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The Determinants of Foreign Direct Investment in Transition Economies: A Meta-Analysis[*]

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Abstract: In this paper, we conduct a meta-analysis of studies that empirically examine the relationship between economic transformation and foreign direct investment (FDI) performance in Central and Eastern Europe and the former Soviet Union over the past quarter century. More specifically, we synthesize the empirical evidence reported in previous studies that deal with the determinants of FDI in transition economies, focusing on the impacts of transition factors. We also perform meta-regression analysis to specify determinant factors of the heterogeneity among the relevant studies and the presence of publication selection bias. We find that the existing literature reports a statistically significant nonzero effect as a whole, and a genuine effect is confirmed for some FDI determinants beyond the publication selection bias.

JEL classification numbers: E22, F21, P33

Key words: foreign direct investment (FDI), FDI determinants, transition economies, meta-analysis, publication selection bias

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1. Introduction

The economics of transition from a socialist economy to a market economy highlights the necessity of foreign direct investment (FDI) as an additional financial resource in countries with a lack of savings and driving forces for the restructuring of extremely inefficient Soviet-type command economies (Lavigne, 1999, Chapter 9). In the economic theory of transition, therefore, inward FDI has played an important role because it is considered critical for both economic growth and structural change (Okafor and Webster, 2016). Although researchers have been divided about the contribution of inward FDI to economic growth, most of the literature shows that foreign capital inflows and the advance of multinational enterprises (MNEs) played extremely significant roles in the restructuring process that began in earnest with the collapse of the Berlin Wall in November 1989 toward the establishment of a capitalist market economy in Central and Eastern Europe (CEE) and the former Soviet Union (FSU).

In the early transitional period, however, due to the deep-seated skepticism of foreign investors and firms toward the perspective of the former socialist bloc involved in the serious economic crisis, foreign investment in this region generally fell far short of expectations throughout the 1990s, except in Hungary and a few other countries bordering the European Union (EU), each of which was very active in structural reforms and economic liberalization. In addition, most foreign capital that had been invested during this period was either spent to acquire state-owned assets and was, thus, absorbed in the national treasury or was used for portfolio investment. Accordingly, the overall impact on real economies was minor. The situation surrounding foreign investment changed substantially after the turn of the century. Among the many factors that encouraged capital inflow into the CEE and FSU countries during the 2000s, the following are considered to be especially noteworthy: remarkable progress toward a market economy that resulted in the belief that a return to the old regime would never occur in the region; a redefinition of these transition economies as emerging markets against the background of a dramatic business recovery; and the psychological effects on foreign investors and MNEs that stemmed from the accelerating globalization of the world economy. Consequently, the accumulated foreign direct investment (FDI) in the CEE and FSU countries from 1989 to 2014 had a value of US $1.55 trillion, of which approximately 90% was concentrated in the first ten years of the new century.[1] This high concentration of FDI into the transition economies demonstrates vigorous cross-border capital movement in this period.

From early on, the literature of transition economies has focused attention on the potential for FDI to play a significant role in the economic reconstruction of the CEE and FSU countries. Researchers started publishing the results of their full-scale empirical analyses in academic journals in the mid-1990s (e.g., Meyer, 1995; Wang and Swain, 1995; Lansbury et al., 1996). However,

[1] For further information on FDI in the region, see Appendix A.

because of the above-mentioned sluggish foreign investment in the early phase of the transition, combined with various technical constraints such as limited data availability and accessibility, studies on FDI in the transition economies were far from adequate in terms of both quality and quantity throughout the 1990s. This sense of inadequacy was greatly dispelled by vigorous research activity during the 2000s, and now it is not an exaggeration to say that FDI has been elevated to a position as one of the most important research topics in the field of transition economics.

Now that pertinent empirical studies are considered to be well established, one can ask what kind of empirical results the existing literature presents as a whole, specifically, whether these results are sufficient for identifying any true effect and whether any intentional bias in the publication of the studies or a so-called "publication selection bias" exists. In this paper, we will provide some answers to these questions by conducting a meta-analysis of studies that empirically examine the relationship between economic transformation and FDI in the CEE and FSU region over the past quarter century. While studies of FDI in transition economies encompass diversified research topics with various theoretical backgrounds and, thus, research methodologies, any meta-analysis requires a certain number of studies reporting empirical results that are eligible for the synthesis of estimates and/or the meta-regression analysis (MRA) of heterogeneity among studies. In light of the development of relevant studies this far, therefore, we can conduct a meta-analysis focusing on the study of FDI determinants in transition economies, for which a comparatively large volume of empirical results has been accumulated. This also enables us to compare the FDI-inducing effect of economic transition with those of other traditional or gravity models' FDI determinants to indicate the extent to which transition economy-specific factors have contributed to FDI performances in the CEE and FSU region. In this regard, this paper will contribute greatly to deepening our understanding of the relationship between the economic transformation process and FDI performance in the emerging European economies.

Meta-analyses concerning studies of transition economies remain inadequate, as do those of FDI determinants in general economies. Eleven systematic reviews or meta-analyses have focused on relevant studies of transition economies. Among those, Djankov and Murrell (2002) was a pioneering work that reviewed the empirical literature on enterprise restructuring in transition economies in a quantitative way; Estrin et al. (2009) followed Djankov and Murrell (2002), focusing on the effects of privatization and ownership change during the transition period; Iwasaki (2007) further provided evidence concerning the effects of corporate governance structure through a comprehensive survey of the literature on the internal structure of Russian corporations. Then Hanousek et al. (2011) and Iwasaki and Tokunaga (2014, 2016) reviewed a large body of findings regarding the effects of FDI on transition economies. The remaining five studies are outlined as follows: Égert and Halpern (2006) and Velickovskia and Pugh (2011) conducted a meta-analysis of the determinants of the foreign exchange rate; Fidrmuc and Korhonen (2006) devoted themselves to analyzing the literature of the business cycle pattern; Babecký and Campos (2011) and Babecky and Havranek (2014) reviewed the relationship between structural reforms and economic growth with meta-analysis techniques. In the meantime, meta-analyses concerning studies of FDI determinants in general works touch entirely on the impact of taxation on FDI (see de Mooij and Ederveen (2003, 2008) and Feld and Heckemeyer (2011)); among works selected by our meta-analysis, Bellak and Leibrecht (2006, 2007a, 2007b, 2009) and Overesch and Wamser (2010) share those same research interests.

The remainder of this paper is organized as follows: The next section describes our methodology for literature selection and meta-analysis. Section 3 gives an overview of the studies selected for meta-analysis. Section 4 demonstrates our synthesis of the collected estimates. Section 5 performs meta-regression analysis to explore the heterogeneity observed between studies. Section 6 assesses the publication selection bias. Section 7 summarizes our major findings and concludes the paper.

2. Methodology of Literature Selection and Meta-analysis

In this section, we describe our methods of selecting and coding relevant studies and for meta-analysis based on the empirical evidence collected. Unlike Hanousek et al. (2011) and Iwasaki and Tokunaga (2014, 2016), studies that deal with direct and indirect FDI effects, this paper focuses on empirical studies of FDI determinants in transition economies. Furthermore, as compared with relevant literature of the past, the methodology for the meta-analysis used in this paper is more comprehensive, in accordance with the guidelines advocated by Stanley and Doucouliagos (2012).

In order to identify studies related to FDI in the CEE and FSU countries as a base collection, we first searched the EconLit and Web of Science databases for research works that had been registered in the 27 years from 1989 to 2015 that contained a combination of two terms including one from *foreign direct investment*, *FDI*, or *multinational enterprise* and another one from *transition economies*, *Central Europe*, *Eastern Europe*, *the former Soviet Union*, or the respective names of each CEE and FSU country.[2] From approximately 550 studies that we found at this stage, we actually obtained more than 380 studies, or about 70% of the total. We also searched the references in these 380 studies and obtained approximately 90 additional papers. As a result, we collected approximately 470 studies.

These 470 studies included various papers other than empirical studies on FDI determinants in transition economies. Hence, as the next step, we closely examined the contents of these works and narrowed the literature list to those containing estimates that could be subjected to meta-analysis in

[2] The last literature search using these databases was carried out in March 2016.

this paper. In the next section, we report the results of our literature selection in detail. During this process, we decided to exclude all unpublished research works. According to Doucouliagos, Haman, and Stanley (2012), unpublished working papers might present estimates that are not final; moreover, these manuscripts are more likely to be insufficient since they had not yet gone through the peer review process. In our judgment, the same concerns apply to unpublished works we obtained for this study. Another reason to exclude unpublished works is that we use the quality level of each paper that we evaluate, based on external indicators like as journal's rakings, as a weight for a combination of statistical significance levels and as an analytical weight or a meta-independent variable for the MRA. In addition, the following facts also motivate us to take this measure: First, the number of working papers is not large in our case. Second, these unpublished works are not heavily concentrated in recent years. The latter fact led us to decide that there is no particular concern of overlooking the latest research results due to their exclusion.

For this study, we adopted an eclectic coding rule to simultaneously mitigate the following two selection problems: The first is the arbitrary-selection problem caused by data collection in which the meta-analyst selects only one estimate per study. The second is over-representation caused by data collection in which all estimates are taken from every study without any conditions. More specifically, we do not necessarily limit the selection to one estimate per study, but multiple estimates are collected if, and only if, we can recognize notable differences from the viewpoint of empirical methodology in at least one item of the target regions/countries, data type, regression equation, estimation period, and estimator. Hereafter, K denotes the total number of collected estimates ($k = 1, 2, \ldots, K$).

Next, we outline the meta-analysis to be conducted in the following sections. In this study, we employ the partial correlation coefficient (PCC) and the t value to synthesize the collected estimates. The PCC is a measure of the association of a dependent variable and the independent variable in question when other variables are held constant. The PCC is calculated in the following equation:

$$r_k = \frac{t_k}{\sqrt{t_k^2 + df_k}}, \quad (1)$$

where t_k and df_k denote the t value and the degree of freedom of the k-th estimate, respectively. The standard error (SE) of r_k is given by $\sqrt{(1 - r_k^2)/df_k}$.[3]

[3] A benefit of the PCC is that it makes it easier to compare and synthesize collected estimates of independent variables with definitions or units that differ. On the other hand, a flaw of the PCC is that its distribution is not normal when the coefficient is close to -1 or +1 (Stanley and Doucouliagos, 2012, p. 25). Fisher's z-transformation $\left(z = \frac{1}{2}\ln\left(\frac{1+r}{1-r}\right)\right)$ is the best known solution to this problem. As in overall economic studies, the PCC of each estimate used for our meta-analysis was rarely observed to be close to the upper or lower limit; thus, we used the PCC

The following method is used to synthesize PCCs. Suppose that there are K estimates. Here, the PCC of the k-th estimate is labeled as r_k, and the corresponding population and standard deviation are labeled as θ_k and S_k, respectively. We assume that $\theta_1 = \theta_2 = \ldots = \theta_K = \theta$, implying that each study in a meta-analysis estimates the common underlying population effect and that the estimates differ only by random sampling errors. An asymptotically efficient estimator of the unknown true population parameter θ is a weighted mean by the inverse variance of each estimate:

$$\bar{R} = \sum_{k=1}^{K} w_k r_k \Big/ \sum_{k=1}^{K} w_k, \quad (2)$$

where $w_k = 1/v_k$ and $v_k = s_k^2$. The variance of the synthesized partial correlation $\bar{R}$ is given by $1/\sum_{k=1}^{K} w_k$.

This is the meta fixed-effect model. Hereafter, we denote estimates of the meta fixed-effect model using $\overline{R_f}$. To utilize this method of synthesizing PCCs, we need to confirm that the estimates are homogeneous. A homogeneity test uses the statistic:

$$Q_r = \sum_{k=1}^{K} w_k \left(r_k - \overline{R_f}\right)^2 \sim \chi^2(K-1), \quad (3)$$

which has a chi-square distribution with N-1 degrees of freedom. The null hypothesis is rejected if Q_r exceeds the critical value. In this case, we assume that heterogeneity exists among the studies and adopt a random-effects model that incorporates the sampling variation due to an underlying population of effect sizes as well as the study-level sampling error. If the deviation between estimates is expressed as δ_θ^2, the unconditional variance of the k-th estimate is given by $v_k^u = \left(v_k + \delta_\theta^2\right)$. In the meta random-effects model, the population θ is estimated by replacing the weight w_k with the weight $w_k^u = 1/v_k^u$ in Eq. (2).[4] For the between-studies variance component, we use the method of moments estimator computed by the next equation using the value of the homogeneity test statistic Q_r obtained from Eq. (3):

$$\hat{\delta}_\theta^2 = \frac{Q_r - (K-1)}{\sum_{k=1}^{K} w_k^u - \left(\sum_{k=1}^{K} w_k^{u^2} / \sum_{k-1}^{K} w_k^u\right)}. \quad (4)$$

Hereafter, we denote the estimates of the meta random-effects model as $\overline{R_r}$.

Following the precedent of Djankov and Murrell (2002), we combine t values using the next equation:[5]

$$\overline{T_w} = \sum_{k=1}^{K} w_k t_k \Big/ \sqrt{\sum_{k=1}^{K} w_k^2} \quad \sim \quad N(0,1). \quad (5)$$

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as calculated in Eq. (1).

[4] This means that the meta fixed-effect model is a special case based on the assumption that $\delta_\theta^2 = 0$.

[5] Iwasaki (2007) and Wooster and Diebel (2010) also adopted this method of combining the t values.

Here, w_k is the weight assigned to the t value of the k-th estimate. As the weight w_k in Eq. (5), we utilize a 10-point scale to mirror the quality level of each relevant study $(1 \leq w_k \leq 10)$. More concretely, if the study in consideration is a journal article, the quality level is determined on the basis of the economic journal's ranking and its impact factor. For either a book or a book chapter, the quality level is determined based on the presence or absence of a peer review process and literature information, such as the publisher.[6] Moreover, we report not only the combined t value $\overline{T_w}$ weighted by the quality level of the study but also the unweighted combined t value $\overline{T_u}$ obtained according to the following equation:

$$\overline{T_u} = \sum_{k=1}^{K} t_k \Big/ \sqrt{K} \sim N(0,1). \quad (6)$$

By comparing these weighted and unweighted combined t values, we examine the relationship between the quality level and the level of statistical significance reported by each study.

As a supplemental statistic for evaluating the reliability of the above-mentioned combined t value, we also report Rosenthal's fail-safe N (fsN) as computed by the next formula:[7]

$$fsN\ (p = 0.05) = \left(\frac{\sum_{k=1}^{K} t_k}{1.645}\right)^2 - K. \quad (7)$$

After synthesizing the collected estimates, we conduct an MRA to explore the factors causing heterogeneity among selected studies. To this end, we estimate the meta-regression model:

$$y_k = \beta_0 + \sum_{n=1}^{N} \beta_n x_{kn} + e_k\,, \ \ k = 1, \cdots, K, \quad (8)$$

where y_k is the PCC or the t value of the k-th estimate; x_{kn} denotes a meta-independent variable that captures all usable characteristics of an empirical study and explains its systematic variation from other empirical results in the literature; β_n denotes the meta-regression coefficient to be estimated; and e_k is the meta-regression disturbance term (Stanley and Jarrell, 2005).

When selecting an estimator for meta-regression models, we should pay the most attention to heterogeneity among selected studies. It is especially true in our case, where multiple estimates are to be collected from one study. Therefore, we perform an MRA using the following six estimators: the cluster-robust ordinary least squares (OLS) estimator, which clusters the collected estimates by study and computes robust standard errors; the cluster-robust weighted least squares (WLS)

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[6] For more details on the method of evaluating the quality level, see Appendix B.

[7] Rosenthal's fail-safe N denotes the number of studies with the average effect size equal to zero, which needs to be added in order to bring the combined probability level of all the studies to the standard significance level to determine the presence or absence of effect. The larger value of fsN in Eq. (7) means the more reliable estimation of the combined t value. For more details, see Mullen (1989, Chapter 6) and Stanley and Doucouliagos (2012, pp. 73-74).

estimator, which uses either the above-mentioned quality level of the study, the number of observations (*N*) or the inverse of the standard error (1/*SE*) as an analytical weight; the multilevel mixed effects restricted maximum likelihood (RML) estimator; and the unbalanced panel estimator.[8] In this way, we check the statistical robustness of coefficient β_n.

Testing for publication selection bias is an important issue on par with the synthesis of estimates and meta-regression of between-study heterogeneity. In this paper, we examine this problem by using the funnel plot and the Galbraith plot as well as by estimating the meta-regression model that is designed especially for this purpose.

The funnel plot is a scatter plot with the effect size (the PCC in this paper) on the horizontal axis and the precision of the estimate ($1/SE$ in this case) on the vertical axis. In the absence of publication selection, effect sizes reported by independent studies vary randomly and symmetrically around the true effect. Moreover, according to statistical theory, the dispersion of effect sizes is negatively correlated with the precision of the estimate. Therefore, the shape of the plot must look like an inverted funnel. This means that if the funnel plot is not bilaterally symmetrical but is deflected to one side, an arbitrary manipulation of the study area in question is suspected, in the sense that estimates in favor of a specific conclusion (i.e., estimates with an expected sign) are more frequently published (type I publication selection bias).

Meanwhile, the Galbraith plot is a scatter plot with the precision of the estimate ($1/SE$ in this paper) on the horizontal axis and the statistical significance (the *t* value in this case) on the vertical axis. We use this plot for testing another arbitrary manipulation in the sense that estimates with higher statistical significance are more frequently published, irrespective of their sign (type II publication selection bias). In general, the statistic, $|(\text{the } k\text{-th estimate} - \text{the true effect})/SE_k|$, should not exceed the critical value of ± 1.96 by more than 5% of the total estimates. In other words, when the true effect does not exist and there is no publication selection, the reported *t* values should vary randomly around zero, and 95% of them should be within the range of ±1.96. The Galbraith plot tests whether the above relationship can be observed in the statistical significance of the collected estimates, thereby identifying the presence of type II publication selection bias. In addition, for the above reasons, the Galbraith plot is also used as a tool for testing the presence of a nonzero effect.[9]

In addition to the two scatter plots, we also report estimates of the meta-regression models, which have been developed to examine in a more rigorous manner the two types of publication

[8] This refers to cluster-robust random-effects and fixed-effects estimators. The unbalanced panel estimator is selected on the basis of the Hausman test of the random-effects assumption. We also report the results of the Breusch-Pagan test for testing the null hypothesis that the variance of the individual effects is zero in order to question whether the panel estimation itself is appropriate. We set the critical value for both of these model specification tests at a 10% level of significance.

[9] For more details, see Stanley (2005) and Stanley and Doucouliagos (2009).

selection bias and the presence of the true effect.

We can test for type I publication selection bias by regressing the t value of the k-th estimate on the inverse of the standard error ($1/SE$) using the following equation:

$$t_k = \beta_0 + \beta_1(1/SE_k) + v_k, \quad (9)$$

thereby testing the null hypothesis that the intercept term β_0 is equal to zero.[10] In Eq. (9), v_k is the error term. When the intercept term β_0 is statistically significantly different from zero, we can interpret that the distribution of the effect sizes is asymmetric. For this reason, this test is called the funnel-asymmetry test (FAT). Meanwhile, type II publication selection bias can be tested by estimating the next equation, where the left side of Eq. (9) is replaced with the absolute t value:

$$|t_k| = \beta_0 + \beta_1(1/SE_k) + v_k \quad (10)$$

thereby testing the null hypothesis of $\beta_0 = 0$ in the same way as does the FAT.

Even if there is a publication selection bias, a genuine effect may exist in the available empirical evidence. Stanley and Doucouliagos (2012) propose examining this possibility by testing the null hypothesis that the coefficient β_1 is equal to zero in Eq. (9). The rejection of the null hypothesis implies the presence of a genuine effect. They call this test the precision-effect test (PET). Moreover, they also state that an estimate of the publication-bias-adjusted effect size can be obtained by estimating the following equation that has no intercept:

$$t_k = \beta_0 SE_k + \beta_1(1/SE_k) + v_k, \quad (11)$$

thereby obtaining the coefficient β_1. This means that if the null hypothesis of $\beta_1 = 0$ is rejected, then the nonzero effect does actually exist in the literature and the coefficient β_1 can be regarded as its estimate. Stanley and Doucouliagos (2012) call this procedure "the precision-effect estimate with standard error" (PEESE) approach.[11] To test the robustness of the regression coefficient, we

[10] Eq. (9) is an alternative model to the following meta-regression model that takes the effect size as the dependent variable and the standard error as the independent variable:

$$\text{effect size}_k = \beta_0 SE_k + \beta_1 + \varepsilon_k \quad (9b)$$

More specifically, Eq. (9) is obtained by dividing both sides of the equation above by the standard error. The error term ε_k in Eq. (9b) does not often satisfy the assumption of being i.i.d. (independent and identically distributed). In contrast, the error term in Eq. (9), $v_k = \varepsilon_k/SE_k$, is normally distributed; thus, it can be estimated by OLS. Type I publication selection bias can also be detected by estimating Eq. (9b) using the WLS estimator with the inverse of the squared standard error $(1/SE_k^2)$ as the analytical weight and, thereby, testing the null-hypothesis of $\beta_0 = 0$ (Stanley, 2008; Stanley and Doucouliagos, 2012, pp. 60-61).

[11] We can see that the coefficient β_1 in Eq. (11) may become the estimate of the publication-selection-bias-adjusted effect size in light of the fact that the following equation is obtained when both sides of Eq. (11) are multiplied by the standard error:

$$\text{Effect size}_k = \beta_0 SE_k^2 + \beta_1 + \varepsilon_k. \quad (11b)$$

estimate Eqs. (9) to (11) above using not only the OLS estimator but also the cluster-robust OLS estimator and the unbalanced panel estimator,[12] both of which treat possible heterogeneity among the studies.

