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How does FDI transmit into domestic investment?

Exploring intra-industry and financial channels

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Abstract

Foreign direct investment (FDI) is often seen as a means to boost domestic investment and, hence, capital accumulation. Yet, the empirical support for such a positive investment effect of FDI is inconclusive. A possible reason is that FDI is often directed towards the financial sector, where capital investment tends to be low. In this paper, we first explore the within-industry relationship between FDI and domestic investment. We then use a novel approach to analyse how FDI into the financial sector transmits into domestic investment by non-financial industries. Using industry-level FDI and investment data from 12 Central and Eastern European countries between 1997 and 2019, we find that about a quarter of FDI into an industry results in domestic investment. Additionally, we document that industries with close links to the financial sector increase domestic investment in the presence of financial FDI, particularly manufacturing, trade and real estate.

Keywords: investment, capital formation, FDI, foreign direct investment, inter-industry linkages

JEL classification: F21, F3, E22, O11

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TABLES AND FIGURES

1. Introduction

Foreign direct investment (FDI) is expected to impact economic growth through two main channels: productivity improvements and factor accumulation, notably capital investment (Harms and Méon 2018; Makiela and Ouattara 2018). While productivity improvements have attracted a lot of attention in the literature,[1] the relationship between FDI and domestic investment in host economies remains relatively underexplored. Notable exceptions include studies by Harrison et al. (2004), Agosin and Machado (2005), Al-Sadig (2013) and Farla et al. (2016). These studies, however, produced inconclusive results and remained limited to the aggregate country level, while productivity-related studies became increasingly granular.

It is worth revisiting the relationship between FDI and domestic investment for several reasons.[2] First, UNCTAD (2023) estimates that the annual investment gap in developing countries necessary to meet the United Nations Sustainable Development Goals has reached approximately USD 4 trillion. The World Bank (2024) has further documented that investment accelerations can have transformative development consequences. Accordingly, increasing investment is a key policy objective, especially in low-income countries (e.g. Sawaqed and Griffin 2023). Even for advanced economies, Goldin et al. (2024) and ECB (2024) emphasise that laggard investment is a major cause of the recent slowdown in growth of output per worker (see also Hanzl-Weiss and Stehrer 2024).

Second, despite the focus on productivity in much of the academic literature, investment and the associated accumulation of capital remains highly important for growth in several cases. For example, the Solow model suggests that capital accumulation can boost growth during a transition to the 'steady state'. This transition period can take several decades and is therefore relevant for policy. Many low-income countries have a capital/worker ratio below this steady state. For example, the poorest quartile of countries in the world has a capital/worker ratio that is merely 7% of the US ratio. Countries transitioning from planned to market economies are another example. The capital/worker ratio in the 10 transition countries that are now part of the European Union (EU) was only 40% of the US ratio in 1995. A simple development accounting exercise suggests that closing this capital gap would have increased output/worker ratios in these countries by 44%.[3,4] Clearly, capital accumulation can be important over a policy-relevant time horizon (see also Walheer and Bignandi 2024).

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1 See Javorcik and Poelhekke (2017), Fons-Rosen et al. (2021), and references therein for direct effects of acquisitions; see Javorcik (2004), Blalock and Gertler (2008), and Havranek and Irsova (2011) for examples of studies investigating productivity spill-overs; and see Abebe et al. (2022) and Gong (2023) for recent studies on technology diffusion.

2 By 'domestic investment', we refer to gross fixed capital formation (GFCF) in the national accounts (i.e. the acquisition of new or existing produced assets; see Section 4), which is a flow that contributes to an economy's capital accumulation.

3 Data from PWT10.0 with a capital output elasticity of 0.4 in a Cobb-Douglas production function. Details are available upon request.

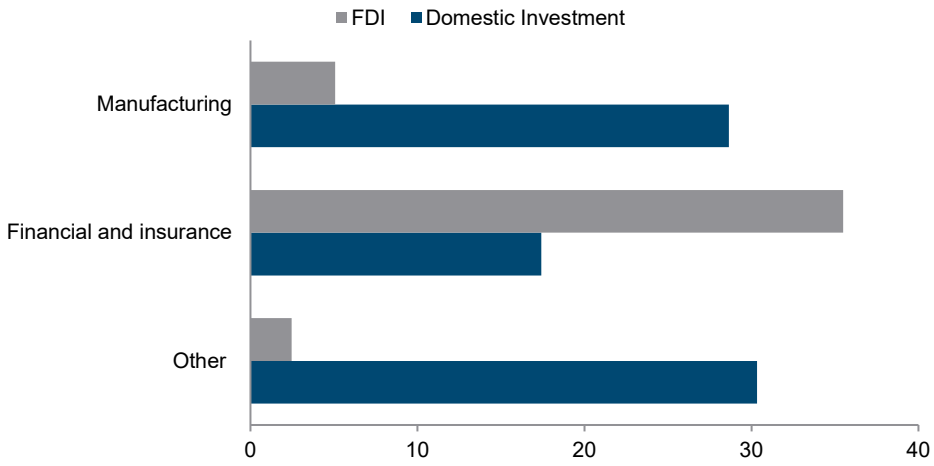
4 See also Hu et al. (2023), who document higher financing needs after trade liberalisation in China.

Third, while one may expect an effect of FDI on capital investment almost by definition, the evidence on this relationship is surprisingly inconclusive.[5] Some studies find that FDI complements private local investment (e.g. Ndikumana and Verick 2008; Al-Sadig 2013; Farla et al. 2016), while others find a negative relationship between FDI and domestic investment (Adams 2009; Wang 2010; Morrissey and Udomkerdmongkol 2012). Additional studies yield mixed results depending on the methods used (Agosin and Mayer 2000; Agosin and Machado 2005; Apergis et al. 2006). What stands out in those previous studies is a lack of granular perspective that gave a boost to the FDI-productivity literature.[6]

In this paper, we propose an approach to investigate the FDI-investment nexus at the cross-country industry level that considers a form of inter-industry linkages. This allows us to separate within-industry from across-industry relations between FDI and domestic investment. For the inter-industry channel, we specifically focus on the role of FDI into the financial sector ('financial FDI'), which is a prominent target for FDI flows and crucial for financial transmission and, hence, investment (see Claessens and van Horten 2014; Panizza 2023; and Figure 1). Failing to consider this inter-industry transmission may blur the scope and channels of FDI's overall impact on domestic investment. We therefore explore two testable research questions in our paper: First, by how much does domestic investment in an industry increase in the presence of FDI? And, second, do industries with strong links to the financial sector increase domestic investment when the financial sector attracts FDI?

Figure 1 / Industry-level FDI inflows and domestic investment

(% of value added)



Notes: Figure shows the average of FDI and gross fixed capital formation (GFCF) by broad industry, both as a percentage of industry-specific gross value added (GVA). Data from CEE sample countries and years as shown in Tables 1 and 2.
Source: wiiw ADB and FDI Databases, own calculations.

[5] In Section 2, we highlight why FDI is not investment in a national accounting sense.

[6] A handful of granular studies do exist for individual countries, such as Venezuela (Aitken and Harrison 1999), Canada (Hejazi and Pauly 2003), the UK (Driffield and Hughes 2003), and Vietnam (Ha et al. 2022). The only cross-country industry-level analysis that we are aware of is a study by Amighini et al. (2017) looking at within-industry effects of FDI on capital formation.

To investigate the between-industry investment effects of financial FDI, one needs to link FDI flowing into the financial sector to investment in non-financial industries. One contribution of our paper is to propose two different sets of 'financial linkage weights' that govern this cross-industry transmission. These financial linkages capture the degree of an industry's connectedness to the financial sector and are conceptually similar to the input-output linkages in the spill-over literature. Our paper therefore introduces into the FDI-investment literature a key concept that has enriched the FDI-productivity literature.

We then apply our framework to industry-level data from 12 Central and Eastern European (CEE) transition economies between 1997 and 2019. These countries are characterised by a need for capital accumulation in the context of transition, EU accession and convergence (see above and Hagemann 2004), dynamic FDI into the financial sector (as evidenced by Figure 1),[7] relevant heterogeneity in income per capita levels, and consistent data availability at the industry level – a combination that is difficult to come by for other countries with low capital/worker ratios.

Our key findings can be summarised as follows: concerning our first research question, we estimate that about a quarter of FDI into a (non-financial) industry transmits into domestic investment. Given that both are very different concepts of investment (see Section 2.2), this is a plausible magnitude.[8] Concerning our second research question, we confirm that financial FDI is associated with higher domestic investment in industries strongly linked to the financial sector. In industries with strong financial linkages (e.g. real estate and manufacturing), a one standard deviation increase in inflowing financial FDI, ceteris paribus, is associated with an increase in domestic investment of approximately 1 percentage point (pp).[9]

A key advantage of our analysis is that uses more granular data than most previous studies on the FDI-investment relationship. At the same time, studying this relationship at an industry-level for countries with a potential investment shortfall faces considerable empirical challenges. Our approach addresses various sources and interactions of unobserved heterogeneity, including country-specific effect heterogeneity, and provides a stepping stone for future research in this area. In particular, our framework can be used to gauge financial linkages in future firm-level studies that are better suited to addressing endogeneity concerns. This mimics the conceptual approach in the productivity spill-over literature, where firm-level data is merged with industry-level input-output relationships.

