



EUROPEAN CENTRAL BANK

EUROSYSTEM

Working Paper Series

Isabella Moder, Tajda Spital

The protectionist gamble:
How tariffs shape greenfield foreign
direct investment

No 3144

Abstract

Motivated by current events, this paper assesses the impact of tariff increases on bilateral greenfield foreign direct investment (FDI) over the period 2016-2023. Leveraging a comprehensive dataset of announced greenfield investment projects, official FDI statistics, and bilateral product-level tariff data, we estimate a series of gravity equations to uncover key relationships. Our results show that, at an aggregate level, tariff increases are associated with a rise in greenfield FDI, consistent with the tariff-jumping hypothesis. However, this positive effect reverses for greenfield manufacturing FDI, where high-intensity tariff increases significantly deter investment. A sectoral analysis reveals substantial heterogeneity: consumer-facing industries tend to attract more investment following tariff hikes, while input-intensive sectors experience declines. Overall, our findings suggest that using tariffs to stimulate foreign manufacturing investment is a risky strategy.

JEL codes: F13, F21, F23, F68

Keywords: tariffs, greenfield FDI, trade policy, gravity model, protectionism

Non-technical summary

In recent years, tariffs have re-emerged as a prominent policy tool in global trade debates. Governments are increasingly using trade barriers not only for protection, but also to encourage companies to invest domestically. A notable example is the 2025 announcement by US President Trump of high import tariffs, explicitly framed as a way to attract foreign direct investment (FDI) into the United States. This raises important questions about how tariffs affect FDI, a major channel for international capital flows, knowledge transfer, and productivity gains.

This paper explores whether and how increases in tariffs influence greenfield FDI, defined as new investment projects that create productive capacity in the host country. While standard trade theory suggests that tariffs are harmful to growth, welfare, and prices, their impact on FDI is less clear. In some cases, firms may respond to tariffs by shifting production into the protected market, a phenomenon known as “tariff-jumping”. In other cases, especially for firms that rely on cross-border supply chains, tariffs may discourage investment by raising production costs.

For our analysis we use a gravity framework, commonly used in studies investigating the drivers of FDI, to assess the relationship between tariffs and greenfield FDI over the period 2016-2023. Tariff data are sourced from the Global Trade Alert (GTA) database, while greenfield FDI data are drawn from the fDi Markets database, which records announced greenfield investment projects, as well as from official FDI statistics. We also distinguish between all FDI projects and those in manufacturing, and examine sector-specific effects.

Our findings show that, overall, tariff increases are associated with a rise in greenfield FDI, supporting the idea that firms respond to trade barriers by investing in the tariff-increasing country. However, when focusing on manufacturing projects, which are a key concern for policymakers, the effect turns negative for tariff increases that target a large number of products. Moreover, the impact varies across manufacturing sectors.

Our results suggest that while tariffs may appear to stimulate foreign investment in some areas, they can discourage it in others, particularly in manufacturing. The “protectionist gamble” is unlikely to succeed if broad-based tariff increases backfire, driving up supply-chain costs and deterring investment.

1 Introduction

Tariffs have once again risen in prominence in the economic and policy debate. Discussions around industrial and trade policies have intensified in recent years, driven by successive economic crises, rising geopolitical risks, and a growing focus on environmental challenges. In this context, tariffs have gained renewed attention, particularly following efforts by the US Administration under President Trump to impose or threaten broad-based tariffs on trading partners, aimed at re-shoring production to the United States. In an April 2025 speech announcing sweeping import tariffs, President Trump declared, “*Companies will build right here, or pay the price*”, explicitly framing tariffs as a mechanism to attract foreign direct investment into the US.¹

Foreign direct investment (FDI) is an important channel for cross-border capital flows, technology transfer, and productivity gains. Understanding how tariffs affect FDI is therefore of significant policy relevance. While tariff increases are generally associated with negative effects on economic growth, welfare, and prices, their impact on FDI is more ambiguous. Theoretical models typically distinguish between two motives: *market-seeking FDI*, where firms invest in the tariff-imposing country to circumvent high tariffs through “tariff-jumping”, and *efficiency-seeking FDI*, where vertically integrated companies reduce investment when tariffs raise the costs of intermediate inputs. Empirical findings on the relationship between tariffs and FDI remain mixed and relatively sparse, likely reflecting FDI and tariff data limitations in terms of country and sector coverage.

Against this background, this paper is the first to link tariff policy to greenfield FDI intentions, aiming to explore whether the “protectionist gamble” of using tariffs to stimulate inflows of foreign manufacturing investment is likely to succeed. Unlike most prior studies that rely on aggregate FDI flows or stocks and overlook the nuances of investment decisions, we focus on announced greenfield projects to capture firms’ initial strategic responses to trade policy changes, with a particular focus on manufacturing investments. Our approach exploits variation in tariff intensity and disaggregates effects at the sectoral level, using a gravity framework commonly

¹Remarks delivered at the Rose Garden on April 2, 2025. While no formal White House policy memo frames tariffs primarily as an FDI attraction tool, Stephen Miran, former Chair of the Council of Economic Advisers under Trump and now a Federal Reserve Governor, outlined complementary policies in a November 2024 white paper, *A User’s Guide to Restructuring the Global Trading System*, combining tariffs with currency coordination and tax incentives to promote domestic manufacturing investment. Miran’s public remarks further suggest that foreign firms may avoid tariffs by investing directly in US manufacturing, reflecting a deliberate strategy to steer capital away from export models and toward onshore production.

applied in FDI research to assess the relationship between tariffs and greenfield FDI during the period 2016–2023. We distinguish between all FDI projects and those in manufacturing, and further examine sector-specific effects. Tariff data are sourced from the Global Trade Alert (GTA) database, while FDI data are drawn from the fDi Markets database, which records announced greenfield investment projects, as well as from official FDI statistics.

Our analysis reveals three key results. First, tariff increases between 2016 and 2023 are associated with a rise in overall greenfield FDI projects into the tariff-increasing country, suggesting that tariff-jumping motives dominate in the aggregate. This pattern is confirmed using official statistics on bilateral inward FDI stocks, which include mergers, acquisitions, and disinvestment, thereby capturing a broader range of investment activity. Second, when we focus exclusively on greenfield manufacturing projects, the effect reverses: large-scale tariff increases significantly reduce greenfield manufacturing investment, consistent with the dominance of efficiency-seeking motives. Third, we find considerable heterogeneity across manufacturing sectors. While greenfield manufacturing FDI into sectors oriented towards local markets or producing final goods tend to respond positively to tariff increases, greenfield manufacturing FDI into upstream industries that produce intermediate inputs appears to decline. Overall, our findings suggest that using tariffs to stimulate foreign manufacturing investment is a risky strategy. The “protectionist gamble” does not appear to succeed when it comes to attracting greenfield FDI in manufacturing.²

The remainder of the paper is as follows. [Section 2](#) reviews the key strands of literature relevant to our study. [Section 3](#) details the data sources for tariffs and FDI and outlines the empirical framework. [Section 4](#) presents the findings, starting with aggregate greenfield FDI, followed by an analysis of manufacturing projects and sectoral heterogeneity, and includes a complementary examination using official FDI statistics. [Section 5](#) discusses robustness checks. Finally, [Section 6](#) concludes.

2 Related literature

This paper relates to four strands of literature. The first examines *tariffs and macroeconomic outcomes*, focusing on the broad effects of trade barriers on aggregate variables. There is a

²At the same time, domestic firms shielded from foreign competition may expand investment or production capacity, potentially offsetting some of these effects, a mechanism that lies beyond the scope of this paper.

broad consensus that tariffs have adverse effects on output, productivity, employment, and inequality. Empirical studies such as [Furceri et al. \(2018\)](#) and [Barattieri et al. \(2021\)](#) document these negative effects, confirming the classic theoretical insights from trade models such as [Krugman \(1980\)](#) and [Melitz \(2003\)](#), which outline how trade barriers distort resource allocation and diminish gains from specialization.