To summarize, to test for publication selection bias and the presence of a genuine empirical effect, we take the following four steps: First, we test the type I publication selection bias by estimating Eq. (9) to examine the FAT and the type II publication selection bias by estimating Eq. (10). Second, regardless of the outcome of the publication selection bias tests, we conduct the PET to test the existence of a genuine effect in the collected estimates beyond possible contamination from publication bias. Third, in cases where the null hypothesis of the PET is rejected, we obtain an estimate of β_1 in Eq. (11) using the PEESE approach. Finally, if β_1 in Eq. (11) is statistically significantly different from zero, we report β_1 as the estimate of the publication-selection-bias-adjusted effect size. In cases where the null hypothesis of PET is accepted, we judge that the literature in question fails to provide sufficient evidence to capture the genuine effect.[13]

3. Overview of Selected Studies for Meta-analysis

In this section, we give a comprehensive review of the selected studies for a meta-analysis of the determinants of FDI in the CEE and FSU countries during the transition period. Among various key FDI-enhancing factors being discussed so far, a central preoccupation of scholars and policy makers in the region is the extent to which FDI inflow has been influenced by market economy reforms such as liberalization, enterprise restructuring, competition policy, and privatization. As mentioned above, some empirical works were in place by the mid-1990s, and all of these studies found a positive correlation between FDI performance and market economy reforms related to the processes of economic transition that were represented by transition indicators of the European Bank for Reconstruction and Development (EBRD), among other things (Lankes and Venables, 1996; Lansbury et al., 1996; Selowsky and Martin, 1997; EBRD, 1998, Chapter 4). Then, a rapidly increasing FDI inflow in the ensuing years and the growing availability of statistical data for

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When directly estimating Eq. (11b), the WLS method, with $1/SE_k^2$ as the analytical weight, is used (Stanley and Doucouliagos, 2012, pp. 65–67).

[12] To estimate Eqs. (9) and (10), we use either the cluster-robust random-effects estimator or the cluster-robust fixed-effects estimator, according to the results of the Hausman test of the random-effects assumption. With regard to Eq. (11), which does not have an intercept term, we report the random-effects model estimated by the maximum likelihood method.

[13] As mentioned above, we basically follow the FAT–PET–PEESE approach advocated by Stanley and Doucouliagos (2012, pp. 78–79) as the test procedures for publication selection. However, we also include the test of type II publication selection bias using Eq. (10) as our first step because this kind of bias is very likely in the literature regarding FDI in transition economies.

econometric analysis enabled researchers to accelerate their study of FDI determinants in the transition economies, a large part of which drew the conclusion that more progress in the economic transition led to greater FDI received.

In accordance with the method of literature selection described in the previous section, we selected a total of 69 studies that contain estimates suitable for our meta-analysis. **Table 1** lists the selected studies. Note that we removed those studies that, first, do not provide empirical results in quantitative way, such as descriptive studies specifically; second, involve only one explanatory variable in simple regression models; third, adopt binary dependent variables with probit and/or logit estimators, of which the explanatory variables' effect sizes are not comparable to those of linear regression models[14]; and fourth, focus spatially-limited areas or specific industrial sub-sectors in a host country, of which the research design seems to be fundamentally different from those of country-level studies.

Although, even in the early 1990s, there was academic work that reviewed trends in FDI inflows to the CEE and FSU countries using official investment statistics, full-scale empirical studies drawing upon an econometric method were extremely limited in the 1990s. However, as Table 1 shows, the 2000s saw an increasing number of econometric papers on FDI determinants in the region, which demonstrates the increasing popularity of FDI studies among researchers of transition economies. This was caused by ballooning FDI in the region as well as by the business community's raising the prospect that the new accession of transition-advanced countries to the EU would lead to a review of the investment strategies of MNEs, resulting in an overall restructuring of business operations at the Pan-European level.[15] Therefore, the main areas of research interest have been the ten CEE countries that joined the EU in 2004 and 2007.

This table also tells us that non-EU CEE countries with only one-eighth the cumulative FDI, as compared to the new EU membership states (see Appendix A), and FSU countries, excluding the Baltics, with less opportunity to participate in the process of EU accession despite high FDI performance or potential, are moved out of the research object *inter alia* among the empirical studies. An exception is Croatia, which joined the EU in 2013. Deichmann (2013) and Derado (2013) are good examples of works driven by the perspective of a country's EU accession process. Also, recent studies try to fill the knowledge gap, focusing on the determinants of FDI location in Southeastern Europe or the Balkans (Dauti, 2015b; Estrin and Uvalic, 2014; Hengel, 2011). On the whole, except for Döhrn (2000) and Jensen (2002), who do not report the composition of FDI recipients, the total number of host country observations is 833, of which 60.1% (501 observations)

[14] See Stanley and Doucouliagos (2012, pp. 16–17) for more details.

[15] To cite an example, Japanese firms have so radically changed the pattern of direct investment in Europe with increasing FDI into the new membership states that they built more greenfield manufacturing plants in the eastern part of Europe in the first half of the 2000s than in their western counterparts (Ando, 2006).

deal with CEE EU countries. Meanwhile, the share of non-EU CEE countries and FSU countries, excluding the three Baltic states, account for only 14.2% (118 observations) and 18.4% (153 observations), respectively. A few host countries outside of Europe are included in the table because Wang and Swain (1997) and Jiménez (2011) incorporate non-European emerging markets into their panels in an undetachable way.

Empirical analysis in the selected studies above covers the 23 years from 1989 to 2011 as a whole.[16] The average estimation period of collected estimates is 10.6 years (median: 10, standard deviation: 4.2). 37 studies employ the total FDI model with all FDI received from the world as a dependent variable, while 30 studies rely on the bilateral FDI model that uses an amount of FDI from a specific home country as a dependent variable. The remaining two, i.e., Demekas et al. (2007) and Iwasaki and Suganuma (2009), estimate both models. As Table 1 shows, all home countries are included in a majority of the studies using the total FDI model; in other words, they use the total value of FDI from the rest of the world in their explanation. On the other hand, most studies using the bilateral FDI model are based on the gravity model and, thus, specify the home countries so as to detect the effect of the geographical distance between FDI recipients and suppliers.[17] In the table, we can see the recent upward trend in the number of studies adopting the bilateral model, which reflects the intention of those who have been analyzing FDI determinants in general to attach more weight to the gravity model as a basic research design. Reflecting the reality that a large portion of inward FDI to the CEE and FSU countries comes from advanced countries within the EU, the bilateral FDI model makes Western Europe a main target for analysis. Non-EU advanced countries (mainly the United States, Japan, and Switzerland) and leading emerging market economies, including those in the former socialist block (e.g., Hong Kong, Korea, Russia, and the Visegrad Group countries), are also added to the list of investors in Bandelj (2002, 2008b), Bevan and Estrin (2004), Deichmann (2010, 2013), and Estrin and Uvalic (2014).

As for data type, studies using panel data make up three-fourths of the total; otherwise they employ cross-sectional data or rely on time series data in only a limited number of cases. Table 1 shows that many researchers were conducting empirical analyses with cross-sectional data until the mid-2000s. This is probably due to the limited availability of longitudinal data as well as the volatility of FDI inflow to the region during the first decade of the transition. Next, the FDI indicators to be introduced as dependent variables in the left-hand side of regression equations can be subdivided into seven groups. According to Table 1, the annual net FDI inflow (Type I) is the most commonly used indicator; 25 of the 69 studies count upon this type of variable. Annual gross FDI inflow (Type II), cumulative gross FDI value or FDI (including fixed capital) stock (Type III),

[16] Only Wang and Swain (1997) include a pre-transition period for their longitudinal data analysis.

[17] Note that the bilateral FDI model, without explanatory variables for geographical distance, does not follow the gravity model in its original meaning.

and annual FDI inflow divided by the value added or industrial output to control for the difference of economic scale within the target countries (Type VI) follow this; approximately a dozen studies use each type. Other types of FDI variables are each used in three to five studies. The FDI variable chosen seems to depend both on purely technical considerations and a priori selection of the specific variables, given the research interest of each study. In the case of the first issue, when one applies published and widely used FDI datasets that are often extracted from the UNCTADstat, OECD StatExtracts, the World Economic Outlook database of the IMF, and the World Development Indicators provided by the World Bank Group, a negative value would come into being because these datasets express the annual net value of FDI flow or a difference between inbound FDI and outbound FDI based on the balance of payment statistics of each country, which poses a serious obstacle to performing log-transformed linear regression. In fact, we have seen a negative bilateral investment flow in the CEE and FSU countries explicitly during the two financial crises of the mid-1990s and 2008−2009; in Russia, among others, "capital flight" continues to be a macroeconomic problem even now, despite its largest FDI volume received in absolute terms. Besides that, the unevenness of FDI inflow has the potential to make for more noisy relationships of other flows, such as GDP, to which they are often scaled (Claessens et al., 2000). To avoid this problem, Garibaldi et al. (2001) use the gross value of FDI inflow without any deduction for outflow, and Botrić and Škuflić (2006) cite the FDI stock from a direct investment position database, for example. As for a priori selection of FDI indicators, although not often expressly stated in the papers, it is highly predictable that the authors of the literature subject to our meta-analysis prefer a specific FDI variable for their research design and tasks. To give an example, Overesch and Wamser (2010) argue for the conceptual advantages of the number of investments (count variable) as a result of location choice by MNEs because an usual form of binary choice model (to go or not to go) is incapable of taking into account that MNEs often have multiple affiliates in a host country.

Meanwhile, transition-specific explanatory variables that are incorporated into the right-hand side of regression equations can be classified according to their contents with six indicators (see Table 1). As we have mentioned before, in most cases, the selected studies use EBRD transition indicators and/or their sub-indicators by area as proxies for the extent of the economic transformation, and, thus, the classification reflects in principle how the EBRD categorizes the transition process into these indicators.[18] However, the privatization indicators stipulated herein

[18] Some researchers have been critical and skeptical of an econometric approach to measuring the FDI-inducing effect of transition from the early stage of market economy reforms; according to Myant and Drahokoupil (2012), a high score in quantified transition indicators does not necessarily imply that an efficient modern economy has been established, as the indicators are based on a narrow concept of private ownership rather than on a broader perspective of economic development that is truly indispensable for transition countries. As was acknowledged both by the

include the large- and small-scale privatization indexes provided by the EBRD as well as other privatization-related variables, such as private sector share and privatization revenues in each country. Table 1 reveals that studies using these privatization indicators (Type V) as transition-specific explanatory variables are in the majority, accounting for 22 of the total 42 studies with them. This is understandable in light of the fact that by-bidding direct sales of state-owned assets was proposed as a way of privatization in the CEE and FSU countries, thereby dramatically increasing FDI inflow in some cases, as symbolized by Hungary in the 1990s. Subsequently, eleven papers employ general transition indicators (Type I); those that rely on liberalization indicators (Type II), enterprise reform indicators (Type III), and competition policy indicators (Type IV) are in a minority (five or six studies for each), and, interestingly, eighteen deploy other transition indicators such as trade and forex systems, the efficiency of law institutions, infrastructure reform, and financial sector reform. This last point would suggest the breadth of researchers' understanding of the economic transition or, alternatively, reflect that there is no clear consensus concerning the essence of the economic transition in the region. Furthermore, as implied in the average precision (*AP*) of estimates by studies reported in Table 1, there is no apparent tendency for their precision to converge in each category of transition-specific explanatory variables.

The economic literature specifies a broad array of FDI determinants, not only for transition economies but also for all parts of the world. It has verified that the local market size, often expressed as the GDP or population of a country, has a positive and statistically significant effect on FDI performance.[19] Papers reviewing empirical and survey studies of the FDI determinants of the CEE and FSU countries reveal the significance of market size as an incentive for foreign investment, which has been a consensus among researchers since an early period (Lankes and

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EBRD, which formulated transition indicators, and Nicolas Stern, who served as the chief economist in the 1990s, the simple approach to transition indicators leaves out what seems to be important to the functioning of the market economy; even though the state authorities must be sufficiently strong and well organized to secure well-regulated and efficiently operational market mechanisms, these over-arching and basic considerations are reflected only in a limited way in quantifying the economic transformation process in the CEE and FSU countries (Stern, 1997). Therefore, transition indicators show how far an economy has moved from a planned or command regime to a market economy; however, they do not fully indicate how and to what extent a country has worked to carry forward its market reforms. Therefore, Djankov and Murrell (2002)'s warning holds true even now. They noted that the empirical research on transition economies that existed at the time paid little attention to how to make sense of transition in the wider context of economic development.

[19] See Chakrabarti (2001) and Eicher et al. (2012) for estimates of FDI determinants at the global level.

Venables, 1996; Estrin et al., 1997; Holland et al., 2000).[20] Thus, it is meaningful to conduct a meta-analysis that will synthesize the estimates of the relevant studies with respect to the effect of economic transition on FDI and compare the FDI-inducing effect of economic transition with those of other potential FDI determinants to provide a clear-cut picture of the extent to which transition economy-specific factors have quantitatively influenced these countries' FDI performances.

The selected empirical studies herein contain various explanatory variables as FDI determinants, of which some are target variables to be explored and some are controlling variables for multivariate analysis. Therefore, in addition to the transition variables above, we collected and categorized the estimates of other variables into nine types (see Table 1).[21] Market-related variables (i.e., market size variables and purchasing power variables) and labor cost variables (both in level and difference) are often included in controlling for potential FDI determinants to verify the effect sizes of focused variables. In most, if not all, cases, geographical distance variables are incorporated into the bilateral FDI model for the reason that we have already discussed in this section. About one-third of papers introduce trade effect variables in an attempt to determine whether a relationship between FDI and trade is complementary or substitutional in the cases of the CEE and FSU countries. Agglomeration effect variables denote that the presence of other foreign firms is expected to motivate FDI, as in Doytch and Eren's (2012) clearly formulated research strategy; in some cases, however, these variables appear as a result of the incorporation of lagged FDI variables to estimate a dynamic panel model with a theoretical consideration of the equilibrium

[20] According to Lefilleur (2008), who reviewed the studies of FDI determinants in the CEE and FSU countries, however, a growing body of literature reports that local market size does not have a significant effect on FDI in the region. The vote-counting method shows that, whereas all 33 papers published before the year 2000 reported a positive and significant coefficient of its proxy variable, nine of the 25 studies that were published after that year found an insignificant or negative relationship between market size and FDI performance.

[21] We exclude corporate income tax-related variables from our meta-analysis, although the impact of corporate taxes, tax incentives, and tax structures on cross-border capital flows is an issue in selected studies such as Beyer (2002), Edmiston et al. (2003), and Bellak and Leibrecht (2006, 2007a, 2007b, 2009). A meta-analysis of FDI and taxation by Feld and Heckemeyer (2011) reported that the tax-rate elasticity of FDI is highly dependent on which index of corporate income tax is adopted for analysis: whereas semi-elasticities based on the statutory tax rate are often statistically non-significant in empirics, those studies that use the bilateral effective average tax rate reveal that semi-elasticities are significant in almost all of the observed cases. This argument is in line with de Mooij and Ederveen's (2003, 2008), which applies a meta-analysis to the empirical findings on semi-elasticities of the corporate tax base. A series of works by Bellak and Leibrecht tells us that this is also the case for the CEE countries. In our view, it is not appropriate for our research design to synthesize those estimates whose statistical significance is *de facto* pre-determined when making relevant variables.

process of FDI.[22] The two remaining potential FDI determinants, resource abundance variables and EU accession variables, are mainly targeted to the FSU region and the new EU CEE sample, respectively. Resource-rich FSU countries such as Russia, Kazakhstan, Azerbaijan, and Turkmenistan seem to attract resource-seeking FDI, and their growing consumer markets, thanks to oil and gas revenues, would anchor market-seeking FDI there. Meanwhile, whether eastward enlargement of the EU boosted FDI in the new member countries has, undoubtedly, been one of the top research agendas in this field.[23] In the following sections, we use estimates of these variables to weight the effect sizes and gauge the statistical significance of all potential FDI determinants, including transition-specific variables, which are the focus of this paper.

4. Synthesis of Estimates

Figures 1 and 2 illustrate frequency distribution of the PCC and that of the *t* value of ten semantically clustered FDI determinants, using 933 estimates collected from the 69 studies listed in Table 1. Goodness-of-fit testing for each panel indicates that either the PCC or the *t* value—or both—is distributed in a nearly normal distribution for six of ten determinants; however, variables of purchasing power, trade effect, labor cost difference, and resource abundance do not satisfy the criteria. As for the transition-related variables that are the focus in subsequent sections of this paper, both the PCC and the t value are distributed with a nearly normal distribution with modes of 0.15 and 1.75, respectively. According to Cohen's (1988) guidelines of PCC, 29.7% (55 estimates) find no practical relationship ($|r|<0.1$) between transition progress and FDI performance in the CEE and FSU countries, while 48.7% (90 estimates) and the remaining 21.6% (40 estimates) report a small effect ($0.1 \leq |r| < 0.3$) and a medium or large effect ($0.3 \leq |r|$), respectively. Meanwhile, Panel (b) of the figure tells us that the estimates of transition-related variables with respective absolute *t* values that are equal to or greater than 2.0 account for 55.7% (103 estimates) of the total.

To consider the implications of the integration of empirical results in a more systematic way, we synthesized the collected estimates of the selected studies using the meta-synthesis methodology outlined in Section 2. **Table 2** indicates the outcome of the integration of all of the estimates extracted from the whole sample, while **Table 3** shows that of estimates restricted solely to transition-specific explanatory variables. In addition to the overall synthesis results shown on the top line, both tables also report individual synthesis results, focusing on differences in data types, model types, types of FDI variable, and types of FDI determinant for Table 2, or of transition variable for Table 3, in light of the discussion in the previous section.

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[22] See Carstensen and Toubal (2004) and Michalíková and Galeotti (2010) for more details on this point.

[23] See Iwasaki and Suganuma (2009) for a review of the literature.

As shown in column (a) of both tables, which reports the synthesis results of the PCC, the homogeneity test rejects the null hypothesis in almost every case; thus, the synthesized effect size, $\overline{R_r}$, of the random-effects model is adopted as the reference value. The synthesized PCC of all estimates (K = 933) is greater than 0.1, with statistical significance at the 1% level, which is almost twice as high as the effect size of the transition-related variables (K = 185); this suggests that other potential FDI determinants are dominant. The variables of market size, agglomeration effect, and EU accession exert greater influence on the FDI performance in a positive way and show larger effect sizes, meaning that they provide stronger inducement to foreign investment. Among other statistically significant variables, an explanatory power of foreign trade that seems to have a complementary relationship to foreign investment is similar to that of economic transition, and labor cost level and geographical distance variables seem to act as brakes on FDI, as the theory predicts. Note that estimates of the geographical distance variables indicate a large negative and highly significant effect. This suggests that a factor beyond the control of policymakers wields influence over cross-border capital mobility; thus, empirics need to include proxies for physical distance in their regression models. In the case of transition-specific explanatory variables (see Row (d) of Table 3), their effect sizes are roughly classified into two groups─one for variables with comparatively larger effect sizes (indicators of general transition, liberalization, and enterprise reform) and the other for less powerful variables (privatization and other indicators).

Both tables tell us that the magnitude of synthesized effect size differs remarkably between subjects of comparison. More specifically, studies that conduct a time series data analysis tend to report a much larger positive effect on FDI performance than do those performing a panel or a cross-sectional data analysis. With regard to model type, the total FDI model is highly likely to result in a greater influence of FDI determinants as compared to the bilateral FDI model. The type of FDI variable chosen seems to be essential for interpreting empirical results; studies using annual net or gross FDI inflow per capita and, in the case of the meta-synthesis of transition variables, annual net FDI inflow to GDP or index alike tend to offer larger effect sizes than do others. Remember that these results are simply compiled from the collected estimates of the original studies. In the next section, we will turn to this issue in a more rigorous way, so as to be more precise using multivariate meta-regression models.

Column (b) of Tables 2 and 3 shows the results of the combined t value. A first inspection of both tables immediately reveals not only that the combined t value, $\overline{T_w}$, weighted by the quality level of the study is substantially lower than the unweighted combined t value, $\overline{T_u}$, but also that the former falls below the 10% level in terms of its statistical significance in some cases. These results suggest that there may be a strongly negative correlation between the quality level of the study and the reported t value; when two panels are compared, this is more likely to be for the analysis of transition variables. On the other hand, except for the cases above, the fail-safe N (*fsN*) in the right column of the tables shows a sufficiently large value. This means that, even taking into consideration the presence of unpublished studies (working papers, discussion papers, conference papers etc.) that have been omitted from our meta-analysis, the overall research implications obtained from the selected studies herein cannot be easily dismissed.