The remainder of our paper is organised as follows. Section 2 reviews the relevant theoretical and empirical literature on the FDI-domestic investment nexus, the role of inter-industry linkages, and the CEE region. Section 3 introduces our key idea and outlines the methods applied. In Section 4, we provide details on the dataset used. Section 5 presents and discusses the results, while Section 6 validates our findings by accounting for time- and country-specific heterogeneity. Section 7 concludes.

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7 For evidence on bank ownership and lending patterns in the region, see e.g. Giannetti and Ongena (2012) and Allen et al. (2017).

8 Our chosen wording 'transmits' highlights that FDI frequently needs to work its way through the economy (and does not 'translate' one-to-one into domestic investment).

9 Based on parameter estimates from column 3 of Table 4 and a financial linkage weight of 0.25.

2. FDI and investment: what do we know?

2.1. REVIEW OF THE LITERATURE

Most of the previous literature considers FDI as a capital flow that directly contributes to capital accumulation in the recipient country. More specifically, it is often assumed that the physical capital necessary for an economy's production originates from two distinct sources: domestic capital and foreign-owned capital. In this view, inflowing FDI can directly increase a nation's capital stock through its impact on the foreign component (De Mello 1999; Agosin and Mayer 2000; United Nations 2000; Deok-Ki Kim and Seo 2003; Agosin and Machado 2005; Farla et al. 2016).

In addition to directly contributing to a country's capital accumulation through the foreign-owned component, FDI can also indirectly affect the accumulation of domestic capital by influencing domestic firms' incentives to invest, either by complementing or substituting their investment activities (Agosin and Machado 2005). For example, FDI can stimulate local firms' investment by signalling unexploited opportunities. Domestic firms may follow multinational enterprises (MNEs) and invest in profitable ventures they might not have identified on their own (Amighini et al. 2017). Foreign entry also increases demand for improved infrastructure (Cardoso and Dornbusch 1988) and professional services, such as accounting (Blalock and Gertler 2008), which can equally benefit local firms. Additionally, FDI can enhance domestic firms' access to finance by boosting local liquidity and lowering interest rates (Harrison et al. 2004) while at the same time generating tax revenue to support public and private investments (Cardoso and Dornbusch 1988).

However, there can also be negative indirect effects of FDI on domestic investment. For instance, a substantial portion of MNE profits is repatriated (UNCTAD 2013), which limits reinvestment in the host economy and weakens the potential for other indirect contributions to capital formation (Artner 2018). Additionally, if a foreign firm heavily relies on local banks for borrowing, there is a possibility of crowding out domestic firms from the host country's capital markets (Harrison et al. 2004). Finally, when a foreign firm enters a relatively underdeveloped industry in a lower- or middle-income country, it can drive up the cost of local inputs (Apergis et al. 2006), potentially leading to reduced investment by local firms.

Theory does not offer any definitive answer on the overall impact of FDI on domestic investment, as it presents a variety of both positive and negative mechanisms. Its net effect appears to depend largely on whether the increased investment by foreign entrants, along with any positive externalities for domestic firms, outweighs the potential displacement of local firm investment.

The empirical evidence is accordingly inconclusive. Some studies suggest that FDI tends to displace domestic investment (Morrissey and Udomkerdmongkol 2012; Wang 2010; Adams 2009), while others indicate that FDI positively affects domestic investment (Ndikumana and Verick 2008; Al-Sadig 2013; Farla et al. 2016). Additionally, several scholars report mixed results depending on the methods used (Agosin and Mayer 2000; Agosin and Machado 2005; Apergis et al. 2006) or do not find any significant effect at all (Lipsey 2000). Comprehensive overviews of the empirical research on this relationship can be found in Farla et al. (2016) and Amighini et al. (2017).

2.2. WHY IS FDI NOT AUTOMATICALLY INVESTMENT?

The inconclusive empirical relationship between FDI and domestic investment seems surprising at first. However, their elusive nexus becomes clearer once one understands that FDI, despite its name, is based on a different economic and accounting concept than domestic investment (more precisely, capital formation).

First, FDI is a balance of payments (BoP) statistic that represents the net financial transfers between an MNE's subsidiary and its headquarters.[10] Conversely, gross fixed capital formation (GFCF), the empirical variable that captures domestic investment, is a national accounts concept that captures investment in fixed capital assets in the domestic economy (irrespective of the investor's country of residence). Not all the financial transfers that FDI captures are directed towards investment in fixed capital assets (Amighini et al. 2017). For example, FDI can also reflect profit-shifting or inter-firm loans.

Second, FDI speaks to ownership and there are many ways to acquire ownership, some of which include real investment, while others solely represent financial transfers. Greenfield investments are an example of the former. They are defined as the establishment of new subsidiaries from the ground up (on the 'green field') and are therefore most likely to have a one-to-one impact on domestic investment since they involve the creation of new capital assets. In contrast, mergers and acquisitions (M&As) involve the transfer of existing domestic capital assets, either partially or entirely, to a foreign entity and do not a priori contribute to the host country's capital stock.[11] This distinction between entry modes is supported by the empirical analyses of Ashraf and Herzer (2014) and Jude (2019),[12] which reveal that foreign M&As do not significantly affect a host country's domestic investment, whereas greenfield investments seem to exhibit a positive effect.

2.3. INTER-INDUSTRY LINKAGES

Another explanation for the inconclusive results in the FDI-domestic investment relationship could be the lack of a granular perspective (i.e. firm- or industry-level). Aggregate analyses overlook potential heterogeneity across industries, which may be essential for understanding when FDI boosts domestic investment and when it does not. Agosin and Machado (2005) recognised this, arguing that the extent to which FDI contributes to a country's domestic investment depends in part on its industrial composition. Empirical evidence supports this notion and, indeed, finds heterogeneous effects across industries (Hejazi and Pauly 2002, 2003; Driffield and Hughes 2003; Amighini et al. 2017).

Most empirical work at the industry level, however, has focused on FDI's intra-industry effects, which limits FDI's direct investment impact to investment responses of domestic firms within the same industry (Aitken and Harrison 1999). Yet, FDI may also influence domestic investment across industries through inter-industry effects. Foreign entrants can affect local firms' investment decisions in other industries via

[10] IMF definition: A direct investor acquiring equity amounting to 10% or more of the ordinary or voting shares in an enterprise located in a country other than the investor's country of residence. After this investment relationship is established, subsequent capital transactions between these two parties are recorded as FDI (Patterson et al. 2004).

[11] Nor is it guaranteed that the foreign entity will increase investment to a greater extent than the acquired firm would have done in the absence of the takeover.

[12] Although their focus is on growth rather than investment, Harms and Méon (2018) includes a good discussion of this topic.

buyer-supplier relationships, known as forward (downstream) and backward (upstream) linkages (see especially Rodríguez-Clare 1996; Görg and Greenaway 2004; Wang 2010; Morrissey 2012).

Despite their potential relevance, empirical studies examining these inter-industry effects are limited. To our knowledge, the only study estimating the effect of such inter-industry linkages is Ha et al. (2022), which focuses exclusively on Vietnam. They, indeed, find that investment responses differ across industries based on the strength of their forward and backward linkages.

In this paper, we propose an additional channel through which inter-industry linkages can lead to asymmetric effects across industries. Rather than examining real linkages formed through buyer-seller interactions, we focus on linkages to the financial sector and how they affect industries' investment responses to inflowing financial FDI (see Section 3). This financial channel of FDI inflows considers the critical role of the financial sector, as a prominent target for FDI, in facilitating financial transmission and, in turn, domestic investment (Claessens and van Horen 2014; Panizza 2023).

2.4. CEE CONTEXT AND OWNERSHIP

This relationship between financial FDI and domestic investment is particularly relevant for the CEE countries. Decades of central planning and an underdeveloped financial system left these countries with a large, obsolete capital stock (Krkoska 2001). Starting in 1990, many CEE countries transitioned from relatively closed, state-planned economies to liberalised market economies. This transition was often accompanied by large-scale privatisation, which included public-to-private ownership transfers for financial intermediaries, leading to a complete overhaul of the banking sectors in these countries (Baudino et al. 2004).

In many cases, ownership transfer also involved a shift from local to foreign actors. In fact, local banking systems were extensively liberalised with the aim of attracting foreign investors, often in an attempt to resolve banking crises (ibid.). By 2000, more than half of the banks in most transition countries were foreign-owned and over two thirds of total bank assets were under foreign control (Naaborg et al. 2004). As a result, the financial markets in many CEE countries have become heavily dependent on foreign banks (Niţoi et al. 2021).