The second strand covers the theoretical literature on *tariffs and FDI motives*, which identifies opposing effects of tariff increases on FDI. Those effects depend on a firm's motive for investing abroad, and can be broadly classified into either "market-seeking" or "efficiency-seeking" motives ([Blanchard et al. 2021](#)). Market-seeking, also called "tariff-jumping" FDI theories, as first defined by [Markusen \(1984\)](#) and later extended by [Bhagwati et al. \(1992\)](#), [Motta \(1992\)](#), [Blonigen and Ohno \(1998\)](#), and [Cole and Davies \(2011\)](#), suggest that tariff increases encourage FDI aimed at serving local markets, as firms invest directly in foreign markets to substitute for exports that would otherwise be subject to higher trade costs. This behaviour is often associated with horizontal FDI, implying that investments are within the same sector as the investing firm, as highlighted by [Brainard \(1997\)](#) and [Markusen and Venables \(1998\)](#). In contrast, efficiency-seeking FDI theories predict that tariff increases have an adverse impact on FDI. These models typically apply to vertically integrated enterprises that exploit international differences in input prices or factor endowments. As higher tariffs raise the cost of intermediate trade within production networks, they discourage cross-border investment in the tariff-increasing country, as captured by the classic [Helpman \(1984\)](#) framework, developed further by [Antràs \(2004\)](#) and [Helpman et al. \(2004\)](#).³

A third strand highlights the *role of tariff expectations and trade policy uncertainty in shaping investment decisions*. [Caldara et al. \(2020\)](#) show that higher trade policy uncertainty significantly reduces firms' capital expenditure, as uncertainty about the duration and scope of trade barriers discourages irreversible investment. Similarly, [Steinberg \(2025\)](#) and [Alessandria et al. \(2025\)](#) highlight that many of the tariffs introduced during the first Trump administration were widely expected to be short-lived or reversible, limiting firms' incentives to commit to new, long-

³A related strand of the literature examines export-platform FDI, where firms establish subsidiaries not only to serve the host market but also to export to third countries. This literature emphasises how differences in tariff regimes across markets influence the attractiveness of particular investment hubs, beyond horizontal or vertical motives. Theoretical frameworks by [Markusen and Venables \(2000\)](#), [Ekholm et al. \(2007\)](#), [Qiu and Tao \(2001\)](#), [\(Ito 2013\)](#), and [Ekholm et al. \(2007\)](#) explain how firms choose host locations to exploit tariff differentials, while empirical studies (e.g. [Baltagi et al. 2007](#); [Kneller and Pisu 2004](#)) find that investment tends to cluster in regions where firms can efficiently export to multiple markets.

term production capacity. [Wang and Lahiri \(2023\)](#) also document that trade policy uncertainty deters FDI projects, particularly in countries with less predictable regulatory environments, while [Gopinath et al. \(2025\)](#) emphasise that rising geopolitical fragmentation may amplify such effects through shifts in global investment linkages. The role of uncertainty is particularly relevant for our analysis, as it may have made firms reluctant to commit funds during the first Trump administration’s tariff episodes. At the same time, because our data capture announced rather than realised greenfield projects, they reflect firms’ intentions under prevailing policy expectations. If firms viewed tariffs as temporary, they may have announced projects to signal interest or hedge against policy shifts, but later delayed or cancelled their implementation.

Finally, the fourth strand concerns *empirical evidence on the impact of trade barriers on FDI*.⁴ This body of work encompasses both macro-level studies, using cross-country or sectoral panels, and micro-level studies focusing on firms or individual projects. Overall, the conclusions are mixed. Macro-level studies often employ panel gravity models using bilateral FDI and trade policy data, for example [Barry et al. \(2016\)](#), who find that trade barriers can support FDI inflows. At the micro level, firm- and project-level analyses typically emphasise efficiency-seeking motives. [Du et al. \(2014\)](#) demonstrate that tariffs raise input costs and deter FDI entry in Chinese manufacturing, based on firm-level panel regressions. Likewise, [Ghodsi \(2020\)](#) finds that protectionist measures drive investment away from targeted sectors, using firm-level data on multinational affiliates across CESEE countries. Other studies explore how trade costs influence vertical FDI. For instance, [Hanson \(2001\)](#) examine how US multinationals respond to tariffs and transport costs using affiliate-level data. They find that higher trade costs are associated with increased local sales by affiliates - consistent with tariff-jumping behaviour - but also that firms reduce their reliance on imported intermediates, limiting vertical integration. In addition, [Alfaro et al. \(2019\)](#) explain how multinationals internalise global value chains in response to trade barriers, while [Head and Mayer \(2014\)](#) use gravity models to examine similar dynamics. However, some micro-level studies find a positive impact of tariff increases on FDI. For instance, [Cardamone and Scoppola \(2015\)](#) use a dynamic GMM panel approach to show that moderate tariff protection can encourage FDI in the Italian manufacturing sector as a substitute for trade, consistent with the tariff-jumping hypothesis. Similarly, [Blonigen \(2002\)](#) employs event-study methods to document tariff-jumping FDI in response to US antidumping actions in the steel

⁴For a broader overview of FDI determinants beyond tariffs, see [Blonigen \(2005\)](#).

industry.

Altogether, the existing literature on the impact of tariffs on FDI reveals mixed and context-dependent outcomes. On one hand, tariffs may trigger market-seeking (tariff-jumping) FDI when firms aim to serve increasingly protected consumer markets. On the other hand, they can discourage efficiency-oriented investment, particularly in supply-chain-intensive industries. The heterogeneity in empirical findings likely reflects both limitations in FDI and bilateral tariff data and sectoral differences in FDI motivations. To the best of our knowledge, there is no macro-level study that examines how greenfield FDI responds to tariff increases - the main contribution of our paper. In doing so, we focus solely on cross-border investment responses, leaving potential effects on domestic investment and firm competitiveness to future research.

3 Empirical approach

3.1 Data

To assess the impact of tariffs on FDI, we combine multiple data sources. Tariff increases are identified using the Global Trade Alert (GTA) database, which tracks bilateral changes in tariff measures at a detailed product level across countries, as described in [Section 3.1.1](#). We link this information to greenfield FDI data from the commercial fDi Markets database, which captures announced greenfield investment projects based on company disclosures, as detailed in [Section 3.1.2](#). To complement our analysis, we also use the OECD’s bilateral FDI statistics derived from national sources.

3.1.1 Data on tariffs

Tariff measures

To identify tariff increases, we use product-level trade policy data from the Global Trade Alert (GTA) database.⁵ The GTA records measures at the six-digit HS level, treating each product-specific tariff measure as a separate policy action. We focus on measures classified as tariffs and labelled “red”, indicating an increase in the tariff rate. Unfortunately, the database does not

⁵Publicly available data sources on tariff schedules, such as WITS, have significant limitations, as they fail to record bilateral tariff rates when changes are temporary, politically motivated, or implemented under national trade laws. They therefore do not fully capture the US tariff increases and related retaliatory actions during the first Trump presidency. See also [Teti \(2024\)](#).

Table 1: Summary statistics

Variable	Mean	Std. Dev.	Min	Max
<i>Tariffs</i>				
Absolute	21.600	182.508	0	4,781
Single dummy	0.083	0.276	0	1
Low-intensity dummy	0.038	0.191	0	1
Medium-intensity dummy	0.038	0.191	0	1
High-intensity dummy	0.008	0.087	0	1
<i>Harmful non-tariff measures (NTMs)</i>				
Absolute	13.153	231.030	0	22,559
Single dummy	0.132	0.338	0	1
Low-intensity dummy	0.079	0.270	0	1
Medium-intensity dummy	0.042	0.201	0	1
High-intensity dummy	0.011	0.104	0	1
<i>FDI</i>				
Number of FDI projects (fDi Markets)	0.482	5.686	0	537
Stock of inward FDI (OECD)	3,554.103	29,198.050	0	1,013,408

Notes: NTMs are non-tariff trade measures as described in [Section 3.1.1](#). All statistics are based on the country-pair-year panel used in the main regressions.

provide information on the magnitude of tariff increases or the trade volume affected.