5. Meta-regression Analysis of Heterogeneity among Studies

Based on discussions in the previous section, one can foresee that the observed heterogeneous set of studies would largely affect their empirical results. In order to scrutinize this issue more carefully, we estimated meta-regression models that take either the PCC or the *t* value of a collected estimate as the dependent variable. **Table 4** lists the names, definitions, and descriptive statistics of meta-independent variables to be introduced on the right-hand side of the regression model defined in Eq. (8).[24] As this table suggests, in our MRA, we quantitatively examine whether and to what extent empirical evidence from the pertinent literature is affected by differences in the composition of target countries in terms of both FDI donors and recipients, the estimation period, the data type, the presence or absence of controlling for individual and time effects,[25] the estimator, the model type, the form of dependent variable (exact numeric value versus logarithmic value), the type of FDI variable, the type of FDI determinant, and the degree of freedom as well as the quality level of the study. Note that some meta-analysis studies of general FDI determinants have, thus far, demonstrated that the empirical evidence of original papers is highly dependent on what type of FDI variable is chosen.[26]

Tables 5 and **6** report the estimation results of the MRA of heterogeneity among the selected studies for overall FDI determinants and for transition-specific FDI determinants, respectively. With regard to the unbalanced panel regression models [6] and [12] in each table, the null hypothesis is not rejected by the Hausman test for overall FDI determinants in Table 5; therefore, we report the estimation results of the cluster-robust random-effects model. At the same time, the Breusch-Pagan test accepts the null hypothesis that the variance of the individual effects is zero in this case, in particular, the strong acceptance of the null-hypothesis in Panel (b) in Table 5 with the *t* value as a dependent variable led to the result that the estimates of the cluster-robust random-effects model [12] are rarely different from those of the OLS model [7]. On the other hand, we report the

[24] Because the original estimates with 1/*SE* more than 500 are possibly produced in our computation (none of the original studies provide information on 1/*SE*), we treat these estimates as having unrealistic precision and, thus, eliminate them from the ensuing analysis.

[25] We include this in our MRA because controlling for unobserved host country heterogeneity and common time effects may reduce the variation of transition-related variables (Overesch and Wamser, 2010).

[26] See de Mooij and Ederveen (2003, 2008), Feld and Heckemeyer (2011), and Iwasaki and Tokunaga (2014).

estimation results of the cluster-robust fixed-effects model for Panel (b) in Table 6 because both the Hausman and Breusch-Pagan tests reject the null hypothesis. For Panel (a), while the null hypothesis is rejected by the Hausman test, the Breusch-Pagan test accepts the null hypothesis that the variance of individual effects is zero; therefore, we report the estimation results of the cluster-robust random-effects model. In both tables, although the WLS models are sensitive to the choice of analytical weights, many variables are significantly estimated uniformly. The coefficient of determination (R^2), which indicates the explanatory power of a model, ranges from 0.300 (models [7] and [12]) to 0.558 (model [9]) for overall FDI determinants (Table 5) and, if we set aside model [12] with the extremely low explanatory power due to the omission of several explanatory variables in the course of the fixed-effects estimation, from 0.404 (model [8]) to 0.965 (model [9]) for transition-specific FDI determinants (Table 6). This is of a sufficient level, as compared to previous meta-analysis studies on FDI performance.

Based on the estimation results of four sets of MRA, we find that a number of coded characteristics of the selected studies exert a statistically significant influence on their empirical evidence. In other words, the empirical results of FDI determinants are highly likely to be affected as follows: First, whereas the composition of host target countries does not significantly influence the estimates of parameters in both cases, studies with more non-EU advanced countries as FDI suppliers report smaller effect sizes and lower statistical significances in the case of transition-specific FDI determinants (see Panels (a) and (b) of Table 6). This can be interpreted to imply that non-Western European investors are not highly sensitive to the progress of economic transition. Considering a greater share of FDI from Western European countries, a series of economic reforms such as liberalization, enterprise restructuring, and privatization has been an important driver for Western European investors, while investors from outside Europe would be more interested in other FDI-inducing factors, for example, ballooning consumer markets for service sectors, cheap labor supply for manufacturers, and resource development newly available to mining sectors.

Second, as suggested by the quantitative synthesis of the empirical results in the previous section (see Tables 2 and 3), a notable result of the MRA herein is the large difference between the panel data and the time series data. Estimates of the time series data analysis, i.e., single country studies, are larger by approximately 0.25 in terms of the PCC relative to the panel data analysis as a benchmark in the case of overall FDI determinants (Panel (a) of Table 5) and by a range of 0.502 to 0.702 if we pay attention to the transition-specific FDI determinants (Panel (a) of Table 6). At the same time, in the latter case, studies using cross-sectional data report statistically significant lower estimates for both PCCs and *t* values as compared to panel data studies. Although an overview of the original papers would tempt us to conclude that researchers were obliged to work with cross-sectional data during the early years of transition, mainly due to the unavailability and/or the incredibility of region-wide datasets,[27] we examined whether the estimation period was associated with increased FDI performance and found no relationship between them in the MRA, providing evidence that the effect is entirely attributable to differences in the data type.

Third, the choice of estimator also greatly affects the estimation results. As compared to the benchmark estimator, i.e., OLS, more reflective estimators, such as FE, 2SLS (or 3SLS applied to the estimation of overall FDI determinants), and GMM that pay more attention to possible biases in the estimates due to individual effects of host target countries or to simultaneous causation between FDI performance and FDI determinants, tend to present a more conservative assessment of the effect size and statistical significance. Focusing on transition-specific FDI determinants in Table 6, FE, 2SLS, and GMM estimates are lower on average by a range of 0.109 to 0.313 with regard to the PCC (Panel (a)) and by a range of 0.898 to 3.762 pertaining to the *t* value (Panel (b)). Since we can expect that there would be endogeneity between FDI performance and economic transition, this MRA result suggests that one must tackle the issue explicitly; this problem is explored by another MRA of the FDI-growth relationship in transition economies (Iwasaki and Tokunaga, 2014).

Fourth, the bilateral FDI model, which was inspired by the development of the gravity model as an analytical framework, clearly shows downward estimates for PCCs, as compared to the total FDI model, in studies of the overall FDI determinants (Table 5). However, this result is not echoed in those of transition-specific FDI determinants (Table 6). Generally speaking, the bilateral FDI model is able to integrate more exhaustive—and sometimes unconventional—variables other than the ten types of FDI determinants specifically coded for our meta-analysis of multivariable regression. In fact, some authors of the original papers have attempted to discover how personal and business networks and/or cultural and linguistic ties between investors and recipients would control the cross-border capital flow in a historically and ethnically complicated region such as Eastern Europe. For instance, Bandelj (2002, 2008b) indicated that the conclusion of bilateral investment treaties, the flow of official government aid from investing countries, a history of long-term immigration from host countries to home countries, and the presence of national minorities in a particular foreign country have statistically significant effects on the dyad of FDI flow, confirming the hypothesis that social relations had positive effects on inward FDI. Moreover, Deichmann (2010, 2013), using a pairwise set of FDI values in one specific host country from the rest of the world, concluded that cultural and historical proximity was an important motivation for developing business relations in the emerging European economies. To give a simpler example, FDI in Croatia in the 1990s might have been *de facto* war-related assistance from the Croatian community abroad, as Garibaldi et al. (2001) described in explaining why this country had received more significant direct investment than expected. Since these effects are difficult to test empirically in the total FDI

[27] As is clearly shown in Table 1, studies that employ cross-sectional data are found mainly in the early original papers selected for our meta-analysis.

model, they vanish with the omitted variables that would make an enormous impact on the analysis of the original papers. Considering also the importance of geographical distance variables in the studies of FDI determinants as described in the previous section, we again insist on the structural validity of the bilateral framework.

Fifth, it seems that the choice of FDI variable type does not cause any significant variance in the effect size or the statistical significance of the FDI variables in the cases of all FDI determinants, except in one variable (cumulative gross value or stock of Panel (b) in Table 5). In other words, contrary to all expectations, the difference in the type of FDI variable does not give rise to large heterogeneity among the whole set of studies. On the other hand, this is not the case for transition-specific FDI determinants, as can be seen from Table 6; whereas studies using annual gross FDI inflow as the dependent variable report smaller effect sizes and lower statistical significances of economic transition, those with cumulative gross value or stock and/or other FDI variables are likely to produce the opposite estimation result. At the same time, the choice of transition variable type does not bring about a large significant difference in the PCC (Panel (a) in Table 6). This result seems to be consistent with Section 3, which pointed out the homogeneous population of transition variables, partly reflecting the fact that they are largely in reference to or compiled from EBRD transition indicators/sub-indicators. It is well known that there appears to be a strong positive correlation between those variables that are devised to indicate the progress of economic reforms in CEE and FSU countries.[28] However, the choice of transition variable type seems to exert a certain influence on the statistical significance, i.e., the *t* value (Panel (b) in Table 6). As opposed to aggregated general transition indicators, functionally segmented transition variables act in the direction of reducing the statistical power of estimates.

Sixth, the type of FDI determinant has an important explanatory power, and the measurement of their relative strengths is certainly of interest to most readers. Table 5 reveals the comparative result of nine plausible determinant factors of FDI performance, with the transition variables used as benchmarks. Seven of nine are different in a statistically significant manner; market size and agglomeration effect variables show positive signs in both the PCC and the *t* value, except in cases using the inverse of the standard error as an analytical weight (models [4] and [10]), meaning that these two variables have stronger FDI-inducement power with higher statistical significance as opposed to the transition variables, *ceteris paribus*. On the other hand, five variables—purchasing power, labor cost level, labor cost difference, resource abundance, and geographical distance—express themselves in an opposite manner, in most cases. Although negative signs do not always mean that they are impediments to FDI inflow, factors other than resource abundance seem

[28] According to IMF (2000, pp. 133–137), EBRD transition indicators and two alternatives (the liberalization index and the index of institutional quality) are highly correlated, which reflects the similarity of the concepts measured.

to hamper the development of foreign business in the region, as can be seen from Table 2 in view of the result of meta-synthesis in the previous section. For labor cost level and geographical distance variables, the analysis herein is consistent with the standard economic theory: investors are likely to pour money into nearby markets with a cheap labor force. With regard to purchasing power variables, their operations are possibly equivalent to those of labor cost level variables. As some authors actually did in their original papers, GDP per capita is likely to be used as a proxy for wage levels that is highly correlated with a country's standard of living. Note, however, that the meta-synthesis of this category provides a statistically insignificant estimate, i.e., the whole set of studies does not view it as an effective FDI determinant. Labor cost difference variables have unexpected signs because investors who are sensitive to labor costs should be interested in host countries with a large difference in labor costs from their home countries. However, as in the case of purchasing power variables, their overall effect as FDI determinants is not supported by the meta-synthesis of collected estimates. Therefore, at this moment, we conjecture that this may be due to a limited number of samples (K = 38) or can be attributed to another reason, such as a particular strategy of foreign investors there.[29]

Finally, the estimation results of resource abundance variables seem to be most interesting, and this may be controversial. Whereas a cursory glance at the descriptive statistics of FDI performance gives us an impression that resource-rich countries such as Poland, Russia, and Kazakhstan have received more foreign investment in the last two decades (see Appendix A), our MRA suggests that the existence of hydrocarbon resources does not alone provide a sufficient incentive for the FDI boom in the region. Put more simply, economic transition and other things matter more than natural resources. The two remaining meta-independent variables, regarding trade effects and EU accession, do not show statistically significant differences from the benchmarks; this means that these two factors have FDI-enhancing effects comparable to those of transition-specific variables.

In addition to the above findings, Table 6 suggests that the degrees of freedom for estimates, i.e., the number of samples, have a mild negative effect on the empirical evaluations of transition-specific FDI determinants. Accordingly, studies with a larger sample size, *ceteris paribus*, tend to assign a lower value to transitional factors for stimulating foreign business, thus drawing conservative conclusions concerning the causality between economic transition and FDI performance in CEE and FSU countries. Other meta-independent variables such as the composition of host target countries, the estimation period, control for individual and time effects, the object of FDI, and the form of dependent variable are not statistically estimated at the 10% level of significance in all but a few cases, reflecting the fact that these characteristics do not cause heterogeneity among individual studies under our meta-analysis.[30]

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[29] We will revisit this issue in the next section.

[30] However, when removing all meta-independent variables related to the estimator, estimates of

6. Assessment of Publication Selection Bias and Estimation of the True Effect

In aggregating the results of the relevant literature that examines the determinants of FDI in the CEE and FSU countries, we must keep in mind that no empirical study is exempt from publication selection bias (PSB). We now turn to this issue by means of the methods that have been developed in Section 2. The objective of this final analytical section is to find the magnitude of PSB and attempt to grasp the true effect of the economic variables in question by removing the influence of PSB. First, we look at a funnel plot of all the estimates' PCCs against the respective inverse of the standard errors in **Figure 3**. Due partly to the limitations of the sample size, these figures, in most cases, hardly show the expected shape, which can be seen among studies of a given research subject without publication selection.[31] In other words, we cannot see a bilaterally symmetric triangle-shaped distribution of the collected estimates in the figures, except in a few cases, when either zero or the mean value of the top 10% most-precise estimates is used as an approximate value of the true effect. In our case, the insufficient number of estimates, in addition to the existence of PSB, is apparently considered to be a primary cause of such an unclear funnel plot.

Looking at the transition-related variables in the first panel of Figure 3, if the true effect exists around zero, then the ratio of the positive versus the negative estimates becomes 155:26, which strongly rejects the null hypothesis that the ratio is 50:50 (z = 7.808, p = 0.000). Following the discussion of Stanley (2005), even if the true effect is assumed to be close to the mean of the top 10% most-precise estimates, the collected estimates herein are divided into a ratio of 49:132, with a value of 0.272 being the threshold; accordingly, the hypothesis is again rejected (z = 5.608, p = 0.000). In this case, therefore, type I PSB is strongly suspected to be present in the existing literature. Among other cases, there would be robust PSB for the five variables of market size, purchasing power, agglomeration effect, labor cost level, and EU accession, all of which have rejected the null hypothesis above in both the cases of zero and the mean of the top 10% most-precise estimates as the true effect. The two variables of trade effect and geographical distance have rejected the null hypothesis in one of two ways, showing potential PSB. Only the two remaining variables of labor cost difference and resource abundance have accepted it in both events. Again, however, due to a limited number of collected estimates, these funnel plots produce an inconclusive result.

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individual effects turn statistically significantly negative at the 10% level in Table 6. This is not surprising, as all estimators used here, other than OLS, control for individual effects owing to their structures.

31 See the clearly inverted funnel-shaped distribution of estimates shown in Doucouliagos, Iamsiraroj, and Ulubasoglu (2010, Figure 1, p. 15), which uses 880 estimates collected from 108 studies on the relationship between FDI and economic growth around the world.

Next, looking at the Galbraith plot in **Figure 4**, we can confirm that the presence of type II PSB is highly likely in this research field. For the transition-specific variables in the first panel of the figure, only 72 of the 181 estimates show t values within the range of ±1.96 or two-sided critical values of the 5% significance level. This result strongly rejects the null hypothesis that the rate as a percentage of total estimations is 95% (z = 15.179, p = 0.000). Even based on the assumption that the mean of the top 10% most-precise estimates stands for the true effect, the corresponding result also rejects the null hypothesis that estimates in which statistics, $|(\text{the } k\text{-th estimate} - \text{the true effect})/\text{SE}_k|$, exceed the critical value of 1.96 account for 5% of all estimates (z = 5.018, p = 0.000). With respect to other variables, the null hypothesis above is not accepted in most, if not all, cases. All too often, empirical papers cling to more statistically significant results and, thus, are contaminated by type II PSB. This holds true for our case.

Finally, in accordance with the methods and procedures described in Section 2, we examined the two types of PSB and attempted to determine whether genuine empirical evidence is present by estimating the meta-regression models specially developed for this purpose. **Table 7** summarizes the results.[32] As the second and third columns of the table show, the null hypothesis, that the intercept term β_0 in Eqs. (9) and (10) is equal to zero, is rejected in many cases but, more often and with more robustness in the latter situation, supports the view that type II PSB has thoroughly prevailed in the selected studies as compared with the degree of type I PSB. Meanwhile, in terms of the true effect, as the fourth column indicates, the null hypothesis, that the coefficient of the inverse of the standard error β_1 in Eq. (9) is equal to zero, can be rejected for the seven variables of economic transition, agglomeration effect, labor cost level, labor cost difference, resource abundance, EU accession, and geographical distance; this means that there is, possibly, a true effect of these FDI determinants. Furthermore, according to the last column of Table 7, which demonstrates the estimation of the publication bias–adjusted effect size, the coefficient of the inverse of the standard error, β_1 in Eq. (11), is estimated to be positive and significant at the 1% or 5% level in all cases except one.[33] All of these considerations imply that there should be genuine evidence concerning the FDI-enhancing effects of economic system transformation, the agglomeration of foreign business entities, comparatively cheap labor costs, natural resource

[32] For more details on the results of meta-regression analysis of PSB, see Appendix C.

[33] Recall that one cannot infer the existence of the genuine effect if the null hypothesis concerning the coefficient of the inverse of the standard error, β_1 in Eq. (9), is not rejected. As can be seen from Appendix C, this often happens when there is a strong PSB, for example, in the case of market size variables. Another meta-analysis of the FDI-growth relationship in transition economies reveals that this is the case for the macroeconomic impacts of FDI in transition economies (Iwasaki and Tokunaga, 2014). Only when β_1 in both Eqs. (9) and (11) is statistically significantly different from zero can we reckon the PSB-adjusted effect size as the genuine effect of the variable in question.

endowments, the strategic Europeanization of specific CEE countries, and geographical vicinity with investors' home countries in the 69 studies listed in Table 1.

According to the estimation of the PSB-adjusted effect size, the agglomeration effect is found to have the largest positive effect on FDI inflow to CEE and FSU countries. Interestingly, it is the only variable to be free of both type I and type II PSB. This probably occurs because it is either employed as a control variable, not a central preoccupation for the author(s), or is introduced as a lagged variable of FDI performance so as to make a dynamic panel model. In any event, it does not seem that researchers are strongly motivated to report preferred results. The modified effect size of the labor cost level variable shows the expected sign predicted by the economic theory, as does the geographical distance variable of the gravity model when it is incorporated into the analysis. Although the impact of natural resources on FDI flow is ambiguous in the literature, our meta-analysis supports the positive FDI-inducing effect of natural resource endowments. Finally, the other two FDI determinants specific to the CEE and FSU countries and of great concern to researchers in this field, economic transition and EU accession variables, are also clearly distinguishable in that they have a genuine FDI promotion effect beyond the PSB in the original studies. Although their effect sizes look modest when compared to that of the agglomeration effect variable, this result argues for the positive role of these major economic and political events that the capital-scarce former socialist countries have experienced in the last quarter century. Therefore, we conclude that the empirical results reported in previous literature have provided sufficient empirical evidence to prove the nonzero FDI-inducing effect of these two factors.

7. Conclusion and Policy Implications

In this paper, we have systematically surveyed the research on transition and FDI in the CEE and FSU countries to synthesize its main findings, as well as to explore the heterogeneous structure of this field of study. We found plentiful work in examining the effects of various potential factors on FDI performance in the region. Using a methodology that has been developed as a set of tools for meta-analysis in economics and business studies that enables us to combine the many results for each FDI determinant, we analyzed their effects separately and compared them.

A total of 69 original studies provided 933 estimates of ten FDI determinants in the CEE and FSU countries for our meta-analysis, among which 185 estimates were specifically attached to economic transition in the region. These transition variables were our main foci, and we examined whether and to what extent the transition economy-specific factors have quantitatively exerted an influence on the FDI performance in the region. In this regard, we paid attention to the observed heterogeneous set of selected studies that would largely affect their empirical results. This could be done with the help of multivariate meta-regression models, the relevant details of which were substantiated in Section 2.

Here is a summary of our findings. First, the meta-synthesis of collected estimates conducted in Section 3 demonstrates that the magnitude of the synthesized effect size (PCC) should be estimated upward if a study uses a time series dataset rather than a panel or a cross-sectional dataset, relies on the total FDI model as opposed to the bilateral FDI model, and chooses a specific type of FDI variable with a larger effect size. Furthermore, although the synthesized PCC of the transition-related variables shows a statistically significant positive estimation, its effect size looks much smaller than those of such variables that embody market size, the agglomeration effect, and EU accession. This implies that many powerful drivers of the development of FDI would be in place together with economic transition in the CEE and FSU countries. However, these results are just compiled from the collected estimates of the original studies without controlling for heterogeneity among them. We attempted to solve this problem in Sections 4 and 5.

Second, based on the estimation results of four sets of meta-regression analyses of heterogeneity among the studies, we found that a number of coded characteristics of the selected studies exert a statistical influence on their empirical evidence. Traditional FDI determinants, such as market size and the agglomeration effect, have stronger FDI-inducement power with higher statistical significance as opposed to economic transition variables; this is in line with the results of the meta-synthesis prior to the multivariate meta-regression. When the meta-regression analysis is confined to transition-specific FDI determinants, a study using a time series dataset relative to a panel dataset and/or cumulative net FDI value per capita against annual net FDI inflow is likely to report a larger effect size. In contrast, if a study includes more non-EU advanced countries as investors in the analysis, uses a cross-sectional dataset, employs an estimator that explicitly controls for the individual effects of FDI recipients (FE) or wrestles with the endogeneity problem between economic transition and FDI performance (2SLS), and relies on the annual gross FDI inflow as a dependent variable, it results in a downward estimation of the effect sizes and lower statistical significance. Unexpectedly, and contrary to the results of meta-analysis studies of FDI determinants to date, the difference in the type of FDI variable does not seem to be a major cause of heterogeneity among the whole set of studies. Also, the type of transition variable chosen for analysis does not yield a large effect-size variance in the empirical evidence. This probably stems from the fact that many of the transition variables are quantified on the basis of the EBRD transition indicators or sub-indicators. Note, however, that these results do not consider any PSB that might be attached to any empirical paper, regardless of what is said about the superiority of the research quality. We tackled this problem in Section 6.

Third, we found the prevalence of PSB in the original studies, with more likely to be contaminated by type II PSB than by type I PSB. Even so, our MRA of publication selection reveals that these studies would provide genuine empirical evidence beyond the PSB for some FDI determinants, including those related to economic transition and EU accession. According to the estimation of the PSB-adjusted effect size, these two variables have nonzero positive FDI-inducing effects, along with the agglomeration effect and resource abundance variables. We can, therefore, conclude that the foremost economic and political changes unique to transition countries have made a considerable contribution to the growth and development of FDI in the region.