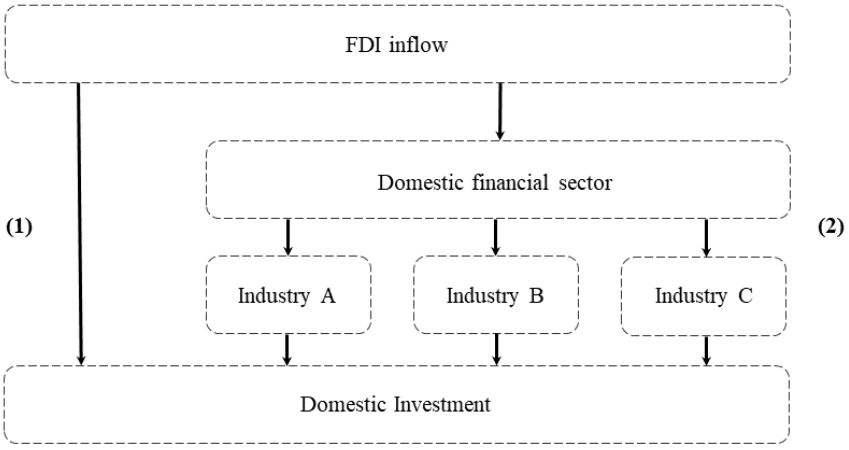
3. Modelling financial FDI linkages

3.1. KEY IDEA

When FDI flows into non-financial industries, it may be directly used to fund capital formation (domestic investment). Additionally, the entry of a foreign firm shakes up the industry, potentially creating new investment opportunities for local firms. Together, these dynamics result in a within-industry effect of FDI on domestic investment.

Furthermore, FDI into the financial sector can potentially help domestic firms to exploit investment opportunities. For example, financial FDI may add investment capital to the financial system or improve its efficiency through foreign ownership and expertise. To what extent (non-financial) firms can benefit from such a financial spill-over effect depends in part on how well the domestic firm, or its overall industry, is linked to the financial system. The key contribution of our paper is to suggest a plausible way to model this inter-industry channel through which FDI transmits into domestic investment.

Figure 2 / Illustration of financial FDI's overall impact on domestic investment



Source: Authors' illustration.

Figure 2 offers a schematic representation of financial FDI's overall impact on domestic investment. This impact can be divided into two main components: (1) a within-industry effect and (2) an inter-industry effect. The within-industry effect (1) is widely analysed in the FDI-domestic investment nexus, though it is often aggregated with other industries in country-level analyses. This is the actual investment from financial FDI that directly contributes to GFCF in the recipient economy (i.e. the fixed capital investments required to set up a subsidiary).

The inter-industry effect (2), in contrast, occurs after the initial foreign investment. When a foreign financial MNE sets up or transfers additional funds to its subsidiary in the host country, it introduces

'new' foreign capital and directly increases the availability of funds that can be lent to domestic firms (Levine 1996). This international capital is often more cost-effective than domestic funds due to the higher efficiency of foreign banks and the competitive pressures they bring (Galac and Kraft 2000; Naaborg et al. 2004; Goldberg 2007). Empirical evidence supports the notion that the presence of foreign banks generally improves credit availability for local firms (Clarke et al. 2001; Detragiache et al. 2008; Giannetti and Ongena 2009, 2012).

This increased credit availability enables domestic firms to finance investment in fixed capital, further contributing to the nation's GFCF. This is the financial channel of FDI. To capture this inter-industry effect accurately, we have to consider industry-specific differences, as not all industries benefit equally from increased access to credit (Rajan and Zingales 1998). Industries with higher external funding requirements tend to grow faster in economies with better access to credit (Rajan and Zingales 1998; Beck and Levine 2002; Kroszner et al. 2007) and suffer disproportionately when credit contracts during recessions (Braun and Larrain 2005; Dell'Ariccia et al. 2008). The impact of changes in credit availability on an industry's investment is therefore moderated by its reliance on external financing, which reflects its linkage to the financial sector.

In summary, when FDI flows into the financial sector, a foreign financial MNE sets up or transfers additional funds to a subsidiary in the host country. These funds can then be intermediated to domestic firms, allowing them to finance investments in fixed capital and thereby increase the nation's GFCF. However, the extent to which domestic firms use these funds depends on *the strength of their financial linkage*.[13] Therefore, in this paper, we set out to test the hypothesis that industries with strong links to the financial sector increase domestic investment when the financial sector attracts FDI.

3.2. ECONOMETRIC SETUP

Since the industry characteristic of interest is the financial linkage, our estimation strategy takes the following form:

$$GFCF/GVA_{c,i,t} = \beta_1 FDI/GVA_{c,i,t} + \beta_2 FinFDI_{c,t} + \beta_3 FinFDI_{c,t} * FinLinkage_{c,i,t} + \theta X_{c,t} + \alpha_c + \gamma_i + \delta_t + \varepsilon_{c,i,t} \quad (1)$$

where $GFCF/GVA_{c,i,t}$ is domestic investment in recipient country *c*, industry *i* (excluding financial sector *k*[14]) and year *t*. We follow the literature by proxying domestic investment with GFCF[15] as a percentage of industry gross value added (GVA); $FDI_{c,i,t}$ represents the inflow of FDI into country *c*, industry *i*, year *t*, also normalised by industry-level GVA. β_1 hence captures the within-industry relationship between FDI and domestic investment in an industry *i* and host country *c*.

[13] The strength of a financial linkage is measured by an industry's relative consumption of loans or financial services. This measure captures not only the industry's dependence on external financing, but also its size relative to the overall economy.

[14] We exclude the financial sector to isolate the inter-industry effect of financial FDI on domestic investment.

[15] GFCF is the most common metric for domestic investment in the FDI-domestic investment literature (e.g. Agosin and Machado 2005; Wang 2010; Farla et al. 2016)

Our main parameters of interest are β_2 and β_3, which respectively capture how domestic investment in a certain industry responds to overall financial FDI (*FinFDI*[16]) and how this relationship depends on the strength of this industry's financial linkage (*FinLinkage)*. The interaction *FinFDI x FinLinkage* proxies the inter-industry transmission of financial FDI and allows for heterogeneous responses in domestic investment across industries. To capture the strength of an industry's financial linkage, we apply two separate sets of weights, which are formally defined in the next subsection. One (LEND) is based on the industry shares of the stock of commercial bank loans to non-financial corporations in a given year. The other (IO) consists of the relative share of financial service activities received by the respective industries based on input-output data.

$X_{c,t}$ is a column vector of country-level controls and includes, inter alia, the price of capital, inflation and the financial development of the host country. A full list of variables and sources is provided in Appendix A2. In our baseline specification, we include additive country, industry and year fixed effects, but we also consider alternative fixed-effect specifications for robustness. $\varepsilon_{c,i,t}$ represents the error term. Throughout, we report robust standard errors clustered at the country level that account for the panel structure of the dataset and capture the most plausible unit for error correlation (within countries over time and industries; see e.g. Cameron and Miller 2015).

3.3. FINANCIAL LINKAGE WEIGHTS

We employ two distinct sets of weights for the financial linkages in equation (1). Both sets proxy the degree of an industry *i's* connectedness to the financial sector (i.e. the strength of its financial linkage).

The first financial linkage measure uses the industry shares of the stock of commercial bank loans to non-financial corporations in a given year. These shares indicate which industries, on average, receive more bank loans than others and are thus more strongly linked to the financial sector.

$$Financial\ linkage\ weights\ LEND_{it} = \frac{\sum_c (\rho_{cit} / \sum_i \rho_{cit})}{N} \tag{2}$$

Equation (2) – in which ρ represents the stock of loans and N is the number of countries for which data is available – illustrates how the financial linkage weights are derived from the loan stock data. For each of the six countries[17] and all of the relevant years, we divide the industry-specific volumes of outstanding loans ρ by the total loan stock. This gives us the weights for a single country. We then sum the country-specific weights and divide them by the number of countries N to produce the average weights over the six countries in question. This results in a series of time- and industry-specific financial linkage weights.

The second measure is constructed using data obtained from the World Input-Output Database (WIOD) (Timmer et al. 2015). It measures the relative share of financial service activities consumed by each industry. While credit granting is not directly included in this measure, it serves as an effective proxy, as

[16] $FinFDI_{c,t}$ is normalised by the total GVA of the non-financial sector in a given country and year since we exclusively focus on the investment response of non-financial industries. Alternatively, one could use the country's GDP; however, as can be seen in Appendix A3, this does not affect the results in any meaningful way.

[17] Ideally, one would construct a country- and industry-specific measure. However, only six central banks in the sample collect and share comparable data on industrially disaggregated commercial bank loan stocks: Bank of Albania, Bulgarian National Bank, Czech National Bank, Eesti Pank, Magyar Nemzeti Bank and Národná banka Slovenska (see corresponding entry in the References section for specific links to data).

it does capture the services involved in originating, processing, managing and servicing loans.[18] The WIOD's national input-output tables model 'financial service activities' as an industry,[19] allowing for the tracking of services provided by this 'industry' to other industries in the country.

$$Financial\ linkage\ weights\ IO_{cit} = \frac{\omega_{cit}}{\sum_i \omega_{cit}} \quad (3)$$

In equation (3), *ω* represents the value of financial services received by an industry *i*. Each industry *i*'s *ω* is divided by the total *ω* received in a country *c* and year *t*, resulting in industry-, country- and year-specific financial linkage weights.

Unfortunately, the WIOD has its own limitations and we have to exclude Albania and Bosnia and Herzegovina due to the absence of national input-output tables. Additionally, the dataset only covers the years 2001-2014, further restricting the sample. In the case of North Macedonia, we can substitute the lack of a national input-output table with data from the country's supply-and-use tables.