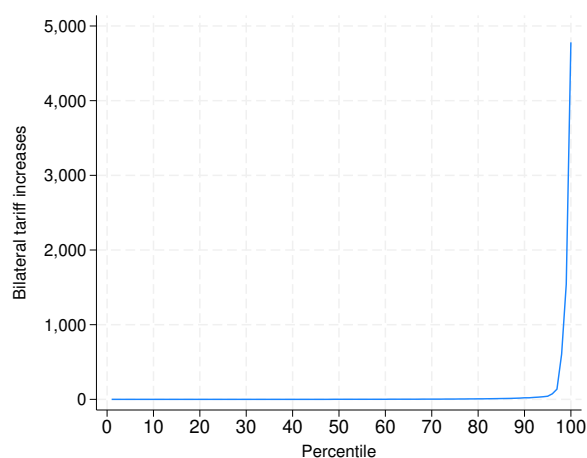
We construct two types of treatment variables. First, we define a binary indicator equal to one if at least one product-level tariff increase is recorded for a given country pair in a given year. A limitation of this single-dummy specification is that it does not reflect the number of product-level increases.⁶ To address this, we also account for the intensity of tariff increases by introducing a set of categorical dummies based on the distribution of tariff increases for each country–year pair.

As shown in [Table 1](#) and [Figure 1](#), the distribution of bilateral tariff increases is highly skewed. In over 90% of observations, no tariff increases occurred in a given year. We therefore classify tariff shocks into three categories:

- **Low intensity** ($k = 1$): up to the 95th percentile (1–3 measures)
- **Medium intensity** ($k = 2$): 96th–99th percentile (4–1,541 measures)
- **High intensity** ($k = 3$): 100th percentile ($>1,541$ measures)

⁶Alternatively, the total count of tariff increases could be used as a continuous variable. However, since this variable must enter the specification in logarithmic form, zero observations—which account for over 90% of the sample—would be dropped.

Figure 1: Percentile plot of bilateral GTA tariff increases



Notes: The chart shows the percentile distribution of product-level tariff measures across country pairs between 2016 and 2023.

The number of tariff measures peaked in 2018, as shown in the left panel of [Figure 2](#). More than half of all country pairs experienced low-intensity tariff activity, while medium-intensity cases were less frequent, and high-intensity shocks were rare, mainly observed in 2018 and 2019, as shown in the right panel of [Figure 2](#).

In all specifications, we focus exclusively on gross tariff increases and disregard simultaneous tariff liberalisations. This choice reflects the expectation of an asymmetric FDI response: while tariff hikes may encourage tariff-jumping FDI, tariff liberalisations are unlikely to reduce greenfield investment to the same extent.

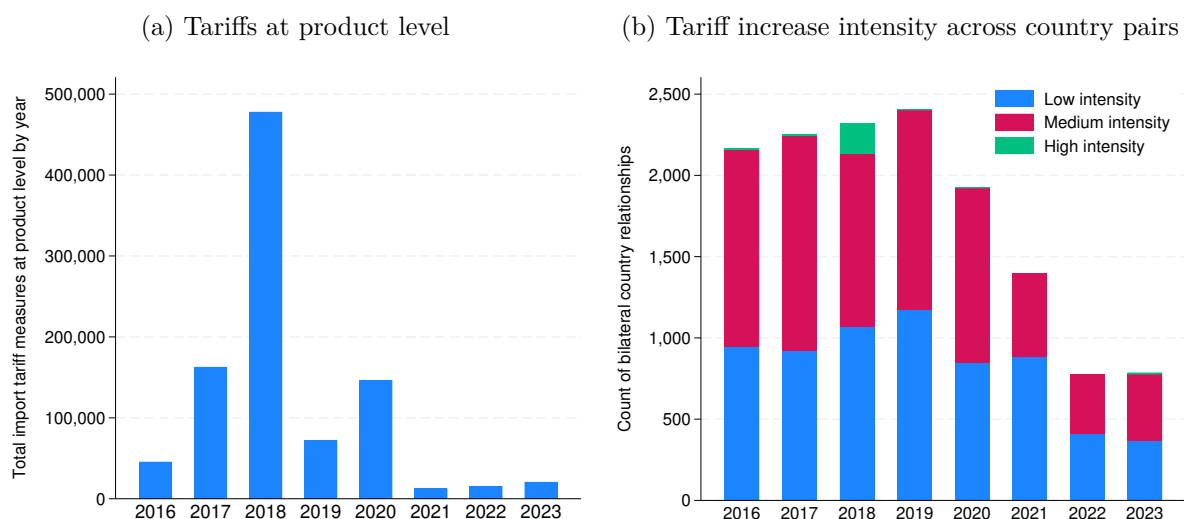
Non-tariff trade measures

In addition to tariffs, the GTA also records other trade policy measures. To account for these, we construct a parallel set of dummy variables for harmful non-tariff trade measures (NTMs), most commonly subsidies (e.g. financial grants), local content requirements in procurement, and tax-based export incentives.

As with tariffs, we distinguish between three levels of NTM intensity:

- **Low intensity** ($k = 1$): up to the 95th percentile (1–10 measures)
- **Medium intensity** ($k = 2$): 96th–99th percentile (11–155 measures)
- **High intensity** ($k = 3$): 100th percentile (>155 measures)

Figure 2: GTA tariff data



Notes: The left panel shows bilateral tariff measures at the product level, aggregated by year. The right panel shows the intensity of bilateral tariffs in each year, with each country pair counted as one observation for that year.

We also control for the presence of bilateral preferential trade agreements using data from the DESTA database (Dür et al. 2014), as well as for whether both countries are EU members.

Sector level tariff mapping

For the sectoral analysis, we match the GTA's product-level tariff and NTM data (available at HS6 level) to ISIC Rev. 4 manufacturing sectors. Because sector-specific tariff increases are relatively infrequent, we use a single binary indicator for each sector–year pair, equal to one if at least one tariff or NTM was imposed bilaterally in that sector and year.

3.1.2 Data on FDI

Greenfield FDI by fDi Markets

Our primary data source for greenfield FDI is the *fDi Markets database* from the Financial Times. This commercial dataset provides project-level information on announced greenfield investment. By focusing on greenfield FDI, it exclusively captures investments that expand the productive capacity of the host economy through fixed capital formation, either by establishing new entities or expanding existing ones. As such, it is closely aligned with the real economic activity that is the focus of this paper.

The database includes information on business activity and project sectors, enabling us to

assess the impact of tariffs on FDI across different activities and industries. Following most of the literature ([Breinlich et al. 2020](#); [Ruta and Sztajerowska 2025](#)), we use the count of announced projects rather than their cumulative values. This choice is motivated by the fact that project values in fDi Markets are often estimated based on typical project size by sector and country, which may introduce bias due to measurement error. By using count data, our analysis captures the extensive margin of FDI responses to tariffs - that is, how tariff increases affect the number of investment projects - rather than changes in the average investment size.

For our aggregate analysis, we first use the total count of FDI projects. Subsequently, we focus on manufacturing, as increased investment in manufacturing is a key objective of the current US administration's widespread use of tariffs (see [Section 1](#)). The fDi Markets database reports the *business function* of each project, defined as the activity to be carried out at the new facility once completed. Notably, manufacturing as a business function accounts for only about 15% of all projects during our sample period, as shown in [Table 2](#).

Table 2: Distribution of business functions among greenfield FDI projects

Business function	Frequency	Percent
Sales, marketing & support	33,342	24%
Business services	27,527	20%
Manufacturing	21,248	15%
Retail	17,009	12%
Research & development	9,819	7%
Logistics, distribution & transport	8,250	6%
Headquarters	6,659	5%
Construction	4,330	3%
Other	10,915	8%
Total	139,099	100%

Note: Based on all greenfield investment projects recorded in the *fDi Markets* database for 2016–2023.

We examine the impact of tariff increases on both the aggregate number of greenfield FDI projects in manufacturing and the number of greenfield FDI projects in specific manufacturing sectors. For the sector-level analysis, we match the project-level sectoral classifications in fDi Markets to the ISIC Rev. 4 system, allowing us to compute bilateral project counts at the two-digit ISIC level.

The fDi Markets dataset has two notable limitations. First, it records announced projects only and does not track their actual implementation. While announcement data provide timely

insights into firms' forward-looking investment decisions, they may overstate eventual implementation if trade policies are perceived as transitory or subject to reversal. Firms may also use announcements strategically to hedge against policy shifts, without intending to follow through on their commitments. Second, the dataset does not provide information on potential disinvestment, which may be a relevant response to rising trade barriers.