Finally, a key policy question is whether FDI in the region has been determined primarily by exogenous factors or by endogenous policy-oriented efforts (Estrin and Uvalic, 2014). Our meta-analysis supports both hypotheses: two exogenous features—natural resource endowments and geographical locations—are apparently out-of-control variables for policymakers. However, they still have many options for attracting FDI, such as market economy reforms (economic transition), highly clustered business activities (industrial agglomeration), price and wage controls (labor cost reduction), and institutional integration with Western Europe (EU accession). A comparison of the PSB-adjusted effect size, however, suggests that industrial agglomeration has much greater FDI-inducement power with a size many times larger. This argument is supported by empirical evidence of FDI determinants in other parts of the world. It is vital, therefore, for policymakers to help make self-organizing business clusters in a well-ordered manner. This would also bring the spillover effects of FDI.

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Table 1. List of selected studies on determinants of FDI in transition economies for meta-analysis

Author(s) (Publication year)	Target countries: Number of countries	Breakdown by host country group: CEE EU countries [a]	Other CEEs	FSU [b]	Others	Number of countries	Breakdown by home country group [c]: EU advanced countries	Non-EU advanced countries	Former socialist countries	Others	Estimation period [d]	Model type	Data type	FDI variable (dependent variable) type [e]	Type of transition variables (explanatory variables) [f]	Number of collected estimates	Average precision (AP) [g]	Type of other FDI determinants (explanatory variables) [h]	Number of collected estimates
Lansbury et al. (1996)	4	4				14	11	3			1991–1993	Bilateral	Panel	VII	V	3	1536.840	III, V	6
Selowsky and Martin (1997)	25	10	3	12		221	17	18	186		1990–1995	Total	Panel	VI	II	2	1.195	IV, VII	3
Wang and Swain (1997)	2	1			1	221	17	18	186		1978–1992	Total	Time series	VII				I, V	17
Claessens et al. (2000)	21	10	3	8		221	17	18	186		1992–1996	Total	Panel	I	II	2	3.922	VIII	2
Döhrn (2000)	21	n/a	n/a	n/a		221	17	18	186		1994–1997	Total	Cross-section	I	VI	1	3.262	I, II	2
Resmini (2000)	10	9	1			15	15				1991–1995	Total	Panel	VII				I, II, III, VI	4
Babić and Stučka (2001)	12	10	2			221	17	18	186		1992–1999	Total	Panel	I				II, III, IV	27
Baláž and Williams (2001)	4	4				221	17	18	186		1990–1999	Total	Panel	VI				I, II	2
Deichmann (2001)	17	10	3	4		221	17	18	186		1990–1999	Total	Cross-section	III				III, V	4
Garibaldi et al. (2001)	25	10	3	12		221	17	18	186		1990–1999	Total	Panel	II	II, VI	3	4.671	I, IV, VII	12
Grogan and Moers (2001)	25	10	3	12		221	17	18	186		1990–1998	Total	Cross-section	VI	V	2	35.508		
Bandelj (2002)	11	10	1			27	12	6	4	5	1995–1997	Bilateral	Cross-section	V	VI	1	32.909	II, VIII	4
Beyer (2002)	15	10		5		221	17	18	186		1995–1998	Total	Panel	VI	I, V	3	27.850	IV, VII	4
Fabry and Zeghni (2002)	6	5		1		221	17	18	186		1991–1999	Total	Panel / Time series	I	I, III, IV, VI	12	4.186	II	4
Jensen (2002)	18	n/a	n/a	n/a		221	17	18	186		1993–1997	Total	Cross-section	VI	I	1	0.669	III	1
Minchev et al. (2002)	1	1				221	17	18	186		1998–2001	Total	Panel	VI				V	2
Deichmann et al. (2003)	25	10	3	12		221	17	18	186		1989–1998	Total	Cross-section	V	VI	1	4.827	VII	1
Edmiston et al. (2003)	25	10	3	12		221	17	18	186		1993–1998	Total	Panel	VI	I, VI	2	3.399	II, III, VII	8
Bevan and Estrin (2004)	11	10		1		19	15	3		1	1994–2000	Bilateral	Panel	I				I, V, VIII, IX	10
Bevan et al. (2004)	12	10		2		15	15				1994–1998	Bilateral	Cross-section	I	I, II, IV, VI	6	0.043	I, III, VI, VII, IX	24
Carstensen and Toubal (2004)	7	7				11	10	1			1993–1999	Bilateral	Panel	I	V	4	0.009	I, III, IV, VI	11
Deichmann (2004)	1	1				143	n/a	n/a	n/a	n/a	1989–2001	Bilateral	Cross-section	VII				III, IX	2
Frenkel et al. (2004) [i]	7	5		2		5	3	2			1992–2000	Bilateral	Panel	I				I, VII, IX	6
Janicki and Wunnava (2004)	9	8		1		15	15				1997	Bilateral	Cross-section	I				I, VI	2
Jensen (2004)	16	10	3	3		15	15				1992–1999	Bilateral	Panel	III				I, VII, IX	5
Pournarakis and Varsakelis (2004)	12	10	2			221	17	18	186		1997–2001	Total	Panel	IV				III	6
Ass and Beck (2005)	27	10	5	12		221	17	18	186		1998–2002	Total	Panel	VI				II	7
Grosse and Trevino (2005)	13	10	1	2		221	17	18	186		1990–1999	Total	Panel	I				I	1
Kekic (2005)	27	10	5	12		221	17	18	186		1998–2002	Total	Cross-section	II				I, V, VII, IX	5
Bellak and Leibrecht (2006)	5	5				7	6	1			1996–2002	Bilateral	Panel	VI	V	1	290.244	I, IX	2
Botrić and Škuflić (2006)	7	2	5			221	17	18	186		1996–2002	Total	Panel	I, III	V	2	0.139	I, II, III, V	12
Brzozowski (2006)	13	10	1	2		221	17	18	186		1990–2001	Total	Panel	II				I, II, IV	15
Fabry and Zeghni (2006)	11	8	3			221	17	18	186		1992–2003	Total	Panel	IV	III, IV	19	3.585	I	25
Bellak and Leibrecht (2007a)	8	7	1			7	6	1			1995–2003	Bilateral	Panel	I	V	2	16.633	I, V, IX	6
Bellak and Leibrecht (2007b)	8	7	1			7	6	1			1995–2003	Bilateral	Panel	I	V	1	16800.000	I, V, IX	3
Demekas et al. (2007)	16	10	6			24	16	2	6		1995–2003	Total/Bilateral	Panel / Cross-sectio	I, III	II, VI	8	11.106	I, II, IV, V, IX	18
Dhakal et al. (2007) [j]	8	8				221	17	18	186		1995-2004	Total	Panel	II	VI	1	3.758	I, III	2

Author(s) (Publication year)	Target countries: Number of countries	Breakdown by host country group: CEE EU countries [a]	Other CEEs	FSU [b]	Others	Number of countries	Breakdown by home country group [c]: EU advanced countries	Non-EU advanced countries	Former socialist countries	Others	Estimation period [d]	Model type	Data type	FDI variable (dependent variable) type [e]	Type of transition variables (explanatory variables) [f]	Number of collected estimates	Average precision (AP) [g]	Type of other FDI determinants (explanatory variables) [h]	Number of collected estimates
Bandelj (2008a)	11	10	1			221	17	18	186		1990–2000	Total	Panel	IV	V	3	9.046	II, VIII	6
Bandelj (2008b)	11	10	1			27	12	6	4	5	1995–1997	Bilateral	Cross-section	V	VI	1	32.963	II, VIII, IX	5
Bellak et al. (2008)	8	7	1			7	6	1			1995–2003	Bilateral	Panel	I	V	4	12.803	I, V, IX	12
Torrisi et al. (2008)	4	4				221	17	18	186		1989–2006	Total	Panel	I	V	1	0.002	I, III, VIII	3
Bellak and Leibrecht (2009)	8	7	1			7	6	1			1995–2003	Bilateral	Panel	I	V	2	205.808	I, V, IX	6
Bellak et al. (2009)	8	7	1			7	6	1			1995–2004	Bilateral	Panel	I	II, V	9	14.386	I, V, IX	24
Fung et al. (2009)	15	10	5			221	17	18	186		1990–2004	Total	Panel	II				I, II, III, V, VIII	20
Iwasaki and Suganuma (2009)	21	10	5	6		7	5	2			1990–2005	Total/Bilateral	Panel	II, IV	V	4	4.936	I, II, VIII, IX	24
Leibrecht and Scharler (2009)	7	6	1			7	6	1			1995–2004	Bilateral	Panel	I	V	7	13.131	I, V, IX	20
Mateev (2009)	8	7	1			12	12				2001-2006	Bilateral	Panel	I				I, II, III, IX	24
Merlevede and Schoors (2009)	10	10				12	12				1992–2000	Bilateral	Panel	III	III	1	4.051	I, III, VI, VIII	24
Sova et al. (2009)	4	4				17	13	4			1990-2005	Bilateral	Panel	II	I	1	6.733	I, VI, IX	3
Azam (2010)	3			3		221	17	18	186		1991–2009	Total	Time series	II				I	3
Bandelj (2010)	10	10				221	17	18	186		1994–2000	Total	Panel	IV	I, VI	2	2.355	II, VIII	4
Deichmann (2010) [j]	1	1				156	17	18	26	95	2006	Bilateral	Cross-section	I				III, IV, IX	4
Lefilleur and Maurel (2010)	11	10	1			221	17	18	186		1993–2005	Total	Panel	II	V	2	29.167	I, IX	10
Michalíková and Galeotti (2010)	1	1				221	17	18	186		2000–2007	Total	Panel	VI				IV, V, VI	27
Overesch and Wamser (2010)	10	10				1					1996–2005	Bilateral	Panel	III, VII	V, VI	18	7.207	I, III, IV, V	45
Serin and Çalışkan (2010)	9	3	4	2		221	17	18	186		1995-2006	Total	Panel	II				I, III, VIII	12
Hengel (2011) [j]	8	2	6			221	17	18	186		1995-2008	Total	Panel	III	I, III, IV, V, VI	6	3.551	II, III	18
Jiménez (2011)	14	10			4	3	3				1999–2006	Bilateral	Panel	I				I, II	12
Seric (2011) [j]	10	10				221	17	18	186		1995-2005	Total	Panel	III	III, V, VI	17	3.155	I, III, V, VII	29
Doytch and Eren (2012)	21	9	5	7		221	17	18	186		1994–2008	Total	Panel	VI				II, IV, VII	32
Gorbunova et al. (2012)	27	10	5	12		221	17	18	186		1995–2002	Total	Panel	III				I, II, V, VII, VIII, IX	21
Deichmann (2013) [j]	1		1			190	17	18	27	128	2000–2009	Bilateral	Cross-section	III, VII				III, IV, IX	6
Derado (2013)	12	10	2			5	4	1			1996–2004	Bilateral	Panel	III	V	3	11.891	I, II, III, VIII, IX	9
Sakali (2013)	1	1				12	10	2			1998–2008	Bilateral	Panel	I	I, VI	1	0.546	I, III, VI, VIII	6
Estrin and Uvalic (2014) [j]	17	10	6	1		70	17	18	35		1990-2011	Bilateral	Panel	I	V	4	9.091	I, V, VII, VIII, IX	29
Dauti (2015a)	15	10	5			14	14				1994-2010	Bilateral	Panel	III	I, VI	8	4.315	I, III, IV, VI, IX	19
Dauti (2015b)	15	10	5			20	17	3			1994-2010	Bilateral	Panel	III	I, VI	8	1.083	I, III, IV, VI, IX	16
Igošina (2015)	27	10			17	9		4	2	3	2000-2008	Bilateral	Panel	I				I, II, IV, V, IX	6
Lee (2015) [j]	20	10	3	7		221	17	18	186		1995–2006	Total	Panel	II	IV, V, VI	6	3.139	I, III, V	6

Notes:

[a] CEE EU countries denote the ten Central and Eastern European countries that joined the European Union either in 2004 or 2007.

[b] Excluding the Baltic countries.

[c] For the total FDI model, all home countries are conveniently divided into four categories according to the country group classificaton of the UNCTAD Handbook of Statistics 2012: among 221 countries listed, 17 are classified as EU advanced countries, 18 as non-EU advanced countries, and the remaining 186 as emerging and developing countries, including the former socialist countries.

[d] The estimation period may differ depending on the target countries within each study.

[e] I: Annual net FDI inflow, II: Annual gross FDI inflow, III: Cumulative gross FDI value or FDI (including fixed capital) stock, IV: Annual net or gross FDI inflow per capita, V: Cumulative net FDI value per capita, VI: Annual net FDI inflow to GDP (including manufacturing value added) or annual gross FDI inflow to manufacturing output, VII: Others (number of FDI projects, etc.).

[f] I: General transition indicators, II: Liberalization indicators, III: Enterprise reform indicators, IV: Competition policy indicators, V: Privatization indicators, VI: Other indicators (trade and forex systems, efficiency of law institutions, infrastructure reform, financial sector reform, and so on).

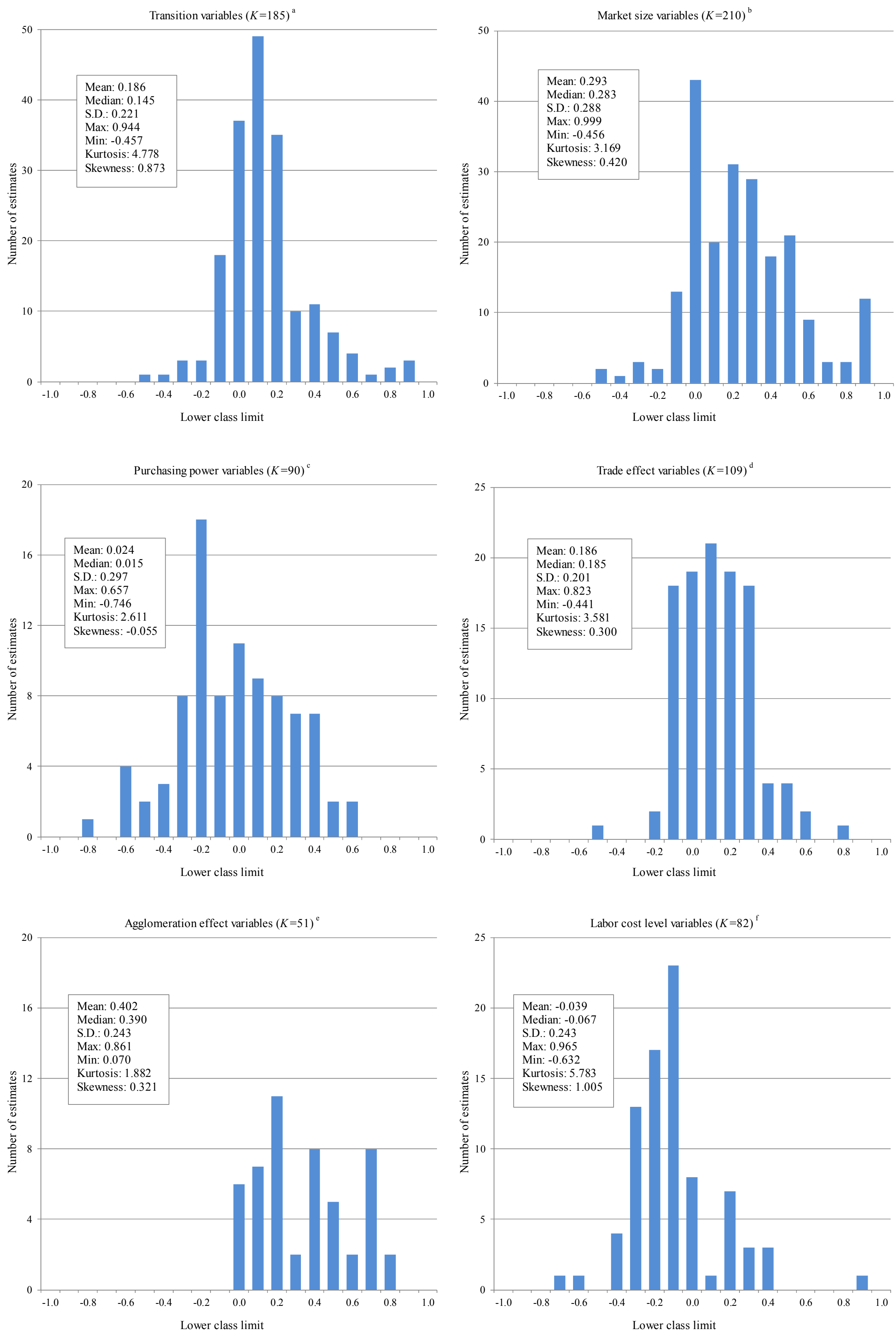
[g] AP is defined as the mean of the inverse of the standard errors of estimates collected from each study.

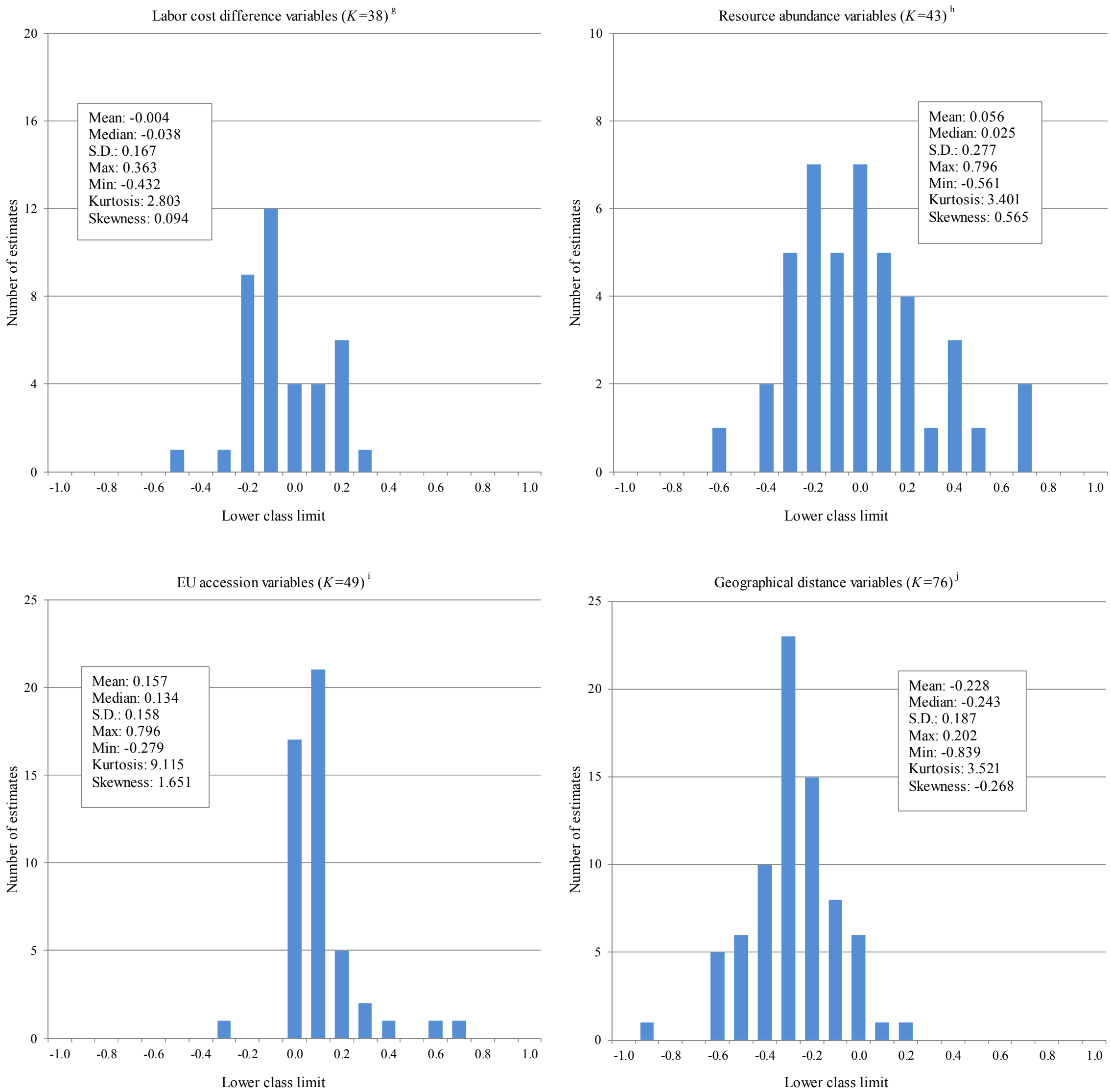
[h] I: Market size variables, II: Purchasing power variables, III: Trade effect variables, IV: Agglomeration effect variables, V: Labor cost level variables, VI: Labor cost difference variables, VII: Resource abundance variables, VIII: EU accession variables, IX: Geographical distance variables.

[i] A subpanel with CEE countries is discussed.

[j] Based on the list of home investment countries in the study, they are divided into four categories according to the country group classificaton of the UNCTAD Handbook of Statistics 2012 (see note c for details).