Despite the measures originating from different data sources, both attempt to capture the same phenomenon. A brief look at the correlation between the two (0.7047) reveals that the measures mirror each other rather successfully (Appendix A1). A more detailed overview (Figure 3) confirms this, reporting relatively similar shares across industries.

[18] Crucially, 'financial service activities' does not include insurance and pension funding.

[19] National input-output tables track the amount of intermediate inputs supplied from industry A to industry B in the same economy. In such tables, financial services can be seen as intermediate inputs.

4. Data and descriptives

The data and their sources are described in detail in Appendix A2. A key part of the data used for our analysis comes from the Vienna Institute for International Economic Studies (wiiw). We combine data from the wiiw Annual Database and the wiiw FDI Database to measure the impact of FDI on domestic investment on the industry level. For the control variables, a number of other sources were consulted, including the Penn World Tables 10.0, the World Development Indicators and the Global Financial Development Database.

Both the dependent variable (GFCF) and the industry-level GVA used for normalisation are gathered from the wiiw Annual Database. This database consists of data from Eurostat, central banks and statistical offices on a wide range of economic indicators for the economies of Central, East and Southeast Europe (CESEE). Most of these countries underwent a period of economic liberalisation, transitioning from largely state-planned to market economies around 1990. Consequently, data availability and reliability increase substantially in the years thereafter. However, availability continues to be haphazard in the years directly following the transition, which is why we have to exclude years prior to 1997.[20] We also omit the 'COVID years' (i.e. 2020 and 2021) due to sudden irregularities induced by the global pandemic. Altogether, this results in a 23-year-long sample period ranging from 1997 to 2019. For this period, we gather industry-level FDI inflows from the wiiw FDI Database.

The industry-level wiiw data uses one-letter NACE Rev. 2 classifications. Revision 2 is the current iteration of the framework, which was asymmetrically implemented among sample countries between 2008 and 2011. The asymmetric implementation results in an unbalanced panel in terms of years and imposes a constraint on the number of sample countries (Table 1). Additionally, differences in methods of industrial aggregation between the wiiw data and the data used to construct the financial linkage weights force us to slightly adjust NACE classifications to facilitate merging (Table 2).

Table 1 / Overview of available FDI data

Country	Years
Albania	2014-2019
Bosnia and Herzegovina	2011-2019
Bulgaria	2014-2019
Czechia	2009-2019
Estonia	1997-2019
Hungary	2008-2019
Latvia	2000-2014
Lithuania	2004-2019
North Macedonia	2009-2019
Poland	2010-2019
Slovakia	2008-2018
Slovenia	2008-2019

Table 2 / Overview of sample industries

Adjusted NACE Rev. 2 classifications
Agriculture, forestry and fishing
Mining and quarrying
Manufacturing
Electricity, gas, water supply and other utilities
Construction
Wholesale, retail trade, repair of motor vehicles etc.
Transportation, storage, information and communication
Accommodation and food service activities
Financial and insurance activities
Real estate, professional, scientific and business activities
Other services

[20] Only a handful of countries report industrially disaggregated FDI inflows prior to 1997. Of those few, none records data on the full range of NACE Rev.1 or Rev.2 industries.

In Table 3, we present descriptive statistics for the specification with the largest sample size in our analysis.[21] The mean domestic investment amounts to a 0.299 share of industry-level GVA. Hence, the average industry (across countries) makes fixed capital investments that amount to 30% of said industry's GVA in a given year. Although a 30% share may appear high, keep in mind that many of the CEE economies were in transition during the timeframe of our sample, which was a period characterised by large-scale privatisation that created many opportunities for private investment (Krkoska 2001). The establishment of newly privatised industries becomes evident when we observe the largest values for our measure of domestic investment, where the fixed capital investments are greater than the value added of an industry.

Table 3 / Descriptive Statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
Domestic investment	1385	0.299	0.204	-0.006	1.619
FDI	1385	0.027	0.114	-1.635	1.325
Financial FDI	1385	0.013	0.018	-0.022	0.088
LEND financial linkage weights	1385	0.101	0.084	0.004	0.373
IO financial linkage weights	824	0.1	0.097	0	0.468
Inflation	1385	2.936	3.260	-9.654	20.063
Financial development	1125	54.593	14.057	32.385	101.388
Capital price	1185	0.561	0.100	0.391	0.832
Bank crisis	1385	0.122	0.328	0	1

The minimum – and only negative – value for domestic investment is recorded in Albania's agricultural industry in 2019 (-0.006).[22]

The mean financial FDI (0.013) appears to be smaller than the mean FDI for all industries (0.027) even though the financial FDI inflows are nearly always larger. This is due to financial FDI being normalised by total non-financial-sector GVA, whereas each industry in the FDI variable is merely divided by its own GVA. In fact, between roughly 25% and 50% of a nation's average FDI inflows seem to be destined for the financial sector (Appendix A4). The negative minimum values for both FDI inflow variables are the result of 'netting out' (i.e. when repatriated profits and/or loan repayments exceed incoming flows of capital from the parent firm).

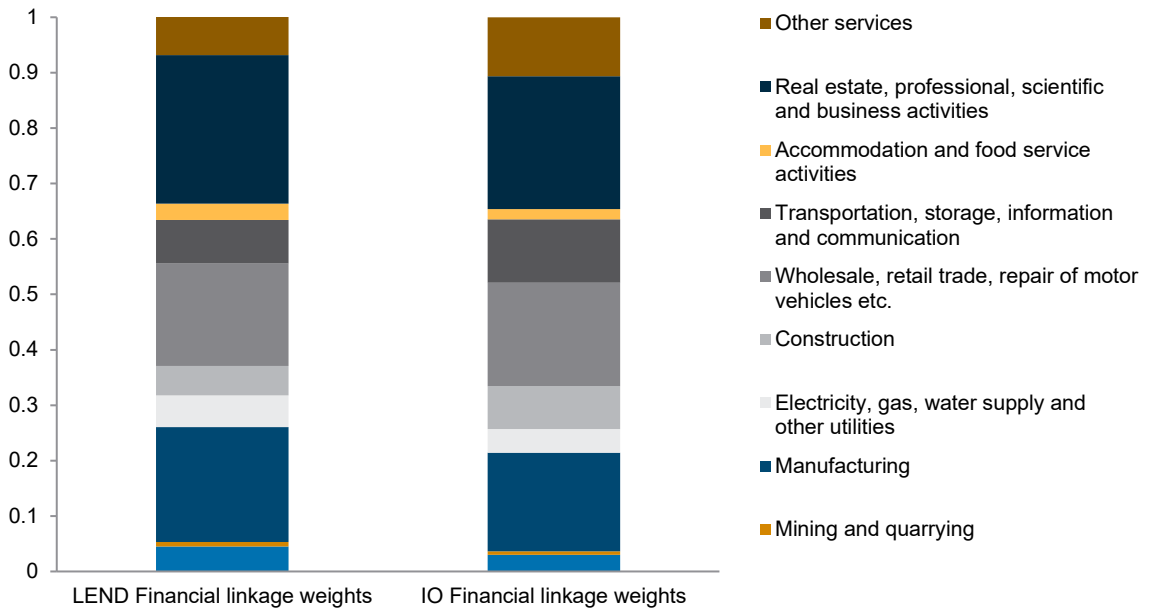
The financial linkage weights exhibit a wide range of values. The lowest financial linkage is close to zero, indicating that the corresponding industry has minimal connections to the financial sector in the average economy. In contrast, the highest linkage values, at 0.373 and 0.468, suggest that certain industries are strongly connected to the financial sector and absorb around 40% of domestically granted credit in a given country-year. Figure 3 shows the average financial linkages across industries, with three sectors standing out for their particularly strong linkages: (1) manufacturing; (2) wholesale, retail trade, repair of

[21] With the inclusion of the control variables, the sample size drops to 925 observations. The inclusion of the IO financial linkage weights causes a further drop, to 580, due to the omission of Albania and Bosnia and Herzegovina as well as from restricting the time period to 2000-2014.

[22] We use GFCF, a flow variable, as a proxy for domestic investment. When disinvestment exceeds new investments, values can be negative.

motor vehicles etc.; and (3) real estate, professional, scientific and business activities. Together, these three industries account for roughly 60% of the total loans granted in the average country.

Figure 3 / Average shares of financial linkage weights across industries



Notes: Industry shares averaged over sample countries and years. The LEND weights are averaged over all 12 countries, while the IO weights are averaged over 10 countries due to data limitations for Albania and Bosnia and Herzegovina. Finally, the LEND weights do not exactly add up to one because not all countries have data for the entire range of industries in all years.
Source: Calculations and sources outlined in section 3.3.

5. Results

5.1. BASELINE RESULTS

We present the results in Table 4, which shows the estimates from equation (1) with country, industry and year fixed effects. In column (1), we introduce the FDI variables. Non-financial within-industry FDI enters the specification with a positive and statistically significant coefficient of 0.265, and it retains this value throughout most of our specifications.[23] This coefficient is only a quarter of what one would expect if FDI were always (physical) investment. In other words, three quarters of FDI are directed towards other financial transfers beyond fixed capital asset investment. Furthermore, on aggregate, financial FDI does not seem to have a significant relation with investment in domestic non-financial industries if one does not account for heterogeneity in industries' financial linkages. [24] Essentially, when we ignore financial linkages, it appears as if the funds flowing into the financial sector are not transmitted to non-financial domestic firms or at least are not being used to finance investment. Recall from equation (1) that financial FDI is measured at the country-year level and not industry-specific.

