330	0.332	0.665	1.330	0.485	0.97	1.94
N_used	33	61	136	33	61	136	27	62	137
Impact_1.5	1.901	-2.127	-3.648	1.443	-2.418	-3.479	-1.924	-3.276	0.250
standard error	(3.524)	(2.396)	(2.107)*	(4.625)	(3.571)	(2.674)	(8.303)	(3.407)	(2.513)
bandwidth	0.480	0.960	1.920	0.480	0.960	1.920	0.963	1.925	3.850
N_used	45	92	236	45	92	236	49	94	226

Note: The table reports estimates from regression discontinuity estimation with the FDI per capita inflow as a dependent variable and the unemployment rate as an assignment variable. The bandwidth characterizes the distance of district from the discontinuity jump in terms of the unemployment rate. A "medium" bandwidth is set so that at least 30 districts are included at each side of the discontinuity. As a robustness check, alternative bandwidths are used - dividing the "medium" bandwidth by 2, we obtain "short" bandwidth and multiplying by two, "long" bandwidth. Three different unemployment thresholds are considered: the average unemployment rate times 1, 1.25 and 1.5, respectively. Values denote the impact of the investment incentive scheme at the margin on the future FDI inflow in a district. Three specifications for each threshold are estimated - the first one uses plain FDI per capita inflow ("baseline"), the second specification adjusts the dependent variable by observed explanatory variables ("adjusted") and the third specification uses only a subsample of districts ("adjusted + subset"). Those districts which changed their eligibility/ineligibility status more than once are excluded because of a potential noise in the data. Thus, at the first discontinuity (U_avg) six districts were excluded, at the second discontinuity four districts and at the third discontinuity also four. Significance levels: *** 0.1%, ** 1 %, * 5%.