Figure 1. Frequency distribution of partial correlation coefficients





Notes:

[a] *Goodness-of-fit test*: χ^2=23.80, p=0.000

[b] *Goodness-of-fit test*: χ^2=6.39, p=0.041

[c] Goodness-of-fit test: χ^2=0.48, p=0.788

[d] *Goodness-of-fit test*: χ^2=3.80, p=0.150

[e] *Goodness-of-fit test*: χ^2=8.47, p=0.015

[f] *Goodness-of-fit test*: χ^2=17.28, p=0.000

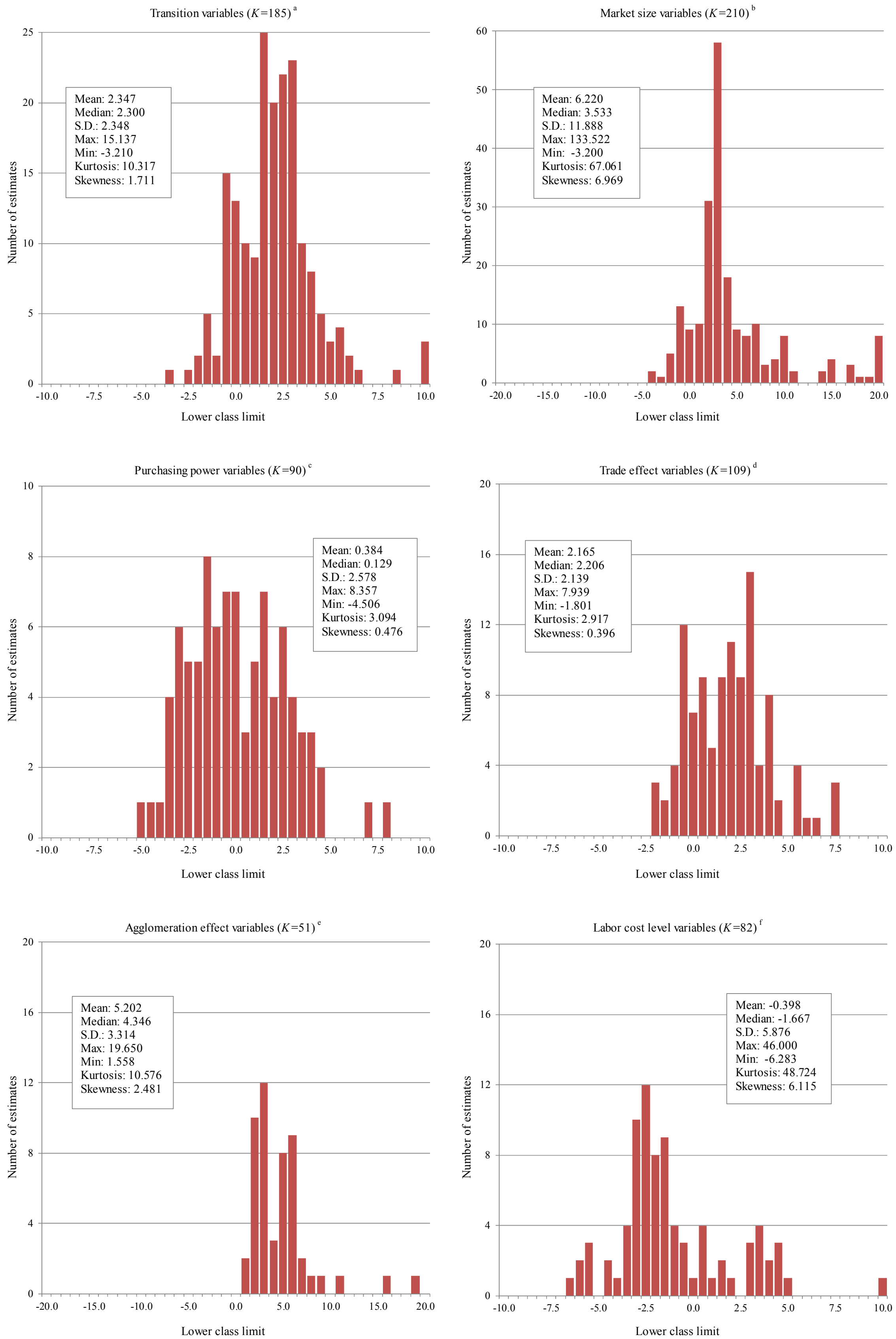
[g] *Goodness-of-fit test*: χ^2=0.10, p=0.953

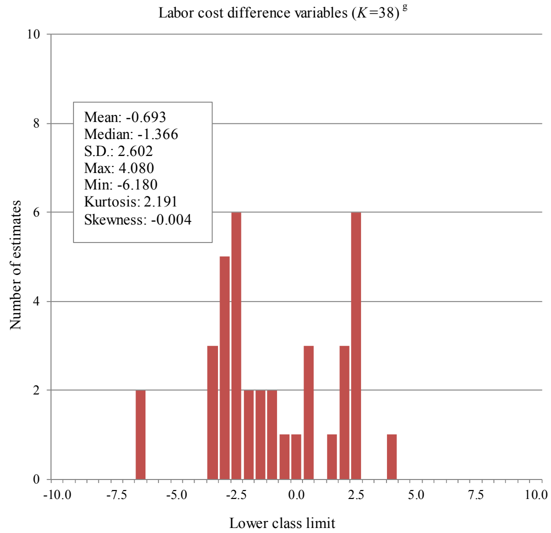
[h] *Goodness-of-fit test*: χ^2=3.89, p=0.143

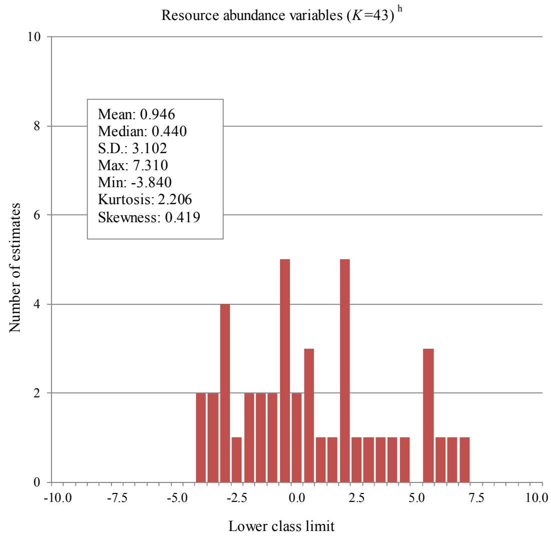
[i] *Goodness-of-fit test*: χ^2=23.32, p=0.000

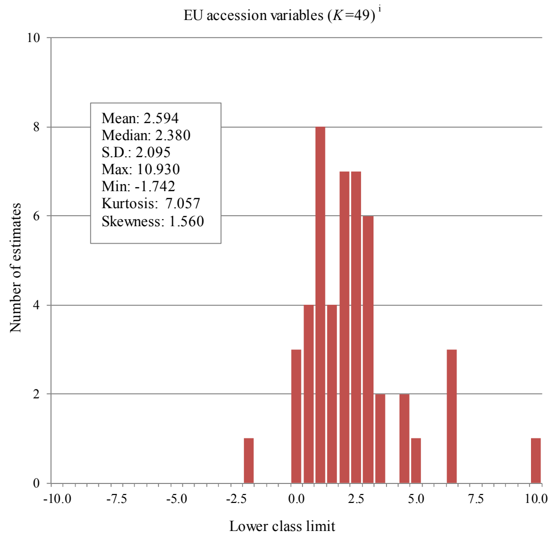
[j] *Goodness-of-fit test*: χ^2=2.59, p=0.274

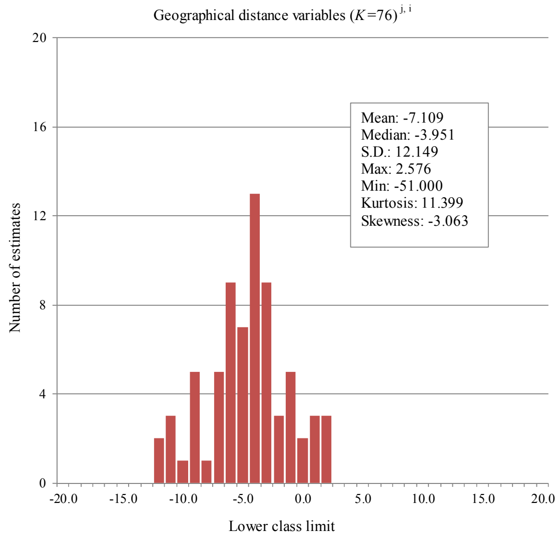
Figure 2. Frequency distribution of t values











Notes:

[a] *Goodness-of-fit test*: χ^2=64.52, p=0.000

[b] *Goodness-of-fit test*: χ^2=-, p=0.000

[c] *Goodness-of-fit test*: χ^2=3.99, p=0.136

[d] *Goodness-of-fit test*: χ^2=3.10, p=0.212

[e] *Goodness-of-fit test*: χ^2=32.67, p=0.000

[f] *Goodness-of-fit test*: χ^2=-, p=0.000

[g] *Goodness-of-fit test*: χ^2=1.60, p=0.449

[h] *Goodness-of-fit test*: χ^2=3.45, p=0.178

[i] *Goodness-of-fit test*: χ^2=19.75, p=0.000

[j] *Goodness-of-fit test*: χ^2=49.23, p=0.000

[i] Some lower outliers (t<50.0) are not indicated for a technical reason.

Table 2. Synthesis of collected estimates of all FDI determinants

	Number of estimates (K)	(a) Synthesis of PCCs			(b) Combination of t values			
		Fixed-effect model (z value) [a]	Random-effects model (z value) [a]	Test of homogeneity [b]	Unweighted combination (p value)	Weighted combination (p value)	Median of t values	Fail-safe N (fsN)
All studies	933	0.006 ***	0.105 ***	62000 ***	60.395 ***	10.954 ***	1.977	1256706
		(20.02)	(32.34)		(0.00)	(0.00)		
(a) Comparison in terms of data type								
Studies that employ panel data	829	0.006 ***	0.100 ***	60000 ***	57.616 ***	10.554 ***	2.001	1016128
		(19.49)	(29.90)		(0.00)	(0.00)		
Studies that employ cross-sectional data	80	0.075 ***	0.089 ***	647.650 ***	8.679 ***	1.489 *	0.970	2147
		(8.29)	(3.32)		(0.00)	(0.07)		
Studies that employ time series data	24	0.888 ***	0.756 ***	68.807 **	22.098 ***	3.539 ***	4.511	4307
		(29.77)	(12.49)		(0.00)	(0.00)		
(b) Comparison in terms of model type								
Studies that adopt total FDI model	487	0.441 ***	0.229 ***	14000 ***	57.664 ***	12.156 ***	2.613	597926
		(116.36)	(11.26)		(0.00)	(0.00)		
Studies that adopt bilateral FDI model	446	0.003 ***	0.039 ***	34000 ***	27.097 ***	4.338 ***	1.283	120570
		(10.67)	(12.47)		(0.00)	(0.00)		
(c) Comparison in terms of the type of FDI variable								
Studies that use annual net FDI inflow	272	0.084 ***	0.084 ***	46000 ***	27.730 ***	4.608 ***	1.681	77020
		(48.21)	(3.58)		(0.00)	(0.00)		
Studies that use annual gross FDI inflow	152	0.104 ***	0.138 ***	2364.112 ***	22.678 ***	3.921 ***	1.839	28737
		(21.42)	(6.91)		(0.00)	(0.00)		
Studies that use cumulative gross FDI value or FDI (including fixed capital) stock	250	0.044 ***	0.127 ***	5094.363 ***	22.678 ***	3.921 ***	1.839	28737
		(27.15)	(15.37)		(0.00)	(0.00)		
Studies that use annual net or gross FDI inflow per capita	86	0.204 ***	0.242 ***	265.569 ***	21.331 ***	3.868 ***	2.300	14374
		(20.53)	(12.77)		(0.00)	(0.00)		
Studies that use cumulative net FDI value per capita	13	0.052 ***	0.047	50.287 ***	2.434 ***	0.380	0.675	15
		(2.74)	(1.15)		(0.01)	(0.35)		
Studies that use annual net FDI inflow to GDP (including manufacturing value added) or annual gross FDI inflow to manufacturing output	96	0.322 ***	0.145 ***	2057.314 ***	18.149 ***	3.842 ***	1.852	11589
		(34.51)	(3.18)		(0.00)	(0.00)		
Studies that use other types of FDI variables (number of FDI projects, etc.)	64	0.001 ***	0.005 ***	1131.332 ***	16.741 ***	2.372 ***	2.093	6565
		(4.54)	(2.72)		(0.00)	(0.01)		
(d) Comparison in terms of the type of FDI determinant								
Studies that use transition variables	185	0.004 ***	0.063 ***	1969.312 ***	31.924 ***	5.586 ***	2.347	69489
		(8.01)	(18.85)		(0.00)	(0.00)		
Studies that use market size variables	210	0.030 ***	0.279 ***	35000 ***	90.137 ***	15.288 ***	6.220	630297
		(47.57)	(27.58)		(0.00)	(0.00)		
Studies that use purchasing power variables	90	0.042 ***	0.035	585.821 ***	3.639 ***	0.817	0.384	350
		(4.36)	(1.32)		(0.00)	(0.21)		
Studies that use trade effect variables	109	0.001	0.066 ***	1002.347 ***	22.602 ***	5.540 ***	2.165	20467
		(1.58)	(14.09)		(0.00)	(0.00)		
Studies that use agglomeration effect variables	51	0.123 ***	0.368 ***	1098.199 ***	37.151 ***	7.333 ***	5.202	25962
		(28.83)	(15.28)		(0.00)	(0.00)		
Studies that use labor cost level variables	82	-0.003 ***	-0.015 **	2787.725 ***	-3.603 ***	-0.580	-0.398	311
		(-4.64)	(-2.28)		(0.00)	(0.28)		
Studies that use labor cost difference variables	38	-0.041 ***	-0.022	225.475 ***	-4.274 ***	-0.965	-0.693	219
		(-6.58)	(-1.29)		(0.00)	(0.17)		
Studies that use resource abundance variables	43	0.058 ***	0.043 **	317.431 ***	6.205 ***	1.047	0.946	569
		(11.19)	(2.09)		(0.00)	(0.15)		
Studies that use EU accession variables	49	0.092 ***	0.140 ***	214.061 ***	18.156 ***	2.977 ***	2.594	5920
		(18.07)	(10.26)		(0.00)	(0.00)		
Studies that use geographical distance variables	76	-0.381 ***	-0.229 ***	3359.708 ***	-61.972 ***	-10.099 ***	-7.109	107786
		(-107.47)	(-9.15)		(0.00)	(0.00)		

Notes:

[a] Null hypothesis: The synthesized effect size is zero.

[b] Null hypothesis: Effect sizes are homogeneous.

*** Statistical significance at the 1% level

** Statistical significance at the 5% level

* Statistical significance at the 10% level

Table 3. Synthesis of collected estimates of transition variables

	Number of estimates (K)	(a) Synthesis of PCCs			(b) Combination of t values			
		Fixed-effect model (z value) [a]	Random-effects model (z value) [a]	Test of homogeneity [b]	Unweighted combination (p value)	Weighted combination (p value)	Median of t values	Fail-safe N (fsN)
All studies	185	0.004 ***	0.063 ***	1969.312 ***	31.924 ***	5.586 ***	2.347	69489
		(8.01)	(18.85)		(0.00)	(0.00)		
(a) Comparison in terms of data type								
Studies that employ panel data	165	0.004 ***	0.058 ***	1808.133 ***	30.036 ***	5.307 ***	2.338	54843
		(7.82)	(17.55)		(0.00)	(0.00)		
Studies that employ cross-sectional data	17	0.148 ***	0.159 ***	25.080 *	7.777 ***	1.228	1.886	363
		(6.99)	(5.70)		(0.00)	(0.11)		
Studies that employ time series data	3	0.926 ***	0.926 ***	0.028	9.431 ***	1.886 **	5.445	96
		(9.50)	(9.50)		(0.00)	(0.03)		
(b) Comparison in terms of model type								
Studies that adopt total FDI model	96	0.240 ***	0.274 ***	677.378 ***	24.835 ***	5.018 ***	2.535	21785
		(24.86)	(10.04)		(0.00)	(0.00)		
Studies that adopt bilateral FDI model	89	0.003 ***	0.025 ***	691.200 ***	20.233 ***	3.141 ***	2.145	13376
		(6.84)	(10.22)		(0.00)	(0.00)		
(c) Comparison in terms of the type of FDI variable								
Studies that use annual net FDI inflow	49	0.068 ***	0.160 ***	294.821 ***	18.048 ***	2.784 ***	2.578	5849
		(13.08)	(9.76)		(0.00)	(0.00)		
Studies that use annual gross FDI inflow	24	0.098 ***	0.109 ***	75.306 ***	8.409 ***	1.363 *	1.716	603
		(8.91)	(4.90)		(0.00)	(0.09)		
Studies that use cumulative gross FDI value or FDI (including fixed capital) stock	55	0.037 ***	0.155 ***	854.353 ***	19.617 ***	4.904 ***	2.645	7767
		(10.48)	(9.53)		(0.00)	(0.00)		
Studies that use annual net or gross FDI inflow per capita	29	0.232 ***	0.260 ***	119.629 ***	12.431 ***	2.416 ***	2.308	1627
		(12.19)	(6.28)		(0.00)	(0.01)		
Studies that use cumulative net FDI value per capita	3	0.137 ***	0.174 ***	5.209 *	3.784 ***	0.617	2.185	13
		(3.17)	(2.19)		(0.00)	(0.27)		
Studies that use annual net FDI inflow to GDP (including manufacturing value added) or annual gross FDI inflow to manufacturing output	10	0.258 ***	0.288 ***	38.856 ***	7.961 ***	1.134	2.517	224
		(7.79)	(3.94)		(0.00)	(0.13)		
Studies that use other types of FDI variables (number of FDI projects, etc.)	15	0.002 ***	0.002 **	43.014 ***	5.812 ***	0.788	1.501	172
		(4.74)	(2.53)		(0.00)	(0.22)		
(d) Comparison in terms of the type of transition variable								
Studies that use general transition indicators	20	0.122 ***	0.224 ***	445.870 ***	18.776 ***	4.800 ***	4.198	2586
		(16.79)	(5.66)		(0.00)	(0.00)		
Studies that use liberalization indicators	12	0.205 ***	0.250 ***	48.773 ***	9.676 ***	1.233	2.793	403
		(8.71)	(4.88)		(0.00)	(0.11)		
Studies that use enterprise reform indicators	22	0.260 ***	0.312 ***	57.664 ***	12.373 ***	2.969 ***	2.638	1223
		(11.76)	(7.74)		(0.00)	(0.00)		
Studies that use competition policy indicators	17	0.177 ***	0.159 ***	71.295 ***	5.702 ***	1.251	1.383	187
		(6.41)	(2.61)		(0.00)	(0.11)		
Studies that use privatization indicators	70	0.001	0.048 ***	591.306 ***	19.131 ***	2.909 ***	2.287	9397
		(1.63)	(11.33)		(0.00)	(0.00)		
Studies that use other indicators	44	0.005 ***	0.009 ***	222.536 ***	11.325 ***	2.137 **	1.707	2041
		(7.51)	(2.72)		(0.00)	(0.02)		

Notes:

[a] Null hypothesis: The synthesized effect size is zero.

[b] Null hypothesis: Effect sizes are homogeneous.