When we account for industries' financial linkages using our sets of weights (columns (2) to (5) in Table 4), we find that industries with strong links to the financial sector experience higher domestic investment in the presence of financial FDI. In three of the four specifications, the interaction enters our model with a positive and significant effect. Specifically, the effect is positive for industries with financial linkage weights over 0.13 (=0.63/4.7) when using the parameter estimates from column (3) and 0.15 in the case of column (5). Above these thresholds, the stronger an industry's financial linkage, the larger its investment response seems to be in the presence of financial FDI.

Figure 4 and the accompanying Appendix A6 illustrate the marginal effects for various strengths of financial linkages. Panel (a) shows the marginal effect of financial FDI on domestic investment for financial linkage weights with an interval of 0.05. The boxplots in panel (b) depict the distributions of these weights per industry.

Panel (a) also illustrates that the positive effect of financial FDI on domestic investment appears at financial linkage thresholds of 0.13 and 0.15 for the LEND and IO weights, respectively. A second threshold emerges around 0.25 (for both LEND and IO weights), where the positive effect of financial FDI on domestic investment becomes significantly different from zero.

Panel (b) illustrates that most industries fail to meet both of these thresholds, suggesting that the majority of industries tend to reduce investment when financial FDI inflows increase, although this negative effect is rarely statistically significant. On the one hand, this lack of significance for industries

[23] In columns (4) and (5), and in any specification that includes IO financial linkage weights, the coefficient for FDI drops in magnitude and becomes insignificant. Appendix A5 demonstrates that this result stems from restricting the sample to available IO data, which excludes Albania and Bosnia and Herzegovina entirely and removes data for the years 1997-2000 and 2015-2019 for other countries in our sample.

[24] Since our domestic investment variable does not include the financial sector itself, estimates for the financial FDI variable only reflect its inter-industry effect on domestic investment.

with limited links to the financial sector is expected given that changes in the financial sector (e.g. inflows of FDI) are less likely to affect industries with weaker financial linkages. On the other hand, although insignificant, the fact that most industries reduce investment seems counterintuitive. In the conclusion, we discuss two potential explanations: first, financial FDI may facilitate structural transformation by reallocating resources; and, second, foreign financial investors may be repatriating domestic profits.

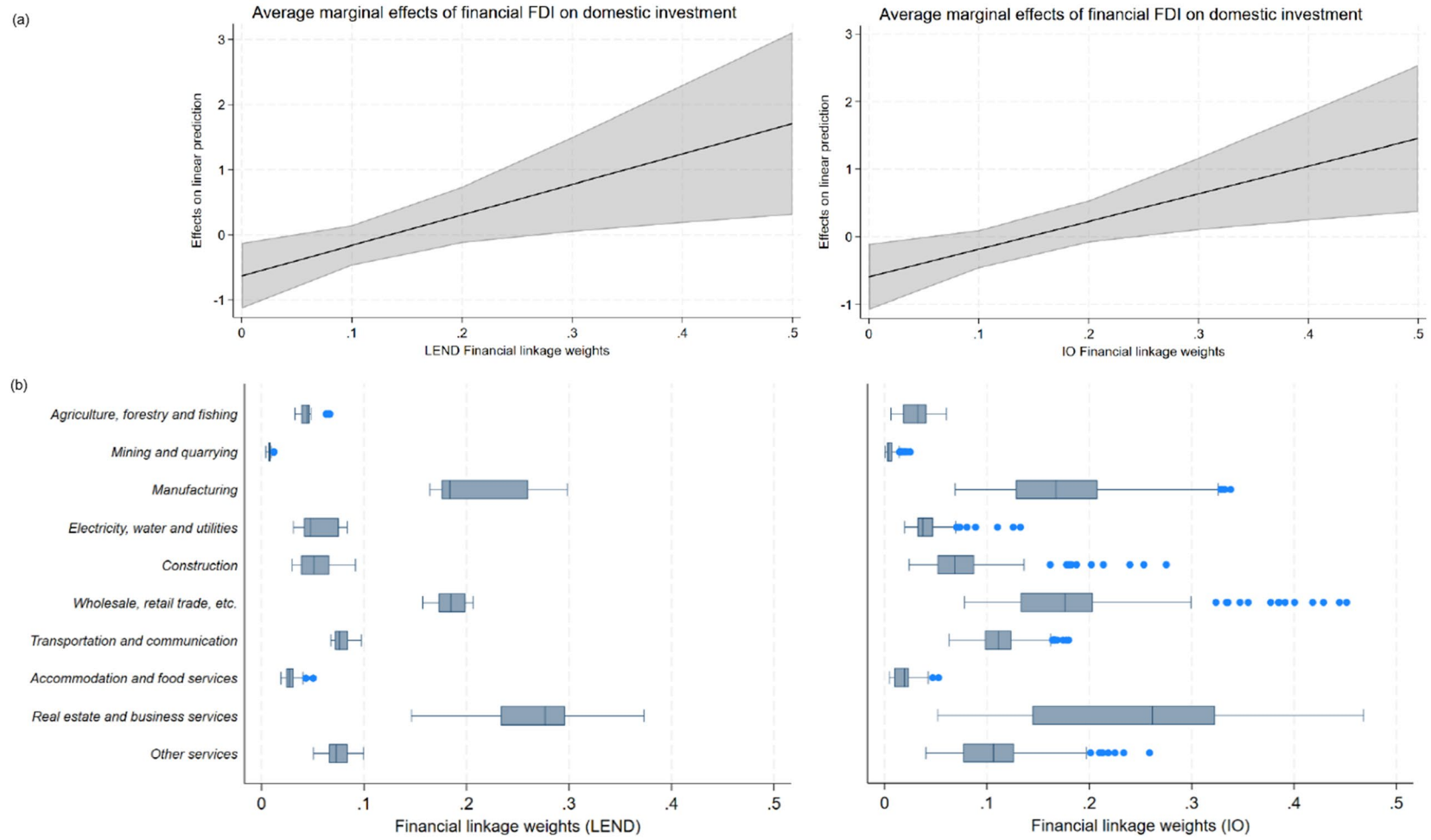
Table 4 / Baseline model

	Dependent variable: Domestic investment				
Financial linkage weights:	**(1)**	**(2) LEND**	**(3) LEND**	**(4) IO**	**(5) IO**
FDI	0.265***	0.215**	0.264***	0.0395	0.0850
	(0.083)	(0.077)	(0.083)	(0.056)	(0.074)
Financial FDI	-0.159	-0.676*	-0.629*	-0.639	-0.595*
	(0.187)	(0.349)	(0.306)	(0.552)	(0.297)
Financial FDI x Financial linkage weights		4.999**	4.679*	3.139	4.097**
		(2.254)	(2.150)	(2.119)	(1.789)
Financial linkage weights		-0.0714	-0.365	0.547***	0.431**
		(0.221)	(0.301)	(0.168)	(0.173)
Inflation	0.006*		0.006*		0.008***
	(0.003)		(0.003)		(0.002)
Financial development	-0.00004		-0.00005		-0.00059
	(0.000)		(0.000)		(0.000)
Bank crisis	0.010		0.010		0.012
	(0.014)		(0.014)		(0.008)
Capital price	0.232		0.231		0.512***
	(0.143)		(0.143)		(0.129)
Constant	0.142	0.303***	0.179*	0.259***	-0.0504
	(0.089)	(0.024)	(0.099)	(0.019)	(0.083)
N	925	1385	925	824	580
R2	0.388	0.368	0.390	0.401	0.431

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country, year and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Examining Figure 4 further, we find that only a few industries surpass these thresholds, namely: (1) manufacturing; (2) real estate, professional, scientific and business activities; and, although to a lesser extent, (3) wholesale and retail trade. Given their economic importance, the fact that we observe modest positive effects for the manufacturing and retail trade industries is encouraging. For the manufacturing sector, using the estimates in column (3) of Table 4 and manufacturing's mean financial linkage weight of 0.21, ceteris paribus, a one standard deviation increase in financial FDI is associated with a 0.64 pp increase in domestic investment. As discussed, this effect is relatively small, especially given the already high level of domestic investment (on average 30% of value added). Consequently, substantial inflows of financial FDI (or strong financial linkages) are necessary to make a meaningful impact.

Figure 4 / Marginal effects of FDI on domestic investment



Notes: a) Marginal effect plots of results in columns (3) and (5) in Table 4 with a 90% confidence interval: effect of financial FDI on domestic investment for different levels of industry-level financial linkage weights. b) Boxplots illustrating the distribution of financial linkage weights per industry.