Total FDI by OECD

To complement the analysis based on announced projects, we use bilateral FDI data from the OECD, which capture realised investment activity. Specifically, we use inward FDI stock data, derived from official national statistics. Because our estimation framework requires a non-negative dependent variable, we follow the literature (e.g. [Larch and Yotov 2025](#)) in using stocks rather than flows, which can take negative values.

Compared with *fDi Markets*, the OECD dataset reflects realised investments and incorporates both new inflows and disinvestments. It thus captures both the extensive and intensive margins of FDI, whereas *fDi Markets* captures only the extensive margin (i.e. the number of new projects). Previous research (e.g. [Aiyar et al. 2024](#)) finds a relatively high correlation between *fDi Markets* and official FDI statistics, supporting the informational value of announcement-based data. Combining both datasets therefore provides a more comprehensive picture of how tariffs affect foreign investment decisions.

However, the OECD data do not distinguish between greenfield investment and other forms of FDI, such as mergers and acquisitions or intra-group restructuring. In addition, coverage is limited: only 38 OECD members and selected partner countries report bilateral FDI stock data, compared with over 200 destination countries covered by *fDi Markets*.

Time period, panel structure and data coverage

Our analysis covers the years 2016–2023, a period marked by a pronounced shift toward trade protectionism, beginning with the election of US President Trump and culminating in the largest wave of tariff actions in decades (before the 2025 Trump announcements). This period is particularly suited to studying the effects of tariffs on greenfield FDI, as it captures both the escalation of trade barriers and firms' strategic responses to heightened policy uncertainty. It also encompasses major shocks such as the US-China trade war and the COVID-19 pandemic, which reshaped global investment patterns. We exclude data prior to 2016, as earlier years were char-

acterised by relative trade stability, limited tariff variation, and the absence of the politically driven protectionism that defines the post-2016 period. The results based on this full 2009-2023 sample are part of the robustness checks.

The final panel based on fDi Markets data is strongly balanced and covers 36,218 country pairs (182 source and 199 destination countries) over eight years. For the sector-level analysis, we distinguish between 22 manufacturing sectors and obtain estimates for 15 sectors with sufficient data coverage. By contrast, the panel based on OECD bilateral inward FDI stocks covers 8,982 country pairs over eight years but includes missing observations and is therefore unbalanced.

3.2 Empirical model

The impact of tariff increases on greenfield FDI projects is empirically tested using a gravity framework, the workhorse model in the literature for studying the determinants of FDI (see e.g. [Kox and Rojas-Romagosa 2020](#); [Larch and Yotov 2025](#)).

We start with the following baseline specification:

$$\text{FDI}_{ij,t} = \exp \left\{ \theta_1 \text{Tariff}_{ji,t-1} + \theta_2 \text{Tariff}_{ji,t} + \theta_3 \text{Tariff}_{ji,t+1} + \mu_1 \text{NTM}_{ji,t-1} + \mu_2 \text{NTM}_{ji,t} + \mu_3 \text{NTM}_{ji,t+1} + \delta \text{PTA}_{ij,t} + \nu \text{intraEU}_{ij,t} + \text{FE}_{i,t} + \text{FE}_{j,t} + \text{FE}_{ij} \right\} u_{ij,t} \quad (1)$$

where $\text{FDI}_{ij,t}$ represents the number of greenfield FDI projects from source country i to destination country j in year t . $\text{Tariff}_{ij,t-1}$, $\text{Tariff}_{ij,t}$, and $\text{Tariff}_{ij,t+1}$ are dummy variables that capture tariff increases imposed by FDI-destination country j on imports from FDI-source country i , included with one-year lags, contemporaneous values, and one-year leads to account for delayed, immediate, and anticipatory effects. These dummies take the value one if the destination country implemented at least one “red” tariff measure in year $t - 1$, t , or $t + 1$ against the source country. We apply the same structure for harmful non-tariff measures (NTMs): $\text{NTM}_{ji,t-1}$, $\text{NTM}_{ji,t}$, and $\text{NTM}_{ji,t+1}$.

To control for other factors influencing FDI, we include dummy variables for preferential trade agreements ($\text{PTA}_{ij,t}$) and intra-EU FDI ($\text{intraEU}_{ij,t}$). Source-time ($\text{FE}_{i,t}$), destination-time ($\text{FE}_{j,t}$), and country-pair (FE_{ij}) fixed effects are included to account for unobserved heterogeneity, such as common legal frameworks or colonial ties. For example, destination-time fixed effects capture policies like the Inflation Reduction Act in the United States, which could affect

inward greenfield investment.

As discussed in [Section 3.1](#), we extend the baseline model by differentiating between the intensity of tariff increases using multiple dummies:

$$\text{FDI}_{ij,t} = \exp \left\{ \sum_{k=1}^3 \left(\theta_1^k \text{Tariff}_{ji,t-1}^k + \theta_2^k \text{Tariff}_{ji,t}^k + \theta_3^k \text{Tariff}_{ji,t+1}^k + \mu_1^k \text{NTM}_{ji,t-1}^k + \mu_2^k \text{NTM}_{ji,t}^k + \mu_3^k \text{NTM}_{ji,t+1}^k \right) + \delta \text{PTA}_{ij,t} + \nu \text{intraEU}_{ij,t} + \text{FE}_{i,t} + \text{FE}_{j,t} + \text{FE}_{ij} \right\} u_{ij,t} \quad (2)$$

where $k = 1, 2, 3$ correspond to low-, medium-, and high-intensity tariff increases. Each dummy equals one if destination country j implemented the corresponding number of “red” tariff measures against source country i . We again include the same lagged, contemporaneous, and lead dummies for tariffs and harmful NTMs. While this richer dummy structure allows us to capture the intensity of tariff actions - that is, the number of products affected - it does not control for the magnitude of the tariff change or the value of trade covered by each measure.

Control variables for preferential trade agreements ($\text{PTA}_{ij,t}$) and intra-EU FDI ($\text{intraEU}_{ij,t}$) are included, along with the same set of fixed effects as in [Equation \(1\)](#).

The sectoral version of the model is estimated as follows:

$$\text{FDI}_{ijs,t} = \exp \left\{ \theta_1 \text{Tariff}_{jis,t-1} + \theta_2 \text{Tariff}_{jis,t} + \theta_3 \text{Tariff}_{jis,t+1} + \mu_1 \text{NTM}_{jis,t-1} + \mu_2 \text{NTM}_{jis,t} + \mu_3 \text{NTM}_{jis,t+1} + \delta \text{PTA}_{ij,t} + \nu \text{intraEU}_{ij,t} + \text{FE}_{i,t} + \text{FE}_{j,t} + \text{FE}_{ij} \right\} u_{ijs,t} \quad (3)$$

where $\text{FDI}_{ijs,t}$ denotes greenfield FDI projects in manufacturing sector s . Tariff and NTM variables are matched to products in the same sector. The model includes the same controls as before, and we estimate separate regressions for each manufacturing sector s . The fixed effects $\text{FE}_{i,t}$, $\text{FE}_{j,t}$, and FE_{ij} capture sector-specific unobserved heterogeneity and are allowed to vary across sectors. Because the number of sector-level tariff increases is limited, we do not differentiate between tariff intensities but rather use a single binary indicator equal to one if at least one bilateral tariff increase occurred in sector s during year t .

All models are estimated using the Poisson Pseudo Maximum Likelihood (PPML) estimator, which offers several advantages, most notably its ability to handle zero-valued dependent variables ([Santos Silva and Tenreyro 2006](#); [Santos Silva and Tenreyro 2011](#)).