*** Statistical significance at the 1% level

** Statistical significance at the 5% level

* Statistical significance at the 10% level

Table 4. Name, definition, and descriptive statistics of meta-independent variables

Variable name	Definition	Descriptive statistics [a]			Descriptive statistics [b]		
		Mean	Median	S.D.	Mean	Median	S.D.
Proportion of CEE EU	Proportion of CEE EU countries in the host target countries[c]	0.742	0.833	0.262	0.769	0.875	0.276
Proportion of other CEEs	Proportion of CEE non-EU countries in the host target countries	0.158	0.120	0.204	0.149	0.091	0.214
Proportion of EU	Proportion of EU advanced countries in the home target countries[d]	0.457	0.119	0.410	0.466	0.243	0.408
Proportion of non-EU	Proportion of non-EU advanced countries in the home target countries[d]	0.093	0.081	0.075	0.089	0.081	0.061
First year	First year of the estimation period	1994	1994	3.565	1994	1995	2.001
Length	Years of the estimation period	10.615	10	4.107	10.768	10	3.635
Cross-section	1 = if cross-sectional data is employed for analysis, 0 = otherwise	0.085	0	0.280	0.094	0	0.293
Time series	1 = if time series data is employed for analysis, 0 = otherwise	0.027	0	0.161	0.017	0	0.128
Individual	1 = if individual effects of the host target countries are controlled, 0 = otherwise	0.476	0	0.500	0.514	1	0.501
Time	1 = if time effects during the estimation period are controlled, 0 = otherwise	0.393	0	0.489	0.436	0	0.497
WLS	1 = if weighted least squares estimator is used for estimation, 0 = otherwise	0.002	0	0.047	-	-	-
FE	1 = if fixed-effects panel estimator is used for estimation, 0 = otherwise	0.151	0	0.358	0.182	0	0.387
RE	1 = if random-effects panel estimator is used for estimation, 0 = otherwise	0.295	0	0.456	0.381	0	0.487
SLS	1 = if two-step or three-step least squares estimator is used for estimation, 0 = otherwise	0.040	0	0.196	0.033	0	0.180
GMM	1 = if generalized method of moments estimator is used for estimation, 0 = otherwise	0.188	0	0.391	0.127	0	0.334
Bilateral	1 = if bilateral FDI model is used for analysis, 0 = otherwise	0.482	0	0.500	0.470	0	0.500
Sector	1 = if FDI by industrial sector (manufacturing, etc.) is used for analysis, 0 = otherwise	0.069	0	0.253	-	-	-
Log	1 = if logarithmic value of the dependent variable is used for estimation, 0 = otherwise	0.743	1	0.437	0.807	1	0.396
Annual gross inflow	1 = if FDI variable is measured in annual gross inflow, 0 = otherwise	0.166	0	0.373	0.133	0	0.340
Cumulative gross value or stock	1 = if FDI variable is measured in cumulative gross value or stock (including fixed capital), 0 = otherwise	0.273	0	0.446	0.304	0	0.461
Annual net or gross inflow per capita	1 = if FDI variable is measured in annual net or gross inflow per capita, 0 = otherwise	0.095	0	0.294	0.160	0	0.368
Cumulative net value per capita	1 = if FDI variable is measured in cumulative net value per capita, 0 = otherwise	0.014	0	0.119	0.017	0	0.128
Annual net inflow to GDP etc.	1 = if FDI variable is measured in annual net inflow to GDP (including manufacturing value added) or annual gross inflow to manufacturing output, 0 = otherv	0.089	0	0.285	0.055	0	0.229
Other FDI variables	1 = if another FDI variable is used, 0 = otherwise	0.068	0	0.251	0.066	0	0.249
Market size	1 = if the market size variable is used as the FDI determinant, 0 = otherwise	0.226	0	0.419	-	-	-
Purchasing power	1 = if the purchasing power variable is used as the FDI determinant, 0 = otherwise	0.082	0	0.275	-	-	-
Trade effect	1 = if the trade effect variable is used as the FDI determinant, 0 = otherwise	0.120	0	0.325	-	-	-
Agglomeration effect	1 = if the agglomeration effect variable is used as the FDI determinant, 0 = otherwise	0.055	0	0.229	-	-	-
Labor cost level	1 = if the labor cost level variable is used as the FDI determinant, 0 = otherwise	0.089	0	0.285	-	-	-
Labor cost difference	1 = if the labor cost difference variable is used as the FDI determinant, 0 = otherwise	0.042	0	0.201	-	-	-
Resource abundance	1 = if the resource abundance variable is used as the FDI determinant, 0 = otherwise	0.048	0	0.213	-	-	-
EU accession	1 = if the EU accession variable is used as the FDI determinant, 0 = otherwise	0.054	0	0.227	-	-	-
Geographical distance	1 = if the geographical distance variable is used as the FDI determinant, 0 = otherwise	0.082	0	0.275	-	-	-
Liberalization	1 = if the liberalization indicator is used as the economic transition variable, 0 = otherwise	-	-	-	0.066	0	0.249
Enterprise reform	1 = if the enterprise reform indicator is used as the economic transition variable, 0 = otherwise	-	-	-	0.122	0	0.328
Competition policy	1 = if the competition policy indicator is used as the economic transition variable, 0 = otherwise	-	-	-	0.094	0	0.293
Privatization	1 = if the privatization indicator is used as the economic transition variable, 0 = otherwise	-	-	-	0.365	0	0.483
Other transition indicators	1 = if another indicator is used as the economic transition variable, 0 = otherwise	-	-	-	0.243	0	0.430
$\sqrt{}$Degree of freedom	Root of the degree of freedom of the estimated model	39.975	12.288	109.639	59.164	12.042	151.142
Quality level	Ten-point scale of the quality level of the study[e]	4.796	5	2.809	4.978	5	2.881

[a] Meta-independent variables for overall FDI determinants

[b] Meta-independent variables for transition-specific FDI determinants

[c] See note a of Table 1.

[d] See note c of Table 1.

[e] See Appendix B for more details.

Table 5. Meta-regression analysis of heterogeneity among studies for overall FDI determinants

(a) Dependent variable — PCC

Estimator (Analytical weight in parentheses)	Cluster-robust OLS	Cluster-robust WLS [Quality level]	Cluster-robust WLS [N]	Cluster-robust WLS [1/SE]	Multi-level mixed effects RML	Cluster-robust random-effects panel GLS
Meta-independent variable (Default) / Model	[1]	[2]	[3]	[4][a]	[5]	[6][b]
Composition of host target countries (FSU countries)						
Proportion of CEE EU	-0.070	-0.029	-0.004	-0.014	-0.070	-0.068
	(0.06)	(0.06)	(0.05)	(0.13)	(0.06)	(0.05)
Proportion of other CEEs	0.140	0.163 *	0.226 **	-0.127	0.129	0.106
	(0.09)	(0.09)	(0.10)	(0.20)	(0.09)	(0.07)
Composition of home target countries (Non-advanced countries)						
Proportion of EU	-0.024	0.038	-0.020	0.063	-0.033	-0.070
	(0.05)	(0.05)	(0.05)	(0.12)	(0.05)	(0.05)
Proportion of non-EU	-0.029	0.034	-0.066	0.149	-0.038	-0.059
	(0.15)	(0.12)	(0.09)	(0.24)	(0.15)	(0.15)
Estimation period						
First year	-0.012 ***	-0.009 **	-0.016 ***	0.009	-0.011 **	-0.009 **
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Length	-0.009 **	-0.006 *	-0.013 ***	0.014	-0.009 **	-0.009 **
	(0.00)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)
Data type (Panel data)						
Cross-section	-0.016	-0.013	-0.022	0.023	-0.041	-0.085 *
	(0.04)	(0.04)	(0.03)	(0.08)	(0.04)	(0.04)
Time series	0.231 ***	0.256 ***	0.279 ***	0.238 *	0.237 ***	0.246 ***
	(0.06)	(0.06)	(0.09)	(0.13)	(0.06)	(0.06)
Control for individual and time effects (No control)						
Individual	-0.027	-0.011	-0.023	-0.029	-0.023	-0.017
	(0.02)	(0.02)	(0.02)	(0.05)	(0.02)	(0.03)
Time	0.074 ***	0.045	0.019	0.065	0.072 ***	0.074 **
	(0.03)	(0.03)	(0.02)	(0.05)	(0.03)	(0.04)
Estimator (OLS)						
WLS	0.209 ***	0.167 ***	0.215 ***	0.406 ***	0.219 ***	0.235 ***
	(0.06)	(0.05)	(0.03)	(0.11)	(0.06)	(0.07)
FE	-0.042	-0.044	-0.032	-0.189 ***	-0.051 *	-0.064 **
	(0.03)	(0.03)	(0.03)	(0.05)	(0.03)	(0.03)
RE	-0.024	-0.010	-0.010	-0.080	-0.034	-0.050 **
	(0.02)	(0.03)	(0.02)	(0.05)	(0.02)	(0.02)
SLS	-0.020	0.022	0.015	0.039	-0.028	-0.039 *
	(0.03)	(0.04)	(0.03)	(0.06)	(0.03)	(0.02)
GMM	-0.064 **	-0.081 ***	-0.063 **	-0.015	-0.066 **	-0.060 **
	(0.03)	(0.03)	(0.03)	(0.05)	(0.03)	(0.02)
Model type (Total FDI model)						
Bilateral	-0.092 **	-0.113 ***	-0.066 **	-0.225 **	-0.081 **	-0.053
	(0.04)	(0.03)	(0.03)	(0.09)	(0.04)	(0.04)
Object of FDI (Whole economy)						
Sector	0.050	0.048	0.047	-0.117	0.057	0.069 *
	(0.04)	(0.03)	(0.04)	(0.09)	(0.04)	(0.04)
Form of dependent variable (Exact numeric value)						
Log	0.038	0.037	0.045 *	-0.550	0.034	0.023
	(0.03)	(0.03)	(0.02)	(0.58)	(0.03)	(0.04)
Type of FDI variable (Annual net inflow)						
Annual gross inflow	-0.052 *	-0.038	-0.012	0.009	-0.051	-0.049
	(0.03)	(0.02)	(0.02)	(0.06)	(0.03)	(0.04)
Cumulative gross value or stock	-0.011	-0.011	-0.032	-0.039	-0.011	-0.008
	(0.03)	(0.03)	(0.02)	(0.07)	(0.03)	(0.03)
Annual net or gross inflow per capita	0.001	0.007	0.013	0.017	-0.014	-0.034
	(0.04)	(0.03)	(0.02)	(0.07)	(0.04)	(0.04)
Cumulative net value per capita	-0.042	0.003	-0.028	0.250 *	-0.026	-0.001
	(0.07)	(0.06)	(0.04)	(0.13)	(0.07)	(0.07)
Annual net inflow to GDP etc.	0.005	0.066	0.037	-0.034	0.000	-0.016
	(0.05)	(0.05)	(0.05)	(0.08)	(0.06)	(0.07)
Other FDI variables	-0.025	-0.002	-0.044	-0.001	-0.026	-0.012
	(0.04)	(0.04)	(0.10)	(0.15)	(0.04)	(0.05)
Type of FDI determinant (Transition variables)						
Market size	0.094 ***	0.114 ***	0.011	0.050	0.094 ***	0.099 ***
	(0.02)	(0.03)	(0.01)	(0.05)	(0.02)	(0.02)
Purchasing power	-0.151 ***	-0.174 ***	-0.150 ***	-0.289 ***	-0.151 ***	-0.146 ***
	(0.04)	(0.04)	(0.05)	(0.07)	(0.04)	(0.04)
Trade effect	0.006	0.013	-0.002 **	-0.007	0.007	0.011
	(0.04)	(0.03)	(0.00)	(0.05)	(0.04)	(0.04)
Agglomeration effect	0.199 ***	0.236 ***	0.090 ***	0.161 **	0.206 ***	0.215 ***
	(0.06)	(0.08)	(0.03)	(0.07)	(0.06)	(0.06)
Labor cost level	-0.225 ***	-0.219 ***	-0.008 ***	-0.179 **	-0.220 ***	-0.212 ***
	(0.06)	(0.06)	(0.00)	(0.07)	(0.06)	(0.06)
Labor cost difference	-0.143 **	-0.080	-0.151 ***	-0.272 ***	-0.140 **	-0.133 **
	(0.05)	(0.06)	(0.03)	(0.07)	(0.05)	(0.06)
Resource abundance	-0.173 ***	-0.161 ***	-0.084 ***	-0.184 ***	-0.180 ***	-0.191 ***
	(0.06)	(0.05)	(0.02)	(0.05)	(0.06)	(0.06)
EU accession	0.004	-0.001	-0.041	-0.074	0.000	-0.010
	(0.03)	(0.02)	(0.02)	(0.05)	(0.03)	(0.03)
Geographical distance	-0.390 ***	-0.406 ***	-0.495 ***	-0.405 ***	-0.393 ***	-0.397 ***
	(0.05)	(0.05)	(0.11)	(0.06)	(0.05)	(0.05)
Degree of freedom and research quality						
√Degree of freedom	0.000	0.000 *	0.000	0.000	0.000	0.000
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Quality level	-0.005	-	-0.008 ***	-0.007	-0.005	-0.005
	(0.00)	(-)	(0.00)	(0.01)	(0.00)	(0.00)
Intercept	23.586 ***	17.215 **	32.752 ***	-17.905	22.387 ***	19.070 **
	(8.71)	(7.13)	(6.38)	(26.01)	(8.59)	(9.34)
K	896	896	896	896	896	896
R^2	0.465	0.522	0.542	0.536	-	0.451

(continued)

(b) Dependent variable — t value — Table 5 (continued)

Estimator (Analytical weight in parentheses)	Cluster-robust OLS	Cluster-robust WLS [Quality level]	Cluster-robust WLS [N]	Cluster-robust WLS [1/SE]	Multi-level mixed effects RML	Cluster-robust random-effects panel GLS
Meta-independent variable (Default) / Model	[7]	[8]	[9]	[10] [a]	[11]	[12] [c]
Composition of host target countries (FSU countries)						
Proportion of CEE EU	-1.031	0.027	-2.994	-0.113	-1.031	-1.031
	(1.17)	(1.68)	(3.96)	(2.06)	(1.14)	(1.17)
Proportion of other CEEs	1.274	1.828	2.521	-2.437	1.274	1.274
	(1.65)	(2.10)	(3.95)	(3.14)	(1.62)	(1.65)
Composition of home target countries (Non-advanced countries)						
Proportion of EU	0.559	2.299	4.695	0.804	0.559	0.559
	(1.06)	(1.43)	(3.34)	(2.56)	(1.04)	(1.06)
Proportion of non-EU	1.578	4.725	5.430	-0.463	1.578	1.578
	(3.13)	(4.23)	(5.98)	(5.15)	(3.07)	(3.13)
Estimation period						
First year	-0.144 *	-0.103	-0.422 **	0.181	-0.144 **	-0.144 *
	(0.07)	(0.08)	(0.21)	(0.21)	(0.07)	(0.07)
Length	-0.055	0.000	-0.171	0.464 ***	-0.055	-0.055
	(0.07)	(0.08)	(0.17)	(0.16)	(0.07)	(0.07)
Data type (Panel data)						
Cross-section	-0.454	-0.349	0.185	2.135	-0.454	-0.454
	(0.66)	(0.74)	(1.37)	(2.97)	(0.65)	(0.66)
Time series	-1.087	0.250	-2.762	-0.763	-1.087	-1.087
	(1.30)	(1.46)	(3.96)	(2.18)	(1.28)	(1.30)
Control for individual and time effects (No control)						
Individual	-1.009 **	-0.515	0.423	-0.968	-1.009 ***	-1.009 ***
	(0.39)	(0.36)	(0.99)	(0.71)	(0.38)	(0.39)
Time	0.634	0.322	-0.583	-0.127	0.634	0.634
	(0.42)	(0.49)	(0.63)	(0.95)	(0.41)	(0.42)
Estimator (OLS)						
WLS	1.103	0.377	-2.304	5.154	1.103	1.103
	(1.17)	(1.55)	(2.95)	(3.61)	(1.15)	(1.17)
FE	-0.923 *	-1.443 **	-3.890 *	-3.659 ***	-0.923 *	-0.923 *
	(0.48)	(0.70)	(2.02)	(1.00)	(0.47)	(0.48)
RE	0.113	0.347	1.221	-0.928	0.113	0.113
	(0.38)	(0.45)	(0.83)	(0.89)	(0.37)	(0.38)
SLS	0.184	0.703	3.228	0.334	0.184	0.184
	(0.58)	(0.86)	(2.05)	(1.45)	(0.57)	(0.58)
GMM	-1.599 **	-2.545 **	-6.130 **	-1.538 ***	-1.599 **	-1.599 **
	(0.73)	(0.98)	(2.98)	(1.03)	(0.72)	(0.73)
Model type (Total FDI model)						
Bilateral	-0.148	-1.023	1.622	-0.784	-0.148	-0.148
	(0.84)	(0.75)	(2.54)	(1.99)	(0.83)	(0.84)
Object of FDI (Whole economy)						
Sector	2.028 **	2.129 *	8.758 *	-0.298	2.028 **	2.028 **
	(0.92)	(1.13)	(4.65)	(1.72)	(0.90)	(0.92)
Form of dependent variable (Exact numeric value)						
Log	0.248	0.355	2.102 *	-0.018	0.248	0.248
	(0.55)	(0.54)	(1.20)	(1.41)	(0.54)	(0.55)
Type of FDI variable (Annual net inflow)						
Annual gross inflow	-0.600	-0.583	0.103	-2.512	-0.600	-0.600
	(0.45)	(0.43)	(0.80)	(2.03)	(0.44)	(0.45)
Cumulative gross value or stock	1.032 **	1.118 **	-0.811	-0.797	1.032 ***	1.032 **
	(0.40)	(0.44)	(1.11)	(1.60)	(0.39)	(0.40)
Annual net or gross inflow per capita	-0.911	-1.222	-2.636	-2.853	-0.911 *	-0.911
	(0.56)	(0.81)	(1.79)	(2.27)	(0.55)	(0.56)
Cumulative net value per capita	0.130	0.451	1.446	0.656	0.130	0.130
	(1.28)	(1.36)	(3.34)	(3.67)	(1.26)	(1.28)
Annual net inflow to GDP etc.	-0.106	0.322	-1.149	-0.473	-0.106	-0.106
	(0.82)	(0.76)	(1.75)	(1.96)	(0.81)	(0.82)
Other FDI variables	-0.734	-1.361	-4.263	-1.150	-0.734	-0.734
	(0.87)	(1.25)	(4.44)	(2.38)	(0.85)	(0.87)
Type of FDI determinant (Transition variables)						
Market size	3.255 ***	4.221 ***	2.895 ***	3.686	3.255 ***	3.255 ***
	(1.20)	(1.76)	(0.46)	(2.21)	(1.18)	(1.20)
Purchasing power	-1.421 ***	-1.393 ***	-5.201 **	-2.833 ***	-1.421 ***	-1.421 ***
	(0.37)	(0.43)	(2.22)	(0.96)	(0.36)	(0.37)
Trade effect	-0.207	0.024	-1.685 ***	0.285	-0.207	-0.207
	(0.54)	(0.65)	(0.09)	(1.10)	(0.53)	(0.54)
Agglomeration effect	3.064 ***	4.312 ***	4.939 ***	2.906 **	3.064 ***	3.064 ***
	(0.97)	(0.95)	(0.59)	(1.40)	(0.95)	(0.97)
Labor cost level	-3.635 ***	-4.080 ***	-3.675 ***	-3.747 ***	-3.635 ***	-3.635 ***
	(0.81)	(0.98)	(0.05)	(0.92)	(0.80)	(0.81)
Labor cost difference	-3.157 ***	-2.018 *	-6.385 ***	-6.017 ***	-3.157 ***	-3.157 ***
	(0.84)	(1.04)	(1.22)	(0.94)	(0.82)	(0.84)
Resource abundance	-1.866 **	-1.199	-4.273	-3.553 **	-1.866 **	-1.866 **
	(0.85)	(1.03)	(2.65)	(1.42)	(0.83)	(0.85)
EU accession	0.598	0.811	-3.011	-0.151	0.598	0.598
	(0.50)	(0.51)	(2.44)	(1.02)	(0.49)	(0.50)
Geographical distance	-10.282 ***	-12.127 **	-35.871 **	-10.199 **	-10.282 ***	-10.282 ***
	(3.62)	(4.95)	(15.44)	(3.89)	(3.55)	(3.62)
Degree of freedom and research quality						
√Degree of freedom	0.000	0.000	0.000	-0.004	0.000	0.000
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)
Quality level	0.002	-	-0.250	-0.144	0.002	0.002
	(0.08)	(-)	(0.15)	(0.12)	(0.08)	(0.08)
Intercept	290.180 *	205.947	848.565 **	-359.257 ***	290.180 **	290.180 **
	(147.08)	(158.84)	(418.31)	(424.21)	(144.17)	(147.08)
K	896	896	896	896	896	896
R^2	0.300	0.316	0.558	0.383	-	0.300

Notes:

Figures in parentheses beneath the regression coefficients are robust standard errors.

[a] Excluding some estimates that report 0.000 or -0.000 as estimated effect sizes, which makes us unable to compute the inverse of the standard error.