The primary beneficiary of financial FDI, however, appears to be the real estate and business services sector due to its strong financial linkage (0.27). Here, a one standard deviation increase in financial FDI is associated with a 1.14 pp increase in domestic investment based on the estimates from column (3). Whether this increase in real estate investment is desirable remains debatable. On the one hand, it could help address the relatively low property endowments in CEE countries; on the other, it could raise the relative price of non-tradables, potentially harming long-term competitiveness (Égert and Martin 2008). At the same time, with services becoming more tradable in the face of automation and global value chains, business services play an increasingly important role in productivity growth, and increased investment in this sector could enhance economic competitiveness (Nayyar et al. 2021).

Overall, our results reveal an important insight for the literature: as expected, our within-industry effect confirms that FDI is positively associated with domestic investment at a magnitude that is plausible given that FDI is not necessarily investment in the national accounting sense. Furthermore, an additional cross-industry effect occurs through the financial sector, a primary recipient of FDI. In the presence of such financial FDI, industries with strong financial linkages seem to step up their domestic investment, while industries with weaker financial ties do not.

5.2. INTERACTIVE FIXED EFFECTS

In Table 5, we incorporate a combination of country-year fixed effects and industry fixed effects into our baseline model to account for unobserved, time-varying shocks specific to the countries in our sample. As a result, the standalone financial FDI variable is omitted, as this is measured at the country-year level. The same applies to the country-level control variables, which are now captured by the country-year fixed effects.

The results support our initial estimates: the estimated within-industry FDI coefficient remains very similar to the results in Table 4, and our key interaction parameter (financial FDI x financial linkage) even increases in magnitude. This allows us to rule out alternative explanations for our baseline results. For instance, public infrastructure (transportation, energy, digital) investments can crowd in private investment. An upgrade of energy grids, for example, could ensure a consistent power supply, reduce factory downtimes and encourage investments in high-tech machinery requiring reliable power.

Table 5 / Interactive fixed effects model

	***Dependent variable*: Domestic investment**		
Financial linkage weights:	**(1)**	**(2) LEND**	**(3) IO**
FDI	0.219**	0.219**	0.0511
	(0.075)	(0.075)	(0.059)
Financial FDI x Financial linkage weights		4.772*	8.427*
		(2.389)	(4.001)
Constant	0.294***	0.287***	0.296***
	(0.002)	(0.003)	(0.007)
N	1395	1385	824
R^2	0.387	0.385	0.398

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country-year fixed effects and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

6. Robustness and extensions

6.1. TIME ADJUSTMENT FINANCIAL FDI

In Appendix A7, we estimate a model in which financial FDI is lagged by one year. It is plausible that the effect of an increase in inward financial FDI on the investment of firms in domestic non-financial industries may not fully materialise in the year of the initial inflow *t*. A time lag may exist either between the arrival of capital and its actual impact on the intermediation of funds or between an increased credit availability and when local firms use the funds for financial investments. Therefore, domestic investment could still be affected in the subsequent year (t+1).

Although we do find some evidence supporting the existence of a delayed effect, we lack sufficient data to draw a firm conclusion. For both measures, estimates for the interactions that include the lag are reduced by approximately 25% (from 4.679 to 3.503 for LEND and from 4.097 to 3.104 for IO), with the IO measure showing a result significant at the 5% level. While this may not provide a definitive answer, these results warrant further investigation into the duration of the investment-boosting impact of financial FDI.

6.2. TIME TRENDS

As a robustness check, we re-estimate our baseline model using different combinations of country- and industry-specific time trends instead of the control variables. While time trends are less restrictive than country-year fixed effects, they still account for the influence of some exogenous factors and allow us to obtain an estimate for the standalone financial FDI variable. Appendix A8 presents the results of these models. Columns (1) and (4) include a country-specific time trend, columns (2) and (5) feature an industry-specific time trend, and columns (3) and (6) incorporate both country- and industry-specific time trends.

The results in Appendix A8 broadly confirm our initial findings. Both the magnitude of the estimates for the standalone financial FDI variable and the interaction terms closely resemble our baseline results. Although the results for the IO measure become insignificant, the LEND results remain significant regardless of the combination of time trends included.

6.3. COUNTRY-SPECIFIC EFFECT HETEROGENEITY

To assess the generalisability of our results, we explore the influence of individual countries on the estimates. We explore country-specific heterogeneity in our estimates by interacting financial FDI with country dummies as well as by using a triple interaction that also includes the LEND financial linkage weights. Appendix A9 presents the estimates of these interactions for each country.

Panel (a) reveals that the triple interaction with Albania results in an unusually large estimate, an outlier compared to other countries. Similarly, in panel (b), Albania, North Macedonia and Latvia stand out as potential outliers. In Appendix A10, we show that our baseline results hold regardless of whether we exclude these outliers from our sample or include the interaction between country dummies and financial FDI as an additional control.

7. Conclusion

Most studies of the relationship between FDI and domestic investment have relied on aggregated cross-country data. Our paper adds an industry-level perspective to that literature and highlights why FDI does not translate one-to-one into domestic investment. Our within-industry results suggest that an increase of FDI of 10 pp is associated with an increase of domestic investment of approximately 2.5 pp, with both being relative to value added.

Furthermore, our paper highlights the importance of industries' linkages to the financial sector to understand the scope and channels of how FDI relates to domestic investment. Since the financial sector is the primary recipient of FDI in many countries, this previously neglected channel seems of utmost relevance.

Our results indicate that FDI inflows into the financial sector can stimulate domestic investment in other industries; however, this effect is not homogeneous across industries. Industries with strong financial linkages tend to increase their domestic investment in response to financial FDI, while this propensity decreases as industries' financial linkages decay. Specifically, three industries appear to benefit significantly in the context of the CEE countries: (1) manufacturing; (2) wholesale and retail trade; and (3) real estate, professional, scientific and business activities. This is economically promising given their potential importance for competitiveness and employment. However, if the real estate sector considerably steps up domestic investment in the presence of financial FDI, this may warrant caution. In this paper, we were unable to separate the real estate and business services sectors. We recommend that future research disentangle the purely financial aspects of real estate activities from the sector's real economic impact and further distinguish these findings from those in the business services sector.

The fact that some industries reduce their domestic investment in response to financial FDI can be interpreted from two broad perspectives. On the one hand, financial FDI might facilitate structural change, causing certain industries to expand and others to contract. On the other hand, it is possible that foreign-owned financial corporations repatriate profits they earn in domestic firms rather than re-investing them (see Joyce 2021; Parnreiter et al. 2024). This outcome is possible even for industries with limited financial linkages, as exposure to the financial sector is rarely non-existent. This latter concern was particularly voiced in the context of the CEE countries studied (Munk 2020).[25] Both interpretations are not mutually exclusive, and future work could investigate their relative importance.

Our findings help to explain the inconclusive evidence on the relationship between FDI and domestic investment in prior empirical studies, most of which were conducted at the country level. Since countries have different industry structures with varying linkages to the financial sector, results about the FDI-investment nexus can differ across samples and regression specifications.

[25] For example, Prime Minister Viktor Orbán claimed that EU money is not a subsidy because money also leaves Hungary in the form of foreign investment dividends. See also Piketty (2018).

Based on our results, policy makers seeking to stimulate domestic investment might consider attracting FDI into the financial sector. However, as illustrated, simply attracting financial FDI does not seem to suffice. Effective transmission to the non-financial sector requires consideration of the economy's industrial composition and the level of integration between local non-financial industries and the financial sector. The strength of these financial linkages appears to play a crucial role in transmitting the effects of financial FDI. Additionally, policy makers should be cautious about increased investment in the real estate sector, as this carries various risks (e.g. rising property prices, resulting in a loss of long-term competitiveness or even the formation of a housing bubble).

Studying the relationship between FDI and domestic investment at an industry-level for countries with a potential investment shortfall is plagued by considerable empirical challenges, starting with data availability and endogeneity concerns. For our analysis, we have therefore focused on a group of relevant countries for which data is available and suggested two related approaches for modelling financial linkages in the presence of FDI. Those approaches and our results open some possibilities for future research on the role of financial linkages in the FDI-domestic investment relationship. We particularly see two promising avenues for further work: First, with more data becoming available from financial accounts in the system of national accounts, especially on the industry level, new possibilities to model financial linkages will arise. In particular, it may be relevant to include other cross-industry financial linkages beyond the genuine financial sector, which we have focused on in this paper. Second, incorporating firm-level data could prove informative, as this would enable the exploration of financial spill-overs at the firm level. Similar to the firm-level literature on FDI productivity spill-overs, which is based on aggregate (industry-level) input-output linkages, such studies can apply industry-level financial linkage weights like the ones we suggested in our paper. Additionally, such firm-level studies are better suited to addressing concerns related to endogeneity, including simultaneity and reverse causality.