4 Results

4.1 Impact of tariff increases on greenfield FDI projects

4.1.1 Aggregate results

Using a single dummy to capture all tariff increases suggests that tariff increases indeed lead to an increase in the number of greenfield FDI projects (Table 3, column (1)), pointing towards the tariff jumping hypothesis.⁷ The coefficients on the lag and the lead are positive and significant, indicating both delayed and anticipatory effects, potentially reflecting tariff announcements. Transforming the two significant coefficients into semi-elasticities suggests that the number of announced greenfield FDI projects increases by around 4% following a tariff increase in the previous year, and in anticipation of a tariff increase in the following year, irrespective of the intensity of the tariff increase.⁸

Table 3: Summary of regression results for aggregate FDI projects (*fDi Markets*)

Dependent variable:	(1)	(2)	(3)	(4)
FDI projects	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	0.039**	0.018	0.061***	0.214***
$Tariff_{ji,t}$	0.022	0.015	−0.014	0.025
$Tariff_{ji,t+1}$	0.039**	0.037*	0.023	−0.010
Observations	36.218	36.218	36.218	36.218
R-squared	0.85	0.85	0.85	0.85

Notes: Table reports coefficients from Poisson Pseudo Maximum Likelihood regressions of greenfield FDI projects on tariff increase dummies. Each column corresponds to a specification using aggregate, low-, medium-, or high-intensity tariff increases. The model includes lagged, contemporaneous, and lead effects, non-tariff measures, preferential trade agreements, and fixed effects as described in Section 3.2. Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

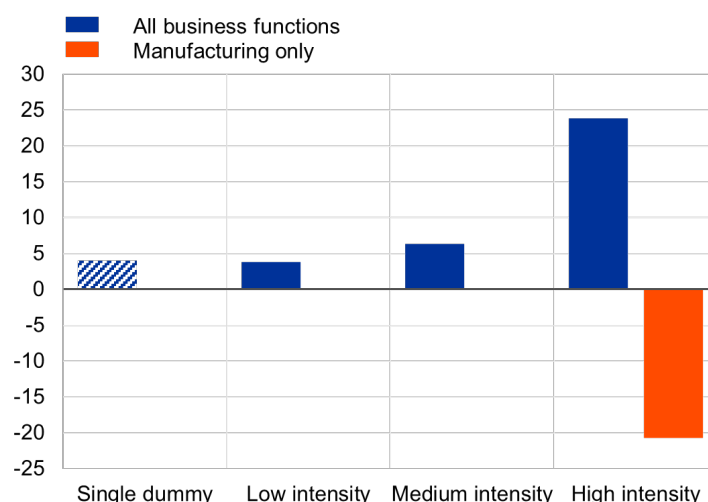
Distinguishing between the intensity of tariff increases (Table 3, columns (2)-(4) and Figure 3) suggests that the tariff-jumping effect is driven by the impact of medium- and high-intensity tariff increases on the number of FDI projects. A medium-intensity tariff increase (between 4 and 1,541 tariff increases at the product-level) boosts the number of FDI projects by around 6% in the following year, while a high-intensity tariff increase (more than 1,541 product-level tariff measures) pushes the number of announced greenfield FDI projects up by around 24% in the following year.

⁷Full results can be found in Table A.1 in the appendix.

⁸The coefficients are transformed into semi-elasticities using $(e^{\text{coeff}} - 1) \times 100$.

Overall, our results of the impact of tariff increases on the total number of announced greenfield FDI projects support the tariff-jumping hypothesis, particularly for higher intensities of tariff increases. In the next two subsections, we first focus on projects with the business function of manufacturing, and then provide an individual assessment for different manufacturing sectors.

Figure 3: Impact of tariff increases on number of FDI projects



Notes: The figure displays estimated semi-elasticities derived from Poisson Pseudo Maximum Likelihood (PPML) coefficients of regressions linking the number of greenfield FDI projects to tariff increase dummies. Semi-elasticities are computed from the estimated coefficients to represent the percentage change in the expected number of new FDI projects associated with a tariff increase. Results are shown separately for all projects (blue bars) and for manufacturing projects only (red bars). For each group, the first bar corresponds to the specification using a single tariff-increase dummy, while the next three bars capture low-, medium-, and high-intensity tariff increases, respectively. Positive coefficients indicate that higher tariffs are associated with an increase in project numbers (consistent with tariff-jumping behaviour), whereas negative coefficients imply a decline in project numbers (consistent with efficiency-seeking motives). (***) significant at the 1% level; (**) significant at the 5% level; (*) significant at the 10% level.

4.1.2 Impact on manufacturing projects

We re-run [Equations \(1\) and \(2\)](#), but include only the number of FDI projects whose main purpose, once completed, is the production of goods (i.e., projects classified under the business function of manufacturing).

The results suggest that tariff increases do not affect greenfield manufacturing FDI when using a single dummy, as the coefficient is statistically insignificant (column (1) in [Table 4](#)).⁹

When distinguishing between the respective intensities ([Table 4](#), columns (2)-(4)), the coefficients of the tariff dummies remain insignificant for the low- and medium-intensity tariff

⁹Full results can be found in [Table A.2](#) in the appendix.

increases. In contrast, the coefficient for a high intensity tariff increase turns strongly negative and is highly significant. Thus, a high-intensity tariff increase -targeting more than 1541 products within one year - lowers the number of greenfield manufacturing FDI projects by around 21%. This stands in stark contrast to the aggregate results discussed in the previous subsection, which showed that a high-intensity tariff increase raises the total number of greenfield FDI projects (irrespective of business function) by about 24%.

Overall, while the impact of high intensity tariff increases on the aggregate number of greenfield FDI projects is positive, suggesting tariff-jumping behaviour, it is highly negative for manufacturing projects. Tariff increases appear to deter investment into greenfield manufacturing FDI, pointing to efficiency-seeking motives, likely because higher tariffs raise the costs of imported intermediate inputs, making the production location less attractive in a world of highly integrated global value chains.¹⁰ Using tariffs as a tool to boost greenfield manufacturing investment is therefore a risky strategy that may backfire in the case of large-scale tariff increases.

Table 4: Summary of regression results for manufacturing FDI projects (*fDi Markets*)

Dependent variable: FDI projects in manufacturing	(1) Aggregate	(2) Low intensity	(3) Medium intensity	(4) High intensity
$Tariff_{ji,t-1}$	-0.025	-0.025	-0.061	-0.042
$Tariff_{ji,t}$	-0.044	-0.012	-0.077	-0.232***
$Tariff_{ji,t+1}$	0.032	0.052	0.044	-0.025
Observations	14.919	14.919	14.919	14.919
R-squared	0.64	0.64	0.64	0.64

Notes: Table reports coefficients from Poisson Pseudo Maximum Likelihood regressions of greenfield FDI projects in manufacturing on tariff increase dummies. Each column corresponds to a specification using aggregate, low-, medium-, or high-intensity tariff increases. The model includes lagged, contemporaneous, and lead effects, non-tariff measures, preferential trade agreements, and fixed effects as described in [Section 3.2](#). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

4.1.3 Results for individual manufacturing sectors

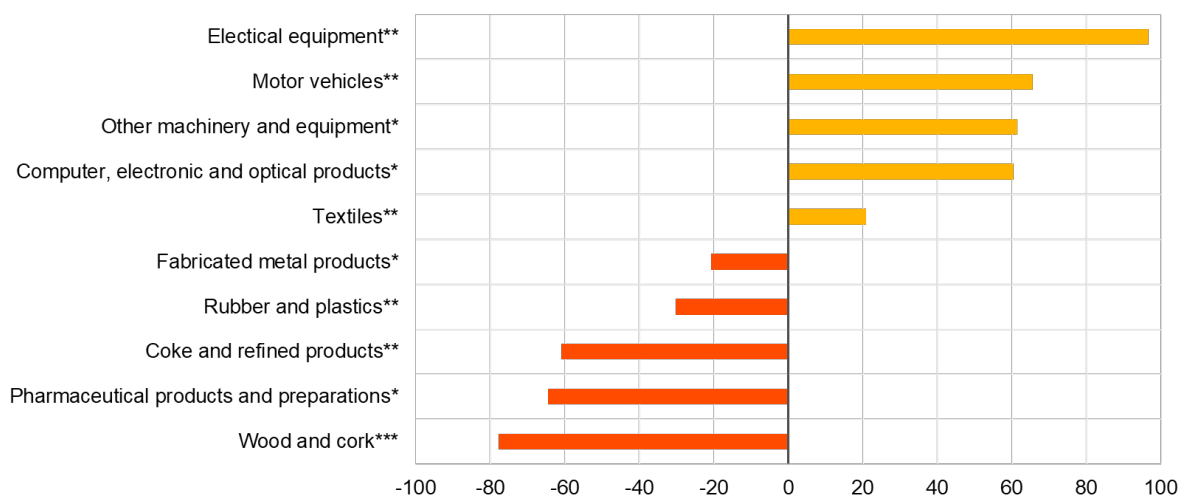
We continue by estimating [Equation \(3\)](#) separately for the respective manufacturing sectors. For seven sectors (beverages, tobacco products, wearing apparel, leather and related products, printing and reproduction of recorded media, other transport equipment and furniture), the

¹⁰The impact of tariff increases on FDI projects associated with business functions other than manufacturing (listed in [Table 2](#)) is generally insignificant or positive. An exception is FDI projects in construction, where the impact of tariff increases is even more negative than for manufacturing. Detailed regression results are available upon request.

number of observations and/or variation in the data is insufficient to obtain reliable estimates.