[b] Breusch-Pagan test: χ^2=0.85, p=0.178; Hausman test: χ^2=20.27, p=0.855

[c] Breusch-Pagan test: χ^2=0.00, p=1.000; Hausman test: χ^2=24.92, p= 0.632

*** Statistical significance at the 1% level

** Statistical significance at the 5% level

* Statistical significance at the 10% level

Table 6. Meta-regression analysis of heterogeneity among studies for transition-specific FDI determinants

(a) Dependent variable — PCC

Estimator (Analytical weight in parentheses)	Cluster-robust OLS	Cluster-robust WLS [Quality level]	Cluster-robust WLS [*N*]	Cluster-robust WLS [1/SE]	Multi-level mixed effects RML	Cluster-robust random-effects panel GLS
Meta-independent variable (Default) / Model	[1]	[2]	[3]	[4]	[5]	[6][a]
Composition of host target countries (FSU countries)						
Proportion of CEE EU	-0.039	-0.102	0.052	-0.261**	-0.023	-0.017
	(0.09)	(0.12)	(0.10)	(0.12)	(0.05)	(0.05)
Proportion of other CEEs	0.167	0.071	0.337	0.056	0.187***	0.197***
	(0.11)	(0.14)	(0.21)	(0.15)	(0.06)	(0.05)
Composition of home target countries (Non-advanced countries)						
Proportion of EU	-0.025	-0.081	-0.054	-0.152	0.065	0.054
	(0.13)	(0.12)	(0.16)	(0.16)	(0.12)	(0.13)
Proportion of non-EU	-0.719*	-0.757**	-0.450*	-0.151	-0.621*	-0.624*
	(0.42)	(0.29)	(0.25)	(0.23)	(0.35)	(0.38)
Estimation period						
First year	0.000	0.000	-0.015	0.007	-0.010	-0.011
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Length	0.007	0.008	-0.023*	-0.006	0.007	0.007
	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)
Data type (Panel data)						
Cross-section	-0.162**	-0.127**	-0.204***	-0.005	-0.188***	-0.195**
	(0.07)	(0.05)	(0.05)	(0.07)	(0.07)	(0.08)
Time series	0.652***	0.649***	0.653***	0.502***	0.691***	0.702***
	(0.08)	(0.11)	(0.10)	(0.11)	(0.05)	(0.05)
Control for individual and time effects (No control)						
Individual	-0.066*	-0.044	-0.053	-0.040	-0.056	-0.052
	(0.04)	(0.03)	(0.03)	(0.03)	(0.04)	(0.04)
Time	0.131**	0.121**	0.053	0.156***	0.094*	0.082
	(0.05)	(0.05)	(0.04)	(0.05)	(0.05)	(0.06)
Estimator (OLS)						
FE	-0.111*	-0.140**	-0.057	-0.063	-0.123**	-0.126**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.06)
RE	-0.114*	-0.100*	-0.092	-0.054	-0.118**	-0.119**
	(0.06)	(0.06)	(0.06)	(0.06)	(0.05)	(0.05)
SLS	-0.226**	-0.313***	-0.088	-0.191**	-0.199***	-0.196***
	(0.08)	(0.10)	(0.07)	(0.09)	(0.05)	(0.05)
GMM	-0.115	-0.059	-0.109**	-0.008	-0.125*	-0.129*
	(0.07)	(0.05)	(0.05)	(0.08)	(0.07)	(0.07)
Model type (Total FDI model)						
Bilateral	-0.113	-0.007	-0.069	-0.025	-0.147	-0.148
	(0.11)	(0.08)	(0.11)	(0.13)	(0.09)	(0.10)
Form of dependent variable (Exact numeric value)						
Log	-0.076	-0.051	0.020	-0.052	-0.032	-0.024
	(0.08)	(0.07)	(0.07)	(0.07)	(0.08)	(0.09)
Type of FDI variable (Annual net inflow)						
Annual gross inflow	-0.167**	-0.097**	-0.103**	-0.089***	-0.213***	-0.219***
	(0.07)	(0.04)	(0.05)	(0.02)	(0.06)	(0.07)
Cumulative gross value or stock	-0.038	0.009	-0.074	-0.006	-0.077	-0.083
	(0.06)	(0.06)	(0.06)	(0.05)	(0.06)	(0.07)
Annual net or gross inflow per capita	0.019	0.089*	-0.016	0.080*	-0.083	-0.100
	(0.06)	(0.04)	(0.05)	(0.04)	(0.08)	(0.09)
Cumulative net value per capita	0.233**	0.188*	-0.030	-0.026	0.201**	0.197*
	(0.10)	(0.09)	(0.11)	(0.14)	(0.10)	(0.11)
Annual net inflow to GDP etc.	-0.118	-0.053	-0.138	-0.121	-0.123	-0.122
	(0.10)	(0.09)	(0.11)	(0.07)	(0.10)	(0.11)
Other FDI variables	1.836*	2.171***	0.183	1.156**	1.853*	1.849*
	(0.95)	(0.57)	(0.77)	(0.52)	(0.95)	(1.05)
Type of transition variable (General transition indicators)						
Liberalization	-0.014	0.061	-0.118	-0.029	-0.047	-0.053
	(0.09)	(0.09)	(0.08)	(0.08)	(0.07)	(0.08)
Enterprise reform	0.012	0.096	-0.038	-0.074	-0.078	-0.091
	(0.09)	(0.10)	(0.07)	(0.08)	(0.08)	(0.08)
Competition policy	-0.158*	-0.118	-0.153**	-0.214***	-0.252***	-0.265***
	(0.09)	(0.09)	(0.06)	(0.07)	(0.09)	(0.10)
Privatization	-0.005	0.074	-0.087***	-0.106*	-0.059	-0.069
	(0.07)	(0.07)	(0.03)	(0.06)	(0.05)	(0.05)
Other transition indicators	-0.038	0.058	-0.082***	-0.148**	-0.070	-0.075
	(0.07)	(0.08)	(0.03)	(0.07)	(0.05)	(0.05)
Degree of freedom and research quality						
√Degree of freedom	-0.004**	-0.004***	-0.001	-0.002**	-0.004**	-0.004**
	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)	(0.00)
Quality level	0.003	-	-0.001	-0.003	-0.002	(-0.00)
	(0.01)	(-)	(0.01)	(0.01)	(0.01)	(0.01)
Intercept	1.431	1.297	30.581	-13.272	20.424	23.469
	(25.82)	(20.83)	(27.34)	(24.55)	(19.07)	(20.27)
K	179	179	179	179	179	179
R^2	0.572	0.624	0.714	0.794	-	0.509

(continued)

(b) Dependent variable — t value

Table 6 (continued)

Estimator (Analytical weight in parentheses)	Cluster-robust OLS	Cluster-robust WLS [Quality level]	Cluster-robust WLS [N]	Cluster-robust WLS [1/SE]	Multi-level mixed effects RML	Cluster-robust fixed-effects panel LSDV
Meta-independent variable (Default) / Model	[7]	[8]	[9]	[10]	[11]	[12][b]
Composition of host target countries (FSU countries)						
Proportion of CEE EU	0.349	-0.881	2.966	-1.283	0.318	0.108
	(1.03)	(1.29)	(3.14)	(1.26)	(0.53)	(0.29)
Proportion of other CEEs	2.961 *	0.778	7.012	3.166	2.152 ***	1.380 ***
	(1.61)	(1.71)	(4.89)	(2.49)	(0.74)	(0.31)
Composition of home target countries (Non-advanced countries)						
Proportion of EU	-0.170	0.461	0.144 ***	-0.760	0.909	#
	(1.84)	(1.51)	(3.03)	(1.59)	(1.87)	(#)
Proportion of non-EU	-12.189 *	-7.802	-7.460	-3.731	-10.192 **	#
	(6.78)	(5.45)	(5.03)	(4.93)	(4.94)	(#)
Estimation period						
First year	0.059	0.113	-0.171	0.032	-0.085	#
	(0.18)	(0.11)	(0.31)	(0.16)	(0.16)	(#)
Length	0.157	0.226 **	-0.377	-0.012	0.119	#
	(0.13)	(0.09)	(0.26)	(0.15)	(0.14)	(#)
Data type (Panel data)						
Cross-section	-3.223 ***	-2.936 ***	-7.139 ***	-1.659 *	-3.350 ***	-6.011 ***
	(0.89)	(0.54)	(1.37)	(0.86)	(0.78)	(1.09)
Time series	2.900 ***	2.463 **	1.415	1.628	3.782 ***	3.649 ***
	(1.02)	(1.17)	(3.15)	(1.30)	(0.68)	(0.51)
Control for individual and time effects (No control)						
Individual	-1.270 **	-0.856	-1.079	-0.704	-0.918	-1.413 ***
	(0.59)	(0.53)	(0.73)	(0.52)	(0.63)	(0.47)
Time	1.180	1.156	-0.668	1.563 **	0.695	-1.384 **
	(0.72)	(0.82)	(0.70)	(0.64)	(0.77)	(0.63)
Estimator (OLS)						
FE	-0.943	-1.943 **	-1.959	-0.435	-1.379 *	-0.898 ***
	(0.73)	(0.80)	(1.30)	(0.75)	(0.72)	(0.29)
RE	-0.982	-1.009	-1.255	-0.128	-0.893	-1.022 ***
	(0.82)	(0.68)	(1.42)	(0.83)	(0.72)	(0.20)
SLS	-2.109 **	-3.330 ***	-0.554	-1.957	-1.840 ***	-1.508 ***
	(0.97)	(1.16)	(1.65)	(1.22)	(0.63)	(0.21)
GMM	-2.013 *	-1.332	-3.762 ***	-0.795	-2.324 ***	-3.709 ***
	(1.02)	(0.90)	(1.11)	(0.65)	(0.74)	(0.67)
Model type (Total FDI model)						
Bilateral	-0.155	0.160	-0.328	0.337	-0.751	-6.321 ***
	(1.19)	(0.84)	(1.93)	(1.17)	(1.09)	(0.71)
Form of dependent variable (Exact numeric value)						
Log	-1.059	-1.164	0.256	0.424	-0.358	53.501
	(1.15)	(1.03)	(1.48)	(1.29)	(1.07)	(34.61)
Type of FDI variable (Annual net inflow)						
Annual gross inflow	-1.897 **	-1.206 ***	-1.858 **	-1.554 ***	-2.318 ***	-0.190 ***
	(0.74)	(0.42)	(0.85)	(0.42)	(0.84)	(0.00)
Cumulative gross value or stock	-0.146	-0.236	-2.082	-0.450	-0.459	-6.306 ***
	(0.83)	(0.76)	(1.36)	(0.82)	(1.01)	(0.77)
Annual net or gross inflow per capita	-0.672	0.320	-2.183	-0.759	-2.138 *	#
	(0.85)	(0.56)	(1.43)	(0.75)	(1.17)	(#)
Cumulative net value per capita	3.344 **	2.733 **	-1.236	0.959	2.446 *	#
	(1.29)	(1.22)	(2.18)	(1.57)	(1.37)	(#)
Annual net inflow to GDP etc.	-1.865	-1.136	-4.267	-0.777	-2.012	#
	(1.26)	(1.11)	(2.91)	(1.21)	(1.50)	(#)
Other FDI variables	23.979 *	25.431 ***	-4.824	17.614 *	16.726	#
	(12.14)	(8.52)	(16.09)	(8.98)	(11.32)	(#)
Type of transition variable (General transition indicators)						
Liberalization	-1.761	0.083	-6.583 ***	-1.830	-2.917 **	-4.058 **
	(1.46)	(1.14)	(2.29)	(1.34)	(1.39)	(1.76)
Enterprise reform	-1.753	-0.144	-4.624 ***	-2.742 **	-3.504 ***	-4.695 ***
	(1.42)	(1.05)	(1.52)	(1.21)	(1.33)	(1.51)
Competition policy	-2.844 **	-1.651 *	-5.836 ***	-3.521 ***	-4.673 ***	-5.901 ***
	(1.34)	(0.96)	(1.66)	(1.05)	(1.37)	(1.63)
Privatization	-1.622	-0.127	-6.702 ***	-2.484 **	-3.210 ***	-4.818 ***
	(1.27)	(1.02)	(1.39)	(0.94)	(1.16)	(1.40)
Other transition indicators	-2.183	0.211	-3.574 **	-3.079 **	-3.062 **	-3.944 ***
	(1.42)	(1.16)	(1.39)	(1.23)	(1.22)	(1.37)
Degree of freedom and research quality						
√Degree of freedom	-0.048 **	-0.051 ***	0.001	-0.030 *	-0.035 *	0.084
	(0.02)	(0.01)	(0.03)	(0.02)	(0.02)	(0.06)
Quality level	0.179	-	0.225	0.000	0.095	#
	(0.19)	(-)	(0.19)	(0.11)	(0.14)	(#)
Intercept	-111.012	-219.798	353.931	-56.435	176.050	-34.311
	(353.92)	(216.48)	(628.08)	(319.78)	(321.81)	(31.32)
K	179	179	179	179	179	179
R^2	0.416	0.404	0.965	0.595	-	0.005

Notes:

Figures in parentheses beneath the regression coefficients are robust standard errors.

[a] Breusch-Pagan test: χ^2=0.69, p=0.203; Hausman test: χ^2=892.84, p=0.000

[b] Breusch-Pagan test: χ^2=3.55, p=0.030; Hausman test: χ^2=40.39, p=0.005

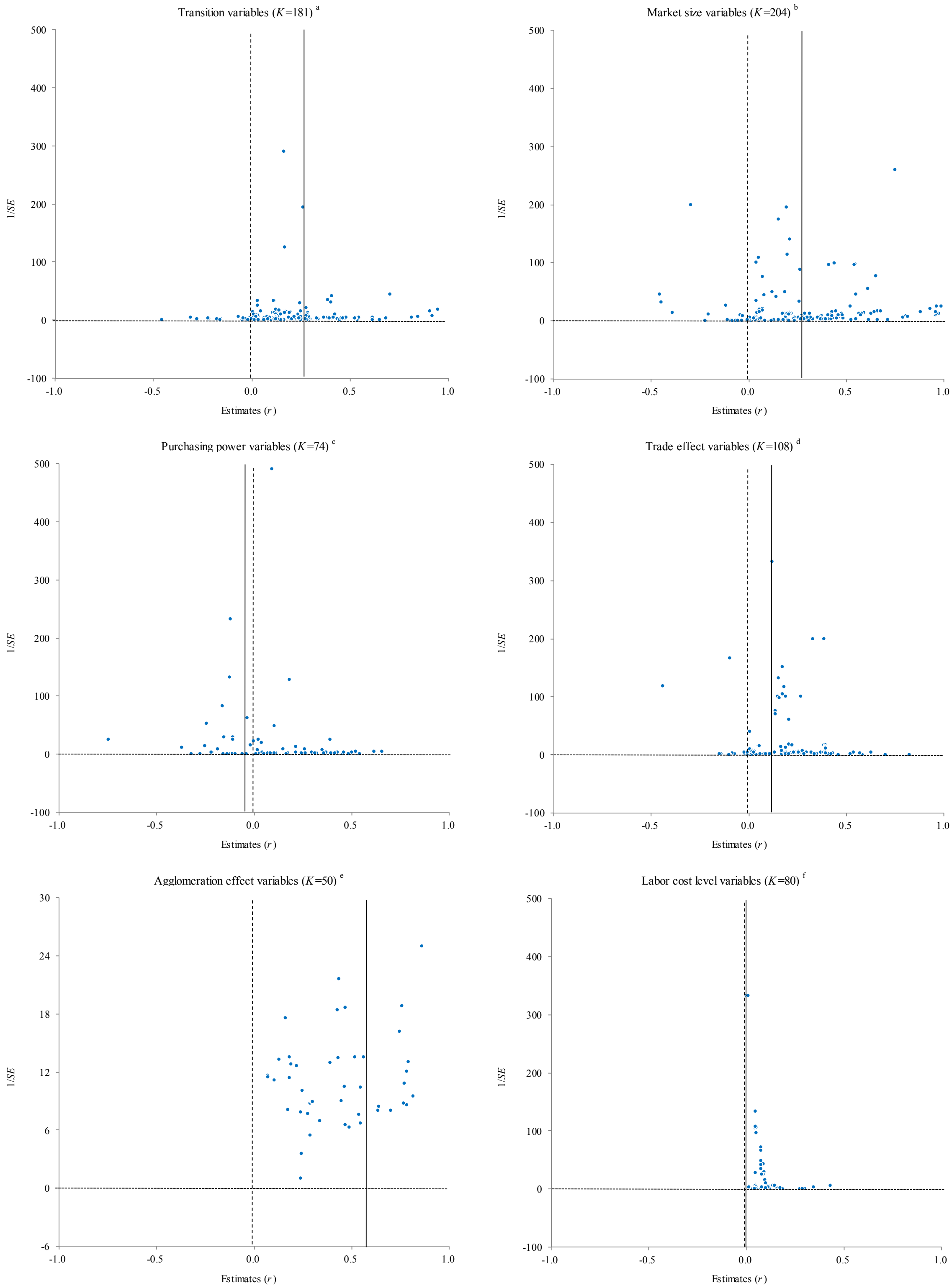
# denotes omitted variables because of collinearity.

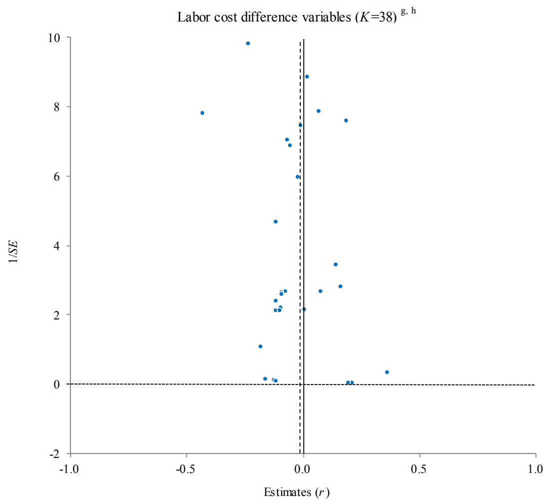
*** Statistical significance at the 1% level

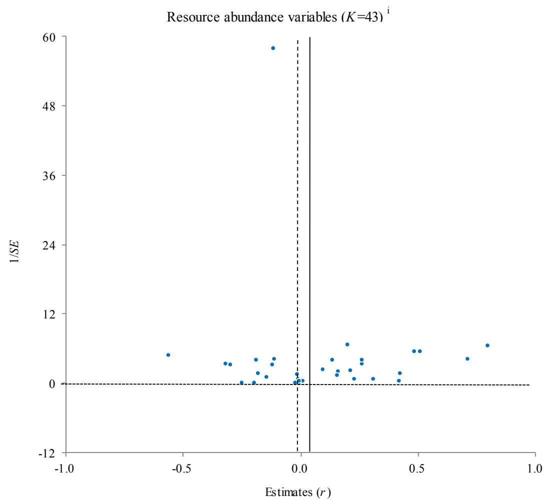
** Statistical significance at the 5% level

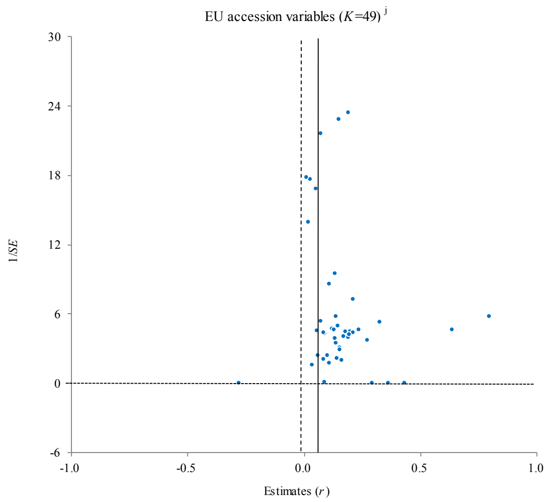
* Statistical significance at the 10% level

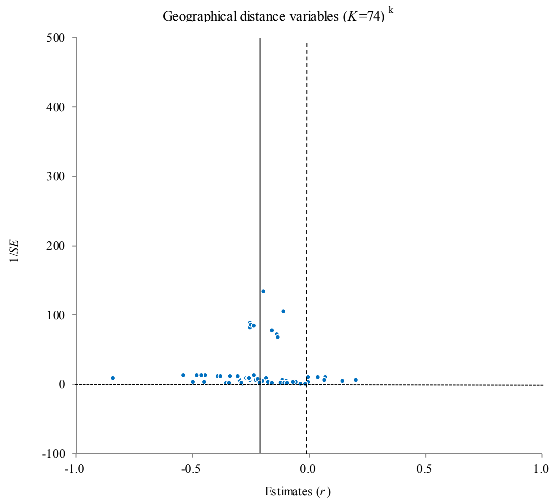
Figure 3. Funnel plot of partial correlation coefficients











Notes:

[a] Solid line indicates the mean of the top 10% most-precise estimates, 0.273.

[b] Solid line indicates the mean of the top 10% most-precise estimates, 0.304.

[c] Solid line indicates the mean of the top 10% most-precise estimates, -0.059.

[d] Solid line indicates the mean of the top 10% most-precise estimates, 0.120.

[e] Solid line indicates the mean of the top 10% most-precise estimates, 0.589.

[f] Solid line indicates the mean of the top 10% most-precise estimates, 0.004.

[g] Solid line indicates the mean of the top 10% most-precise estimates, 0.009.

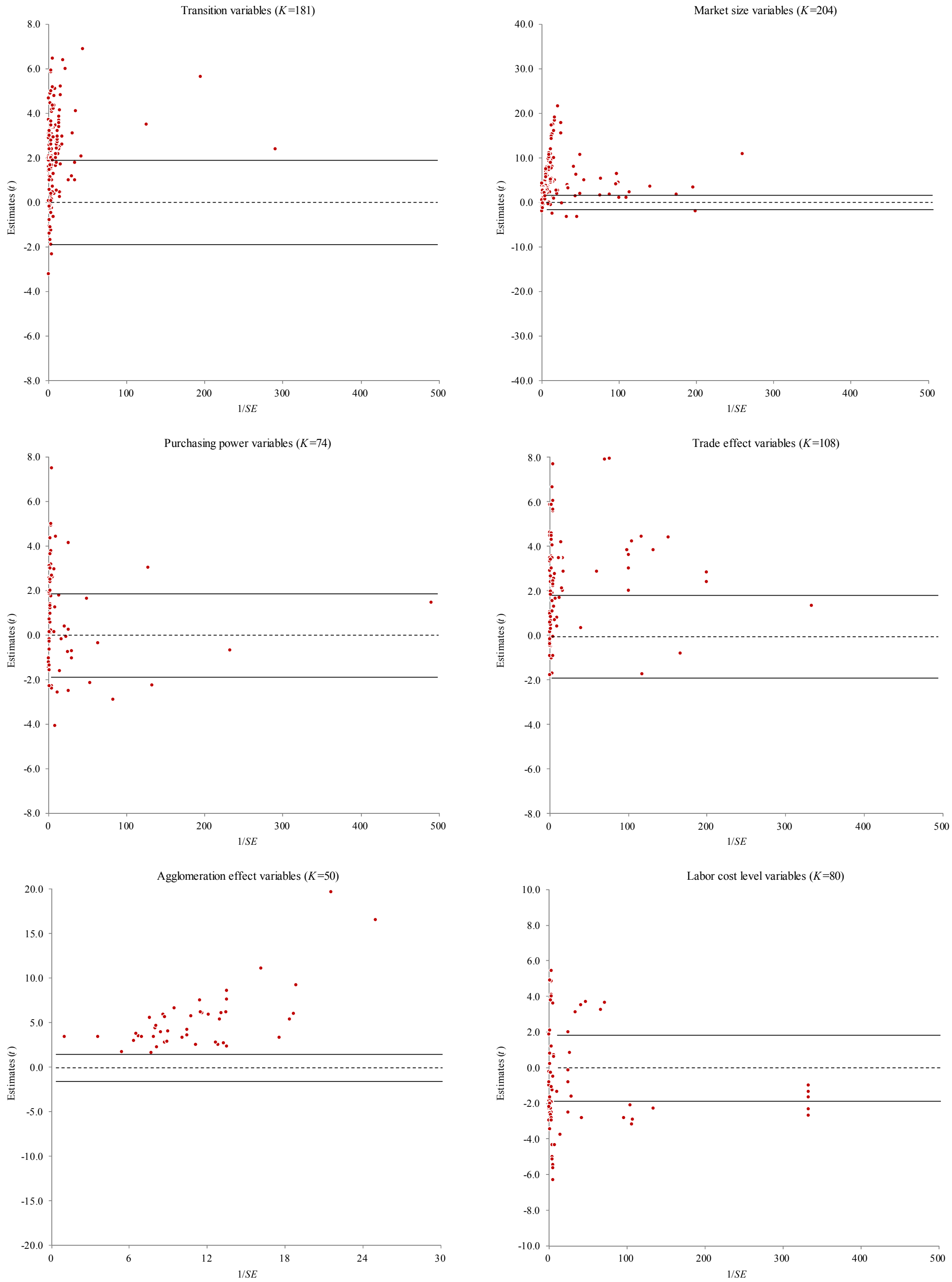
[h] An upper outlier (1/SE=170.5) is not indicated for a technical reason.