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Appendices

Appendix A1 / Pairwise correlation matrix

Pairwise Correlation Matrix

Variables	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
(1) Domestic investment	1.000								
(2) *FDI*	0.178	1.000							
(3) Financial FDI	0.105	0.215	1.000						
(4) LEND fin. linkages	-0.160	0.002	0.000	1.000					
(5) IO fin. linkages	-0.034	0.067	0.000	0.705	1.000				
(6) Inflation	-0.045	0.104	0.432	0.000	0.000	1.000			
(7) Financial development	0.057	0.009	0.370	0.000	0.000	-0.182	1.000		
(8) Capital price	0.015	-0.002	0.226	0.000	0.000	-0.124	0.472	1.000	
(9) Bank crisis	0.009	-0.035	-0.089	0.000	0.000	0.188	0.310	0.084	1.000

Appendix A2 / List of variables and data sources

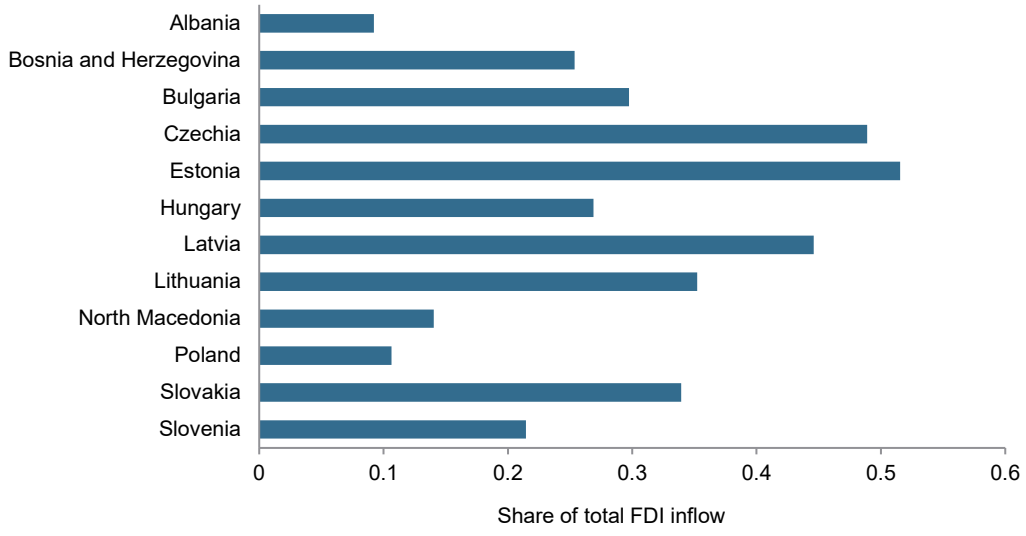
Variable	Description	Source
Domestic investment	GFCF in country *c*, industry *i* and year *t*, as a share of GVA in country *c*, industry *i* at time *t*.	The Vienna Institute for International Economic Studies (wiiw)
FDI	Net FDI in country *c*, industry *i* and year *t*, as a share of GVA in country *c*, industry *i* at time *t*.	The Vienna Institute for International Economic Studies (wiiw)
Financial FDI	Net FDI in country *c* and year *t*, taken from the FDI variable and matched to all other industries *i* in country *c* and year *t*.	The Vienna Institute for International Economic Studies (wiiw)
Capital price	Price level of capital formation in country *c* and year *t*, for which the price level of the US in 2017 equals unity.	Penn World Tables 10.0 (Feenstra et al. 2015)
Inflation	Measured as the annual growth rate of the GDP implicit deflator (ratio of GDP in current local currency to GDP in constant local currency), which shows the rate of price change in the economy as a whole.	World Development Indicators (World Bank 2023)
Financial development	Financial development represents the total domestic credit provided to the private sector measured as a percentage of GDP.	Global Financial Development Database (World Bank 2022)
Bank crisis	Bank crisis is a dummy variable that turns 1 when a banking crisis happens in a given year and country. A banking crisis is defined as when these two necessary conditions are met: i) significant signs of financial distress in the banking system (e.g. losses, liquidations, bank runs) and ii) a significant policy intervention. The end of a crisis requires real GDP growth and real credit growth to be positive for at least two consecutive years.	Global Financial Development Database (World Bank 2022)
LEND financial linkage weights	An average of loan stock weights per industry. Individual weights computed as the loan stock of industry *i* in country *c* and year *t* divided by the total loan stock of country *c* in year *t*.	Bank of Albania, Bulgarian National Bank, Czech National Bank, Eesti Pank, Magyar Nemzeti Bank and Národná banka Slovenska
IO financial linkage weights	The amount of financial service activities in country *c*, received by industry *i* in year *t*, as a share of the total amount of financial service activities received in country *c* at time *t*.	The World Input-Output Database (WIOD). Groningen Growth and Development Centre. State Statistical Office of the Republic of Macedonia.

Appendix A3 / Additive FE model: financial FDI normalised with GDP

	Dependent variable: Domestic investment		
Financial linkage weights:	**(1)**	**(2) LEND**	**(3) IO**
FDI	0.265***	0.264***	0.0850
	(0.083)	(0.083)	(0.074)
Financial FDI	-0.169	-0.665*	-0.624*
	(0.196)	(0.321)	(0.313)
Financial FDI x Financial linkage weights		4.937*	4.292**
		(2.245)	(1.889)
Financial linkage weights		-0.366	0.431**
		(0.301)	(0.173)
Inflation	0.006*	0.006*	0.008***
	(0.003)	(0.003)	(0.002)
Financial development	-0.00004	-0.00005	-0.00059
	(0.000)	(0.000)	(0.000)
Bank crisis	0.010	0.010	0.011
	(0.014)	(0.014)	(0.008)
Capital price	0.232	0.231	0.512***
	(0.143)	(0.143)	(0.129)
Constant	0.142	0.179*	-0.0503
	(0.089)	(0.099)	(0.083)
N	925	925	580
R^2	0.388	0.390	0.431

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country, year and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix A4 / Mean share of FDI flowing into the financial sector for the CEE sample countries



Notes: Figure displays the mean financial FDI inflows per sample country averaged over all years in the sample. The mean value of financial FDI is subsequently divided by the mean value of total FDI inflows per country.
Source: wiiw FDI Database.

Appendix A5 / Baseline regression model limited to IO sample

	Dependent variable: Domestic investment				
Financial linkage weights:	**(1)**	**(2) LEND**	**(3) LEND**	**(4) IO**	**(5) IO**
FDI	0.0886	0.0504	0.0906	0.0395	0.0850
	(0.077)	(0.059)	(0.078)	(0.056)	(0.074)
Financial FDI	-0.179	-0.875	-0.792*	-0.639	-0.595*
	(0.173)	(0.528)	(0.385)	(0.552)	(0.297)
Financial FDI x Financial linkage weights		5.534*	6.121*	3.139	4.097**
		(2.783)	(3.239)	(2.119)	(1.789)
Financial linkage weights		0.500	-0.0058	0.547***	0.431**
		(0.431)	(0.597)	(0.168)	(0.173)
Inflation	0.0081***		0.0081***		0.0081***
	(0.002)		(0.002)		(0.002)
Financial development	-0.0005		-0.0005		-0.0005
	(0.000)		(0.000)		(0.000)
Bank crisis	0.0117		0.0117		0.0115
	(0.008)		(0.008)		(0.008)
Capital price	0.510***		0.510***		0.512***
	(0.129)		(0.129)		(0.129)
Constant	0.314***	0.263***	-0.0048	0.259***	-0.0504
	(0.006)	(0.045)	(0.122)	(0.019)	(0.083)
N	824	824	580	824	580
R^2	0.379	0.384	0.417	0.401	0.431

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country, year and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix A6 / Total effect financial FDI on domestic investment for different levels of industries' financial linkages for Table 4

LEND
column (3)

0	dy/dx	std. err	z	P>z	[90% conf.	interval]
0.05	-0.629	0.306	-2.05	0.040	-1.132	-0.125
0.10	-0.395	0.230	-1.71	0.087	-0.773	-0.016
0.15	-0.161	0.188	-0.85	0.393	-0.470	0.149
0.20	0.073	0.202	0.36	0.717	-0.259	0.406
0.25	0.307	0.263	1.17	0.243	-0.126	0.741
0.30	**0.541**	**0.348**	**1.56**	**0.120**	**-0.031**	**1.114**
0.35	0.775	0.443	1.75	0.080	0.047	1.503
0.40	1.009	0.542	1.86	0.063	0.118	1.901
0.45	1.243	0.644	1.93	0.054	0.184	2.302
0.50	1.477	0.748	1.98	0.048	0.247	2.707
	1.711	0.852	2.01	0.045	0.309	3.113

IO
column (5)

0	dy/dx	std. err	z	P>z	[90% conf.	interval]
0.05	-0.595	0.297	-2.01	0.045	-1.083	-0.107
0.10	-0.390	0.226	-1.73	0.084	-0.761	-0.019
0.15	-0.185	0.173	-1.07	0.283	-0.470	0.099
0.20	0.019	0.157	0.12	0.902	-0.239	0.278
0.25	**0.224**	**0.189**	**1.19**	**0.235**	**-0.086**	**0.535**
0.30	0.429	0.250	1.72	0.086	0.018	0.841
0.35	0.634	0.325	1.95	0.051	0.100	1.168
0.40	0.839	0.406	2.07	0.039	0.172	1.506
0.45	1.044	0.489	2.13	0.033	0.239	1.848
0.50	1.248	0.575	2.17	0.030	0.303	2.194