The sectoral estimations reveal substantial heterogeneity in how tariffs affect greenfield FDI across industries (see summary in [Figure 4](#) and full results in [Tables A.3 - A.6](#) in the appendix). Specifically, positive effects are found for textiles, motor vehicles, computers, electrical equipment and machinery. With the exception of textiles manufacturing, these sectors tend to be oriented toward local markets and often produce final goods.¹¹ Their relatively flexible production models may make tariff-jumping investment an attractive strategy, prompting firms to relocate to or expand operations within the tariff-imposing country. For instance, high tariffs on motor vehicles can incentivise foreign car producers to set up local production facilities to avoid tariff costs on imports of final cars, meet domestic demand and comply with local content requirements, while benefiting from economies of scale in large consumer markets. For computer, electronic and optical products, as well as electrical equipment and machinery, the need to meet country-specific technical standards and consumer customisation demands may encourage firms to invest directly in foreign markets when trade barriers rise.

Figure 4: Impact of tariff increases on the number of greenfield FDI projects in manufacturing sectors



Notes: The figure reports estimated semi-elasticities derived from PPML coefficients of sector-specific regressions based on [Equation \(3\)](#). Each bar represents the estimated percentage change in the expected number of greenfield FDI projects in a given manufacturing sector following a tariff increase. Positive elasticities indicate that higher tariffs are associated with an expansion in FDI projects (tariff-jumping), while negative elasticities indicate a contraction in investment (efficiency-seeking). (***) significant at the 1% level; (**) significant at the 5% level; (*) significant at the 10% level.

¹¹Sector 13 of ISIC4 is defined as “Manufacture of textiles” and includes only textile materials and products, not the manufacture of apparel and footwear, which are classified in a different ISIC section.

In contrast, several sectors show a negative FDI response to tariffs, including wood, refined petroleum products, rubber and plastic products, fabricated metals and pharmaceuticals. Many of these industries are upstream and produce intermediate inputs. Their capital-intensive nature and limited orientation toward local consumer markets may reduce the appeal of locating production in tariff-imposing countries. In pharmaceuticals, despite being consumer-facing, investment decisions are often driven more by regulatory frameworks, supply chain integration, and access to specialised inputs than by proximity to end markets.

In conclusion, the results for individual manufacturing sectors show that the impact of tariff increases on FDI is highly heterogeneous. The analysis also provides initial insights into potential mechanisms behind these differences, which merit further exploration in future research.

4.2 Impact on the stock of inward FDI

Finally, we re-run the analysis of [Section 4.1.1](#) using data on the bilateral FDI inward stock from the OECD. As discussed in [Section 3.1.2](#), these data serve as a complement to the greenfield FDI data from *fDi Markets*, which have certain limitations. While we can compare the results of the aggregate regressions corresponding to [Equations \(1\)](#) and [\(2\)](#), OECD data do not allow us to separately identify greenfield manufacturing projects, let alone individual manufacturing sectors.

The coefficient for the contemporaneous impact of tariff increases on the bilateral inward FDI stock is positive, but only marginally significant when using a single dummy for all tariff increases ([Table 5](#), column (1)).¹²

Table 5: Summary of regression results for aggregate FDI stocks (*OECD*)

Dependent variable:	(1)	(2)	(3)	(4)
FDI stock (USD million)	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	0.024	0.057**	−0.010	0.001
$Tariff_{ji,t}$	0.051*	0.104***	−0.006	0.034
$Tariff_{ji,t+1}$	0.009	0.061	0.003	−0.081
Observations	17.319	17.319	17.319	17.319
R-squared	0.99	0.99	0.99	0.99

Notes: Table reports coefficients from Poisson Pseudo Maximum Likelihood regressions of bilateral FDI stocks on tariff increase dummies. Each column corresponds to a specification using aggregate, low-, medium-, or high-intensity tariff increases. The model includes lagged, contemporaneous, and lead effects, non-tariff measures, preferential trade agreements, and fixed effects as described in [Section 3.2](#). Significance levels: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

¹²Full results can be found in [Table A.7](#) in the appendix.

When distinguishing between different tariff-increase intensities (Table 5, columns (2)-(4)), the coefficient for low-intensity tariff increases becomes larger and more significant. It suggests that a low-intensity tariff increase raises the inward FDI stock by around 11% in the same year, and by about 6% in the following year, compared to the baseline with no tariff changes. This effect appears to be sizeable - however, it is important to recall that total FDI stocks include not only greenfield investment but also mergers and acquisitions (i.e., transactions involving existing equity) as well as intra-firm financial restructuring (i.e., the reallocation of funds across affiliates of multinational groups). Without data distinguishing bilateral *greenfield* FDI, it is therefore unclear whether tariff increases truly stimulate new productive investment in the tariff-imposing country or whether they primarily affect other forms of FDI.

For higher intensities of tariff increases, the impact on the inward FDI stock becomes statistically insignificant. This contrasts with the findings for greenfield FDI projects presented in the previous section. One possible explanation is that large-scale tariff increases might prompt disinvestment or divestment that offsets new inflows, thereby dampening the overall effect on the FDI stock.

While OECD data on bilateral inward FDI stocks should be seen as a complement rather than a substitute for the *fDi Markets* data on announced greenfield projects, the results based on OECD data nevertheless point toward a modest tariff-jumping effect for aggregate FDI flows.

5 Robustness checks

To assess the reliability of our main findings, we perform a series of robustness checks. These checks confirm that the main results hold under alternative sample specifications and when mitigating the influence of potential outliers.

Excluding major tariff-imposing countries

We first exclude the United States as a tariff-imposing destination country of FDI. The aggregate results remain robust across all dependent variables: the total number of greenfield FDI projects, the number of greenfield manufacturing FDI projects, and the inward FDI stock (Tables A.8 and A.9). Sectoral results are also broadly consistent with the baseline.

Next, we exclude China as a tariff-imposing destination country. The aggregate results again remain robust for both total and manufacturing FDI project counts (Table A.10). Since China is

not a reporting country in the OECD dataset on inward FDI, no robustness check is conducted for the FDI stock in this case. The sectoral results are also broadly robust, similar to the findings for the United States.¹³

Winsorizing outliers

The distribution of both the dependent variables (number of greenfield FDI projects and bilateral inward FDI stock) and the independent tariff measures from GTA dataset is highly skewed, as discussed in [Section 3.1](#). To ensure that our results are not driven by extreme outliers, we winsorize the top 0.1% of observations. This adjustment reduces the maximum number of total FDI projects from 537 to 72, the maximum number of manufacturing FDI projects from 126 to 15, and the maximum bilateral FDI stock from USD 1,013 billion to USD 526 billion.¹⁴ The results are summarised in [Tables A.11](#) and [A.12](#), confirming that the main findings remain robust to excluding extreme outliers. However, the magnitude of the coefficient for high-intensity tariff increases becomes somewhat smaller, consistent with the removal of extreme observations associated with large investment episodes.