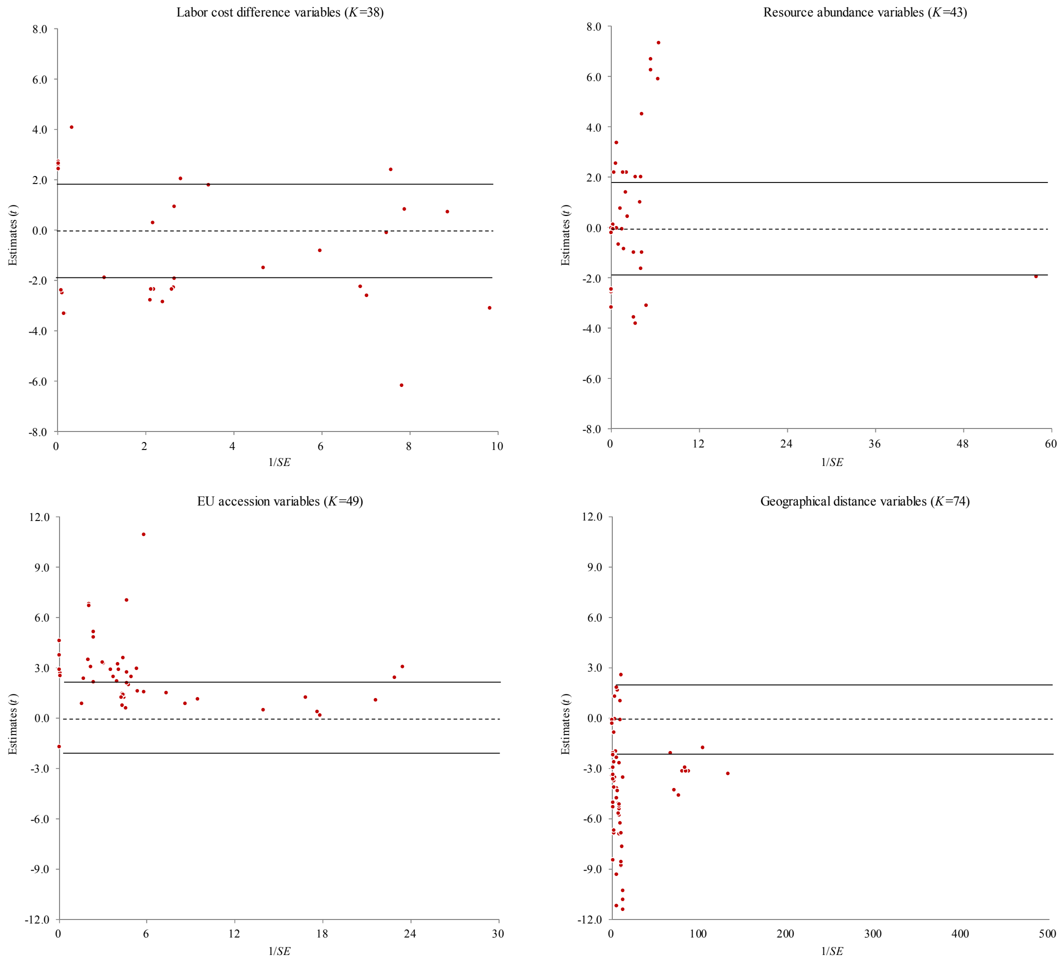
[i] Solid line indicates the mean of the top 10% most-precise estimates, 0.078.

[j] Solid line indicates the mean of the top 10% most-precise estimates, 0.089.

[k] Solid line indicates the mean of the top 10% most-precise estimates, -0.219.

Figure 4. Galbraith plot of *t* values





Note: Solid lines indicate the thresholds of two-sided critical values at the 5% significance level ±1.96. An upper outlier (1/SE=170.5) of the labor cost difference variables is not indicated for a technical reason.

Table 7. Assessment of publication selection bias (PSB) and estimation of true effect

	Type I PSB	Type II PSB	True effect	PSB-adjusted effect size
Transition variables	✓	✓	✓	0.028–0.036
Market size variables	✓	✓		
Purchasing power variables		✓		
Trade effect variables	✓	✓		
Agglomeration effect variables			✓	0.466–0.519
Labor cost level variables		✓	✓	-0.006
Labor cost difference variables		✓		
Resource abundance variables		✓	✓	0.031–0.038
EU accession variables	✓	✓	✓	0.099–0.173
Geographical distance variables	✓	✓	✓	-0.087

Note:

Appendix C gives more details on the results of meta-regression analysis of PSB.

Appendix A. Foreign direct investment into the CEE and FSU countries from 1990 to 2014

Country groups and countries [a]	Cumulative value (in millions of $)	Cumulative value per capita ($)	Cumulative value to GDP (%) [b]	Percentage of total (%)	Reference (2014)	
					Population (thousand people)	Nominal GDP (in millions of $)
CEE EU countries [c]						
Poland	194,598	5,119	35.7	12.55	38,012	544,967
Czech Republic	107,571	10,220	52.4	6.94	10,525	205,270
Hungary	99,206	10,058	71.7	6.40	9,863	138,347
Romania	77,833	3,910	39.1	5.02	19,904	199,044
Bulgaria	56,752	7,856	100.1	3.66	7,224	56,717
Slovakia	50,419	9,305	50.3	3.25	5,419	100,249
Estonia	20,268	15,418	76.5	1.31	1,315	26,485
Lithuania	15,012	5,120	31.0	0.97	2,932	48,354
Latvia	13,974	7,009	44.7	0.90	1,994	31,287
Slovenia	10,126	4,911	20.5	0.65	2,062	49,491
Other CEE countries [d]						
Croatia	36,510	8,614	63.9	2.36	4,238	57,113
Serbia and Montenegro	31,325	4,041	64.6	2.02	7,751	48,454
Albania	9,803	3,387	74.2	0.63	2,894	13,212
Bosnia and Herzegovina [e]	7,743	2,028	41.8	0.50	3,818	18,521
FYR Macedonia	4,304	2,074	38.0	0.28	2,076	11,324
FSU countries [f]						
Russia	510,326	3,548	27.4	32.92	143,820	1,860,598
Kazakhstan	126,587	7,322	58.1	8.17	17,289	217,872
Ukraine	74,472	1,642	56.5	4.80	45,363	131,805
Turkmenistan	26,203	4,937	54.7	1.69	5,307	47,932
Azerbaijan	19,872	2,084	26.4	1.28	9,535	75,198
Belarus	19,326	2,041	25.4	1.25	9,470	76,139
Georgia	12,424	3,334	75.2	0.80	3,727	16,530
Uzbekistan	9,002	293	14.4	0.58	30,758	62,644
Armenia	6,555	2,181	56.3	0.42	3,006	11,644
Kyrgyzstan	3,915	671	52.9	0.25	5,836	7,404
Moldova	3,906	1,098	49.1	0.25	3,556	7,962
Tajikistan	2,287	276	24.7	0.15	8,296	9,242
Total	1,550,318	3,819	38.1	100.00	405,990	4,073,805

Notes:

[a] Countries are ranked in order of cumulative value of FDI in each country group.

[b] Nominal GDP in 2014 is 100.

[c] CEE EU countries denote the ten Central and Eastern European countries that joined the European Union either in 2004 or 2007.

[d] Excluding Kosovo due to data unavailability

[e] Showing the combined value of two countries due to data unavailability

[f] Excluding the Baltic countries

Data is derived from the UNCTAD World Investment Report (http://unctad.org/en/Pages/DIAE/World%20Investment%20Report/Annex-Tables.aspx) and the World Development Indicators (http://databank.worldbank.org/data/views/variableSelection/selectvariables.aspx?source=world-development-indicators).

Appendix B

Method for evaluating the quality level of a study

This appendix describes the evaluation method used to determine the quality level of the studies subjected to our meta-analysis.

For journal articles, we used the ranking of economics journals that had been published as of November 1, 2012, by IDEAS—the largest bibliographic database dedicated to economics and available freely on the Internet (http://ideas.repec.org/)—as the most basic information source for our evaluation of quality level. IDEAS provides the world's most comprehensive ranking of economics journals, and as of November 2012, 1173 academic journals were ranked.

We divided these 1173 journals into 10 clusters using a cluster analysis based on overall evaluation scores, and assigned each of these journal clusters a score (weight) from 1 (the lowest journal cluster) to 10 (the highest).

The following table shows a list of 12 academic journals that are representative of the study field of transition economies along with their IDEAS economics journal ranking [1], their overall scores [2], and the scores that we assigned in accordance with the above-mentioned procedures [3].

	[1]	[2]	[3]
Journal of Comparative Economics	129	129.98	8
Economics of Transition	138	137.84	8
Emerging Markets Review	162	160.99	7
Economic Systems	230	216.02	7
Economic Change and Restructuring	362	338.54	5
Comparative Economic Studies	397	370.99	5
Emerging Markets Finance and Trade	419	393.71	5
European Journal of Comparative Economics	443	421.53	5
Post-Communist Economies	449	425.82	5
Eastern European Economics	483	456.52	4
Problems of Economic Transition	626	590.06	4
Transition Studies Review	663	625.18	3

For academic journals that are not ranked by IDEAS, we referred to the Thomson Reuters Impact Factor and other journal rankings and identified the same level of IDEAS ranking-listed journals that correspond to these non-listed journals; we have assigned each of them the same score as its counterparts.

Meanwhile, for academic books and book chapters, we have assigned a score of 1 in principle, but if at least one of the following conditions is met, each of the relevant books or chapters has uniformly received a score of 4, which is the median value of the scores assigned to the above-mentioned IDEAS ranking-listed economics journals: (1) The academic book or book chapter clearly states that it has gone through the peer review process; (2) its publisher is a leading academic publisher that has external evaluations carried out by experts; or (3) the research level of the study has been evaluated by the authors to be obviously high.

Appendix C. Meta-regression analysis of publication selection bias

(a) FAT (Type I publication selection bias)-PET test (Equation: $t = \beta_0 + \beta_1 (1/SE) + v$)

Type of variable	Transition variables			Market size variables			Purchasing power variables			Trade effect variables			Agglomeration effect variables		
Estimator	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS
Model	[1]	[2]	[3][a]	[4]	[5]	[6][b]	[7]	[8]	[9][c]	[10]	[11]	[12][d]	[13]	[14]	[15][e]
Intercept (FAT: H$_0$: β_0=0)	2.256 ***	2.256 ***	1.443 ***	5.357 ***	5.357 ***	4.759 ***	1.004 ***	1.004 *	0.857	2.087 ***	2.087 ***	1.737 ***	-0.556	-0.556	-0.797
	(0.19)	(0.32)	(0.35)	(0.54)	(1.12)	(0.48)	(0.30)	(0.54)	(0.53)	(0.22)	(0.48)	(0.42)	(1.33)	(1.48)	(1.16)
1/SE (PET: H$_0$: β_1=0)	0.009	0.009	0.091 **	0.008	0.008	0.039	-0.003	-0.003	-0.002	0.004	0.004	0.019	0.522 ***	0.522 ***	0.560 ***
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.03)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)	(0.14)	(0.16)	(0.12)
K	181	181	181	204	204	204	74	74	74	108	108	108	50	50	50
R^2	0.012	0.012	0.012	0.001	0.001	0.001	0.007	0.007	0.007	0.011	0.011	0.011	0.480	0.480	0.480

Type of variable	Labor cost level variables			Labor cost difference variables			Resource abundance variables			EU accession variables			Geographical distance variables		
Estimator	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS
Model	[16]	[17]	[18][f]	[19]	[20]	[21][g]	[22]	[23]	[24][h]	[25]	[26]	[27][i]	[28]	[29]	[30][j]
Intercept (FAT: H$_0$: β_0=0)	-0.728 *	-0.728	-0.701	-0.825 *	-0.825	1.394	0.360	0.360	0.897	3.107 ***	3.107 ***	2.092 ***	-7.880 ***	-7.880 **	-5.766 ***
	(0.38)	(0.88)	(0.57)	(0.44)	(0.80)	(1.61)	(0.50)	(0.70)	(0.81)	(0.40)	(0.57)	(0.74)	(1.65)	(3.66)	(2.01)
1/SE (PET: H$_0$: β_1=0)	0.001 **	-0.003	-0.000	0.015 *	0.015	-0.239	0.034 ***	0.034 **	0.023 ***	-0.088 **	-0.088 **	0.033	0.031 **	0.031	-0.005
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.18)	(0.01)	(0.01)	(0.01)	(0.04)	(0.04)	(0.03)	(0.01)	(0.03)	(0.01)
K	80	80	80	38	38	38	43	43	43	49	49	49	74	74	74
R^2	0.020	0.020	0.020	0.025	0.025	0.025	0.148	0.148	0.148	0.064	0.064	0.064	0.006	0.006	0.006

(b) Test of type II publication selection bias (Equation: $|t| = \beta_0 + \beta_1 (1/SE) + v$)

Type of variable	Transition variables			Market size variables			Purchasing power variables			Trade effect variables			Agglomeration effect variables		
Estimator	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS
Model	[31]	[32]	[33][k]	[34]	[35]	[36][l]	[37]	[38]	[39][m]	[40]	[41]	[42][n]	[43]	[44]	[45][o]
Intercept (H$_0$: β_0=0)	2.508 ***	2.508 ***	1.766 ***	5.528 ***	5.528 ***	5.024 ***	2.097 ***	2.097 ***	2.194 ***	2.351 ***	2.351 ***	2.105 ***	-0.556	-0.556	0.320
	(0.17)	(0.31)	(0.30)	(0.53)	(1.11)	(0.48)	(0.20)	(0.36)	(0.31)	(0.19)	(0.41)	(0.40)	(1.33)	(1.48)	(0.86)
1/SE	0.007	0.007	0.081 **	0.010	0.010	0.037	-0.002	-0.002	-0.002	0.004	0.004	0.015	0.522 ***	0.522 ***	0.438 ***
	(0.01)	(0.01)	(0.03)	(0.01)	(0.01)	(0.02)	(0.00)	(0.00)	(0.00)	(0.00)	(0.01)	(0.02)	(0.14)	(0.16)	(0.09)
K	181	181	181	204	204	204	74	74	74	108	108	108	50	50	50
R^2	0.009	0.009	0.009	0.002	0.002	0.002	0.006	0.006	0.006	0.016	0.016	0.016	0.480	0.480	0.480

Type of variable	Labor cost level variables			Labor cost difference variables			Resource abundance variables			EU accession variables			Geographical distance variables		
Estimator	OLS	Cluster-robust OLS	Cluster-robust fixed-effects panel LSDV	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS	OLS	Cluster-robust OLS	Cluster-robust random-effects panel GLS
Model	[46]	[47]	[48][p]	[49]	[50]	[51][q]	[52]	[53]	[54][r]	[55]	[56]	[57][s]	[58]	[59]	[60][t]
Intercept (H$_0$: β_0=0)	2.660 ***	2.660 ***	1.603 *	2.307 ***	2.307 ***	2.551 ***	2.219 ***	2.219 ***	2.888 ***	3.246 ***	3.246 ***	2.444 ***	8.321 ***	8.321 **	5.864 ***
	(0.21)	(0.43)	(0.91)	(0.20)	(0.21)	(0.39)	(0.32)	(0.58)	(0.57)	(0.35)	(0.54)	(0.65)	(1.62)	(3.58)	(2.00)
1/SE	-0.002 **	-0.002	0.014	0.005 *	0.005	0.005	0.018 **	0.018 *	0.002	-0.100 ***	-0.100 ***	0.013	-0.036 **	-0.036	0.012
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.03)	(0.03)	(0.03)	(0.01)	(0.03)	(0.02)
K	80	80	80	38	38	38	43	43	43	49	49	49	74	74	74
R^2	0.028	0.028	0.028	0.011	0.011	0.011	0.098	0.098	0.098	0.090	0.090	0.090	0.008	0.008	0.008

(c) PEESE approach (Equation: $t=\beta_0 SE+\beta_1(1/SE)+v$)

Type of variable	Transition variables			Market size variables			Purchasing power variables			Trade effect variables			Agglomeration effect variables		
Estimator	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML
Model	[61]	[62]	[63]	[64]	[65]	[66]	[67]	[68]	[69]	[70]	[71]	[72]	[73]	[74]	[75]
SE	0.010 ***	0.010 ***	0.006	-0.000 ***	-0.000 ***	-0.000	-0.040	-0.040	0.030	0.000	0.000 ***	-0.000 ***	1.875	1.875	2.716
	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.03)	(0.05)	(0.12)	(0.00)	(0.00)	(0.00)	(1.37)	(1.53)	(1.95)
1/SE (H_0: β_1=0)	0.036 **	0.036 **	0.028 ***	0.068 ***	0.068 ***	0.046 ***	0.002	0.002	0.000	0.019 ***	0.019 *	0.017 ***	0.466 ***	0.466 ***	0.519 ***
	(0.02)	(0.02)	(0.01)	(0.02)	(0.02)	(0.02)	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.05)	(0.06)	(0.05)
K	181	181	181	204	204	204	74	74	74	108	108	108	50	50	50
R^2	0.119	0.119	-	0.085	0.085	-	0.005	0.005	-	0.133	0.133	-	0.853	0.853	-

Type of variable	Labor cost level variables			Labor cost difference variables			Resource abundance variables			EU accession variables			Geographical distance variables		
Estimator	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML	OLS	Cluster-robust OLS	Random-effects panel ML
Model	[76]	[77]	[78]	[79]	[80]	[81]	[82]	[83]	[84]	[85]	[86]	[87]	[88]	[89]	[90]
SE	-0.017 ***	-0.017 ***	-0.012	0.070 ***	0.070 *	0.075	-0.017 ***	-0.017 ***	-0.017	0.000 ***	0.000 ***	0.000	-1.421	-1.421	-0.445
	(0.00)	(0.00)	(0.02)	(0.02)	(0.04)	(0.08)	(0.00)	(0.00)	(0.01)	(0.00)	(0.00)	(0.00)	(0.86)	(1.27)	(0.65)
1/SE (H_0: β_1=0)	-0.006 ***	-0.006 ***	-0.003	0.006	0.006	0.008	0.038 ***	0.038 ***	0.031 *	0.173 ***	0.173 **	0.099 *	-0.087 ***	-0.087 *	-0.042
	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.02)	(0.01)	(0.01)	(0.02)	(0.04)	(0.07)	(0.05)	(0.02)	(0.05)	(0.05)
K	80	80	80	38	38	38	43	43	43	49	49	49	74	74	74
R^2	0.090	0.090	-	0.091	0.091	-	0.305	0.305	-	0.261	0.261	-	0.055	0.055	-

Note: Figures in parentheses beneath the regression coefficients are standard errors. Except for Models [63], [66], [69], [72], [75], [78], [81], [84], [87], and [90], robust standard errors are estimated.

[a] Breusch-Pagan test: χ^2=37.18, p=0.000; Hausman test: χ^2=10.85, p=0.001

[b] Breusch-Pagan test: χ^2=132.21, p=0.000; Hausman test: χ^2=3.61, p=0.057

[c] Breusch-Pagan test: χ^2=42.95, p=0.000; Hausman test: χ^2=1.02, p=0.312

[d] Breusch-Pagan test: χ^2=84.81, p=0.000; Hausman test: χ^2=4.33, p=0.038

[e] Breusch-Pagan test: χ^2=5.20, p= 0.011; Hausman test: χ^2=0.21, p=0.645

[f] Breusch-Pagan test: χ^2=140.22, p=0.000; Hausman test: χ^2=1.51, p=0.219

[g] Breusch-Pagan test: χ^2=13.61, p=0.000; Hausman test: χ^2=3.26, p=0.071

[h] Breusch-Pagan test: χ^2=4.07, p=0.022; Hausman test: χ^2=0.05, p= 0.831

[i] Breusch-Pagan test: χ^2=4.08, p=0.022; Hausman test: χ^2=1.33, p=0.250

[j] Breusch-Pagan test: χ^2=161.06, p=0.000; Hausman test: χ^2=0.13, p=0.714

[k] Breusch-Pagan test: χ^2=60.30, p=0.000; Hausman test: χ^2=12.28, p=0.001

[l] Breusch-Pagan test: χ^2=138.70, p=0.000; Hausman test: χ^2=3.41, p=0.065

[m] Breusch-Pagan test: χ^2=40.93, p=0.000; Hausman test: χ^2=0.48, p=0.487

[n] Breusch-Pagan test: χ^2=82.75, p=0.000; Hausman test: χ^2=2.77, p=0.096

[o] Breusch-Pagan test: χ^2=5.20, p=0.011; Hausman test: χ^2=0.21, p=0.645

[p] Breusch-Pagan test: χ^2=76.95, p=0.000; Hausman test: χ^2=3.40, p=0.065

[q] Breusch-Pagan test: χ^2=0.00, p=0.491; Hausman test: χ^2=1.23, p=0.268

[r] Breusch-Pagan test: χ^2=20.46, p=0.000; Hausman test: χ^2=0.24, p=0.624

[s] Breusch-Pagan test: χ^2=5.27, p=0.011; Hausman test: χ^2=2.71, p=0.100

[t] Breusch-Pagan test: χ^2=159.49, p=0.000; Hausman test: χ^2=0.27, p=0.601

*** Statistical significance at the 1% level

** Statistical significance at the 5% level

* Statistical significance at the 10% level