Appendix A7 / Lagged financial FDI specification

	Dependent variable: Domestic investment			
Financial linkage weights:	**(1) LEND**	**(2) LEND**	**(3) IO**	**(4) IO**
FDI	0.264***	0.278**	0.0850	0.0796
	(0.083)	(0.101)	(0.074)	(0.070)
Financial FDI	-0.629*		-0.595*	
	(0.306)		(0.297)	
Financial FDI t-1		-0.461		-0.676***
		(0.272)		(0.200)
Financial FDI x Financial linkage weights	4.679*		4.097**	
	(2.150)		(1.789)	
Financial FDI t-1 x Financial linkage weights		3.503		3.104**
		(2.090)		(1.181)
Financial linkage weights	-0.365	-0.668	0.431**	0.449**
	(0.301)	(0.381)	(0.173)	(0.186)
Inflation	0.006*	0.006*	0.008***	0.008***
	(0.003)	(0.003)	(0.002)	(0.002)
Financial development	-0.00005	-0.00059	-0.00059	-0.00116
	(0.000)	(0.001)	(0.000)	(0.001)
Bank crisis	0.0101	0.0144	0.0115	0.0144
	(0.014)	(0.014)	(0.008)	(0.009)
Capital price	0.231	0.171	0.512***	0.368
	(0.143)	(0.205)	(0.129)	(0.225)
Constant	0.179*	0.273*	-0.0504	0.0756
	(0.099)	(0.137)	(0.083)	(0.159)
N	925	848	580	522
R^2	0.390	0.392	0.431	0.427

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country, year and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

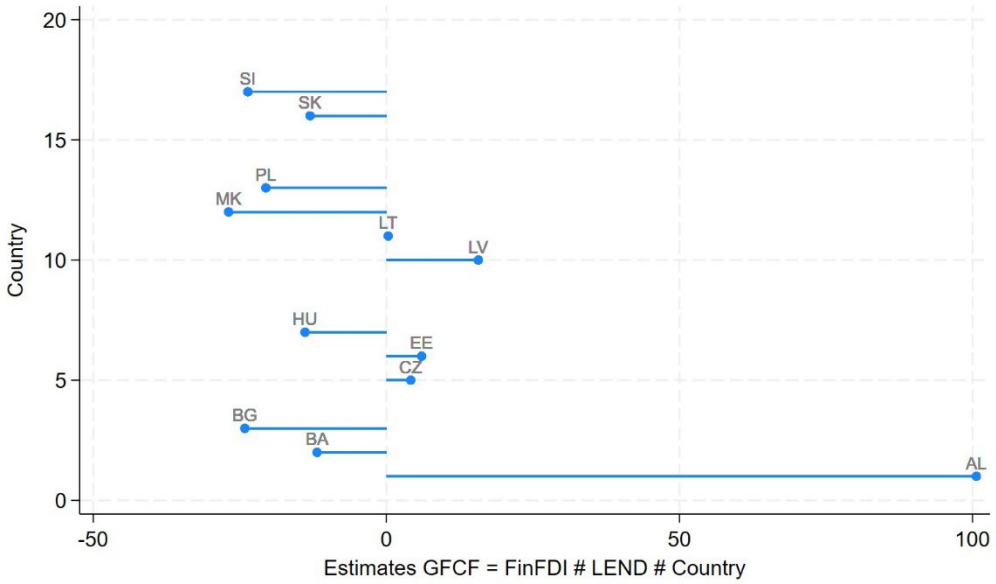
Appendix A8 / Additive fixed effects model with a country- or industry-specific time trend

	Dependent variable: Domestic investment					
Financial linkage weights:	**(1) LEND**	**(2) LEND**	**(3) LEND**	**(4) IO**	**(5) IO**	**(6) IO**
FDI	0.214**	0.218**	0.217**	0.0442	0.0165	0.0212
	(0.077)	(0.087)	(0.087)	(0.056)	(0.053)	(0.053)
Financial FDI	-0.831**	-0.716*	-0.869***	-0.791*	-0.619	-0.769*
	(0.269)	(0.329)	(0.234)	(0.377)	(0.562)	(0.381)
Financial FDI x Financial linkage weights	5.008**	5.431**	5.428**	3.146	2.912	2.917
	(2.257)	(1.859)	(1.864)	(2.124)	(2.094)	(2.100)
Financial linkage weights	-0.0706	0.298	0.299	0.547**	0.511***	0.511***
	(0.221)	(0.215)	(0.215)	(0.168)	(0.147)	(0.148)
Country-specific time trend	Yes	No	Yes	Yes	No	Yes
Industry-specific time trend	No	Yes	Yes	No	Yes	Yes
Constant	-75.87***	-21.15	-95.24**	-236.1***	20.78	-215.2**
	(5.428)	(44.539)	(42.971)	(18.598)	(83.740)	(90.622)
N	1385	1385	1385	824	824	824
R^2	0.373	0.398	0.403	0.405	0.470	0.473

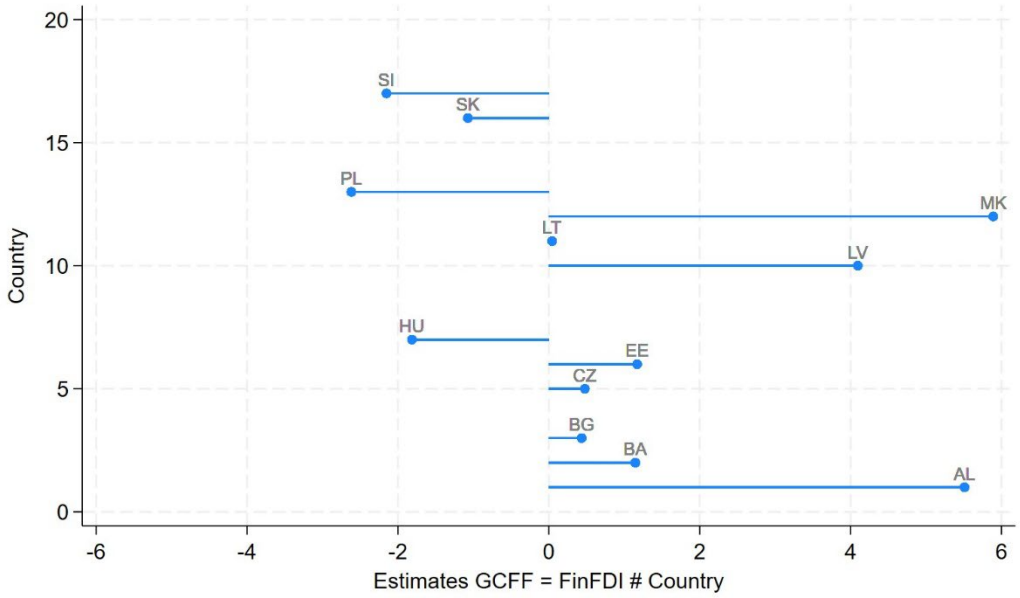
Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country-, year- and industry fixed effects, as well as a combination of country- and sector-specific time trends.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Appendix A9 / Country-specific estimates of effect financial FDI on domestic investment

(a)



(b)



Notes: a) Estimates of regressing domestic investment on a triple interaction of country dummies, financial FDI and the LEND financial linkage weights. b) Estimates of regressing domestic investment on an interaction between country dummies and financial FDI.

Appendix A10 / Robustness checks

Financial linkage weights: LEND	Dependent variable: Domestic investment (1) Baseline	(2) Interaction fin FDI x country dummies	(3) Albania omitted	(4) Albania, North Macedonia & Latvia omitted
FDI	0.264***	0.264***	0.151*	0.110
	(0.083)	(0.084)	(0.072)	(0.123)
Financial FDI	-0.629*	0.656	-0.717**	-0.676**
	(0.306)	(2.494)	(0.284)	(0.232)
Financial FDI x Financial linkage weights	4.679*	4.701*	5.494**	3.937***
	(2.150)	(2.161)	(1.984)	(0.834)
Financial linkage weights	-0.365	-0.368	-0.349	-0.191
	(0.301)	(0.300)	(0.311)	(0.265)
Inflation	0.006*	0.006*	0.006*	0.007
	(0.003)	(0.003)	(0.003)	(0.004)
Financial development	-0.00005	-0.00005	-0.0001	0.00007
	(0.000)	(0.001)	(0.000)	(0.001)
Bank crisis	0.010	0.015	0.010	0.014
	(0.014)	(0.017)	(0.014)	(0.020)
Capital price	0.231	0.238	0.224	0.133
	(0.143)	(0.136)	(0.154)	(0.177)
Financial FDI x country dummies	No	Yes	No	No
Constant	0.179*	0.181	0.185	0.204
	(0.099)	(0.103)	(0.107)	(0.124)
N	925	925	887	777
R^2	0.390	0.392	0.376	0.520

Notes: All standard errors, reported in parentheses, are robust and clustered at the country level. Regressions in table include country, year and industry fixed effects.
* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

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Offenlegung nach § 25 Mediengesetz: Medieninhaber (Verleger): Verein "Wiener Institut für Internationale Wirtschaftsvergleiche", A 1060 Wien, Rahlgasse 3. Vereinszweck: Analyse der wirtschaftlichen Entwicklung der zentral- und osteuropäischen Länder sowie anderer Transformationswirtschaften sowohl mittels empirischer als auch theoretischer Studien und ihre Veröffentlichung; Erbringung von Beratungsleistungen für Regierungs- und Verwaltungsstellen, Firmen und Institutionen.

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