6 Conclusion

This paper is the first to link tariff policy to greenfield FDI intentions and to assess whether the “protectionist gamble” - using tariffs to stimulate greenfield manufacturing investment - is likely to succeed. Unlike most previous studies that focus on aggregate FDI flows or stocks and overlook the nature of investment decisions, we analyse announced greenfield projects to capture firms’ early strategic responses to trade policy changes, with a particular focus on manufacturing projects. Our approach also exploits variation in tariff intensity and disaggregates effects at the sectoral level.

The econometric analysis, based on gravity-type regressions, reveals a positive relationship between tariff increases and the aggregate number of announced bilateral greenfield FDI projects, particularly for high-intensity tariff increases. This finding supports the tariff-jumping hypoth-

¹³Sector-level results are omitted for brevity but are available upon request.

¹⁴Winsorizing at the 99th percentile (instead of 99.9th) would reduce the maximum number of projects to only 9 (and to 2 for manufacturing), effectively eliminating most of the variation in the dependent variable.

esis: firms expand production in (or relocate to) tariff-imposing countries to circumvent duties on their exported products.

However, when focusing exclusively on projects with a manufacturing business function, the relationship changes. The impact is statistically insignificant for low- and medium-intensity tariff increases and strongly negative for high-intensity tariff increases. When the number of product-level tariff increases exceeds roughly 1,500 in a given year, the number of newly announced greenfield manufacturing projects falls by about 21%. These results suggest that large-scale tariff increases deter efficiency-seeking investment in manufacturing, as higher tariffs raise the cost of imported intermediates and make production locations less attractive in globally integrated value chains. They may also reflect firms' expectations about the duration of tariff measures: if recent tariff increases were viewed as temporary or politically reversible (as during Trump's first Administration), firms might have been reluctant to commit to large-scale or irreversible manufacturing projects, opting instead to delay or scale down investment plans. Using tariffs as a policy tool to boost manufacturing FDI is therefore a risky strategy that may backfire when protectionism becomes too broad.

The sectoral analysis reveals substantial heterogeneity in responses across manufacturing industries. Greenfield FDI in sectors producing final goods or serving local markets tends to rise following tariff increases — consistent with tariff-jumping behaviour — while investment in upstream, input-producing industries declines. This pattern highlights the importance of supply-chain linkages and sector-specific characteristics in shaping firms' responses to trade barriers. Further research could examine in more depth the mechanisms driving this heterogeneity.

Complementary analysis using OECD data on bilateral inward FDI stocks, which capture both greenfield and non-greenfield components, confirms the presence of a moderate tariff-jumping effect for aggregate FDI, particularly for low-intensity tariff increases. However, this measure also reflects mergers, acquisitions, and potential disinvestment, implying that the positive aggregate response may not correspond to new productive capacity.

Overall, the results suggest that the renewed use of wide-ranging tariffs by the current US Administration could significantly reshape global FDI patterns. While tariffs may attract some investment aimed at bypassing trade barriers, the “protectionist gamble” is unlikely to deliver sustained gains in manufacturing investment. Instead, large-scale tariff increases risk raising supply-chain costs, discouraging efficiency-seeking investment, and ultimately undermining the very manufacturing competitiveness they seek to protect.

References

- Aiyar, S., Malacrino, D., & Presbitero, A. F. (2024). Investing in friends: The role of geopolitical alignment in FDI flows. *European Journal of Political Economy*, 83(100).
- Alessandria, G., Midrigan, V., & Tsyvinski, V. (2025). *Trade Policy Expectations and the Transmission of Tariffs* [NBER Working Paper, forthcoming].
- Alfaro, L., Antràs, P., Chor, D., & Conconi, P. (2019). Internalizing Global Value Chains: A Firm-Level Analysis. *Journal of Political Economy*, 127(2), 508–559.
- Antràs, P. (2004). Is the U.S. aggregate production function Cobb–Douglas? New estimates of the elasticity of substitution. *Contributions to Macroeconomics*, 4(1), 1–34.
- Baltagi, B. H., Egger, P., & Pfaffermayr, M. (2007). Estimating models of complex FDI: Are there third-country effects? *Journal of Econometrics*, 140(1), 260–281.
- Barattieri, A., Cacciatore, M., & Ghironi, F. (2021). Protectionism and the business cycle. *Journal of International Economics*, 129, 103417.
- Barry, F., Barry, L., & Menton, A. (2016). Tariff-jumping foreign direct investment in protectionist era Ireland. *Economic History Review*, 69(4), 1285–1308.
- Bhagwati, J. N., Dinopoulos, E., & Wong, K.-y. (1992). Quid Pro Quo Foreign Investment. *American Economic Review*, 82(2), 186–190.
- Blanchard, E., Santos-Paulino, A. U., Trentini, C., & Milet, E. (2021). Implications of rising trade tensions for FDI projects. *UNCTAD Transnational Corporations Journal*.
- Blonigen, B. A. (2002). Tariff-jumping antidumping duties. *Journal of International Economics*, 57(1), 31–50.
- Blonigen, B. A. (2005). A Review of the Empirical Literature on FDI Determinants. *Atlantic Economic Journal*, 33(4), 383–403.
- Blonigen, B. A., & Ohno, Y. (1998). Endogenous protection, foreign direct investment and protection-building trade. *Journal of International Economics*, 46(2), 205–227.
- Brainard, S. L. (1997). An Empirical Assessment of the Proximity-Concentration Trade-off Between Multinational Sales and Trade. *American Economic Review*, 87(4), 520–544.
- Breinlich, H., Leromain, E., Novy, D., & Sampson, T. (2020). Voting with their money: Brexit and outward investment by UK firms. *European Economic Review*, 124(100).
- Caldara, D., Iacoviello, M., Mollico, P., Prestipino, A., & Raffo, A. (2020). The Economic Effects of Trade Policy Uncertainty. *Journal of Monetary Economics*, 109, 38–59.

- Cardamone, P., & Scoppola, M. (2015). Tariffs and EU countries foreign direct investment: Evidence from a dynamic panel model. *The Journal of International Trade & Economic Development*, 24(1), 1–23.
- Cole, M. T., & Davies, R. B. (2011). Strategic tariffs, tariff jumping, and heterogeneous firms. *European Economic Review*, 55(4), 480–496.
- Du, L., Harrison, A., & Jefferson, G. (2014). FDI Spillovers and Industrial Policy: The Role of Tariffs and Tax Holidays. *World Development*, 64(100), 366–383.
- Dür, A., Baccini, L., & Elsig, M. (2014). The design of international trade agreements: Introducing a new dataset. *The Review of International Organizations*, 9(3), 353–375.
- Ekholm, K., Forslid, R., & Markusen, J. R. (2007). Export-platform foreign direct investment. *Journal of the European Economic Association*, 5(4), 776–795.
- Furceri, D., Hannan, S. A., Ostry, J. D., & Rose, A. K. (2018). *Macroeconomic Consequences of Tariffs* (NBER Working Papers). National Bureau of Economic Research, Inc.
- Ghods, M. (2020). How do technical barriers to trade affect foreign direct investment? Tariff jumping versus regulation haven hypotheses. *Structural Change and Economic Dynamics*, 52(100), 269–278.
- Gopinath, G., Gourinchas, P.-O., Presbitero, A. F., & Topalova, P. (2025). Changing Global Linkages: Bridging Geopolitical Fragments. *AEA Papers and Proceedings*, 115, 605–610.
- Hanson, G. H. (2001). Should countries promote foreign direct investment? *UNCTAD G-24 Discussion Paper Series*, (9).
- Head, K., & Mayer, T. (2014). Gravity equations: Workhorse, toolkit, and cookbook. *Handbook of International Economics*, 4, 131–195.
- Helpman, E. (1984). A Simple Theory of International Trade with Multinational Corporations. *Journal of Political Economy*, 92(3), 451–471.
- Helpman, E., Melitz, M. J., & Yeaple, S. R. (2004). Export versus FDI with heterogeneous firms. *American Economic Review*, 94(1), 300–316.
- Ito, T. (2013). Export-platform foreign direct investment: Theory and evidence. *The World Economy*, 36(5), 578–600.
- Kneller, R., & Pisu, M. (2004). Export-oriented FDI in the UK. *Oxford Review of Economic Policy*, 20(3), 424–439.

- Kox, H. L. M., & Rojas-Romagosa, H. (2020). How trade and investment agreements affect bilateral foreign direct investment: Results from a structural gravity model. *The World Economy*, 43(12).
- Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *American Economic Review*, 70(5), 950–959.
- Larch, M., & Yotov, Y. V. (2025). Deep Trade Agreements and FDI in Partial and General Equilibrium: A Structural Estimation Framework. *The World Bank Economic Review*, 39(2), 281–307.
- Markusen, J. R. (1984). Multinationals, multi-plant economies, and the gains from trade. *Journal of International Economics*, 16(3-4), 205–226.
- Markusen, J. R., & Venables, A. J. (1998). Multinational firms and the new trade theory. *Journal of International Economics*, 46(2), 183–203.
- Markusen, J. R., & Venables, A. J. (2000). The theory of endowment, intra-industry and multinational trade. *Journal of International Economics*, 52(2), 209–234.
- Melitz, M. J. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica*, 71(6), 1695–1725.
- Motta, M. (1992). Multinational firms and the tariff-jumping argument : A game theoretic analysis with some unconventional conclusions. *European Economic Review*, 36(8), 1557–1571.
- Qiu, L. D., & Tao, Z. (2001). Export, foreign direct investment, and local content requirement. *Journal of Development Economics*, 66(1), 101–125.
- Ruta, M., & Sztajerowska, M. (2025). *Shifting Advantages: Do Subsidies Shape Cross-Border Investment?* (IMF Working Paper No. 2025/080). International Monetary Fund.
- Santos Silva, J., & Tenreyro, S. (2006). The Log of Gravity. *The Review of Economics and Statistics*, 88(4), 641–658.
- Santos Silva, J., & Tenreyro, S. (2011). Further simulation evidence on the performance of the Poisson pseudo-maximum likelihood estimator. *Economics Letters*, 112(2), 220–222.
- Steinberg, J. (2025). *Tariffs and Manufacturing Employment* [University of Toronto, Working Paper].
- Teti, F. (2024). Missing tariffs. *CESifo Working Paper Series 11590*.

Wang, D., & Lahiri, S. (2023). Bilateral foreign direct investments: differential effects of tariffs in source and destination countries. *The Journal of International Trade & Economic Development*, 32(1), 66–83.

A Appendix

A.1 Additional tables

Table A.1: Aggregate regression results using *fDi Markets* data

Dependent variable:	(1)	(2)	(3)	(4)
FDI projects	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	0.039** (0.017)	0.018 (0.018)	0.061*** (0.021)	0.214*** (0.038)
$Tariff_{ji,t}$	0.022 (0.016)	0.015 (0.018)	-0.014 (0.021)	0.025 (0.038)
$Tariff_{ji,t+1}$	0.039** (0.018)	0.037* (0.019)	0.023 (0.023)	-0.010 (0.038)
$NTM_{ji,t-1}$	-0.015 (0.022)	-0.017 (0.022)	0.022 (0.029)	0.017 (0.036)
$NTM_{ji,t}$	0.005 (0.022)	0.004 (0.022)	0.047* (0.029)	0.091** (0.036)
$NTM_{ji,t+1}$	-0.029 (0.022)	-0.029 (0.022)	-0.051* (0.029)	-0.002 (0.036)
PTA	0.164*** (0.033)	0.173*** (0.033)	0.173*** (0.033)	0.173*** (0.033)
Intra-EU	0.080* (0.043)	0.107** (0.046)	0.107** (0.046)	0.107** (0.046)
Observations	36,218	36,218	36,218	36,218
R-squared	0.85	0.85	0.85	0.85

Notes: Coefficients reported with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.2: Regression results for FDI projects in manufacturing (*fDi Markets data*)

Dependent variable:	(1)	(2)	(3)	(4)
FDI projects in manufacturing	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	-0.025 (0.040)	-0.025 (0.044)	-0.061 (0.049)	-0.042 (0.077)
$Tariff_{ji,t}$	-0.044 (0.039)	-0.012 (0.044)	-0.077 (0.048)	-0.232*** (0.077)
$Tariff_{ji,t+1}$	0.032 (0.041)	0.052 (0.045)	0.044 (0.051)	-0.025 (0.082)
$NTM_{ji,t-1}$	0.103* (0.055)	0.111** (0.055)	0.097 (0.069)	0.142* (0.086)
$NTM_{ji,t}$	0.014 (0.054)	0.016 (0.054)	0.070 (0.069)	0.097 (0.086)
$NTM_{ji,t+1}$	-0.018 (0.054)	-0.015 (0.055)	0.045 (0.068)	0.104 (0.087)
PTA	0.147* (0.078)	0.141* (0.079)	0.141* (0.079)	0.141* (0.079)
Intra-EU	-0.044 (0.108)	-0.069 (0.111)	-0.069 (0.111)	-0.069 (0.111)
Observations	14,919	14,919	14,919	14,919
R-squared	0.64	0.64	0.64	0.64

Notes: Coefficients reported with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.3: Sectoral results — part 1

Dependent variable:	(10)	(13)	(16)	(17)
FDI projects	Food products	Textiles	Wood & cork	Paper products
$Tariff_{ji,t-1}$	-0.191 (0.149)	-0.051 (0.097)	0.569 (0.615)	-0.127 (0.398)
$Tariff_{ji,t}$	0.005 (0.162)	0.053 (0.095)	-1.501*** (0.563)	0.460 (0.454)
$Tariff_{ji,t+1}$	0.089 (0.147)	0.189** (0.090)	0.756 (0.670)	-0.018 (0.461)
$NTM_{ji,t-1}$	-0.125 (0.170)	0.031 (0.084)	0.029 (0.681)	0.035 (0.623)
$NTM_{ji,t}$	0.224 (0.146)	0.054 (0.090)	0.622 (0.456)	-1.018* (0.585)
$NTM_{ji,t+1}$	0.709*** (0.159)	-0.101 (0.085)	-0.473 (0.569)	0.579 (0.548)
PTA	0.014 (0.368)	-0.245 (0.214)	0.243 (1.510)	1.959** (0.964)
Intra-EU	-1.078** (0.513)	-0.610* (0.367)	1.379 (1.122)	-1.147 (0.872)
Observations	2,290	3,353	504	709
R-squared	0.29	0.43	0.26	0.24

Notes: Coefficients with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.4: Sectoral results — part 2

Dependent variable:	(19)	(20)	(21)	(22)
FDI projects	Coke & refined products	Chemicals	Pharmaceuticals	Rubber & plastics
$Tariff_{ji,t-1}$	0.004 (0.330)	-0.161 (0.098)	0.522 (0.619)	-0.361** (0.173)
$Tariff_{ji,t}$	0.098 (0.382)	-0.095 (0.100)	-1.039* (0.613)	0.110 (0.163)
$Tariff_{ji,t+1}$	-0.940** (0.371)	-0.025 (0.104)	1.081 (0.718)	0.053 (0.144)
$NTM_{ji,t-1}$	0.138 (0.244)	-0.291** (0.120)	0.586 (1.073)	-0.138 (0.132)
$NTM_{ji,t}$	0.021 (0.247)	0.033 (0.126)	0.017 (0.692)	-0.112 (0.134)
$NTM_{ji,t+1}$	-0.435* (0.224)	0.062 (0.118)	1.907*** (0.743)	0.018 (0.128)
PTA	0.045 (0.418)	-0.158 (0.219)	1.694 (1.300)	0.095 (0.292)
Intra-EU	-0.242 (0.967)	-0.324 (0.287)	0.304 (1.131)	-0.190 (0.490)
Observations	1,066	3,174	345	2,675
R-squared	0.26	0.37	0.36	0.33

Notes: Coefficients with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.5: Sectoral results — part 3

Dependent variable:	(23)	(24)	(25)	(26)
FDI projects	Other non-metallic	Basic metals	Fabricated metal	Computer & optical
$Tariff_{ji,t-1}$	0.072 (0.124)	0.005 (0.212)	0.114 (0.137)	0.473* (0.247)
$Tariff_{ji,t}$	0.083 (0.129)	0.147 (0.234)	-0.233* (0.138)	-0.183 (0.207)
$Tariff_{ji,t+1}$	0.139 (0.121)	-0.195 (0.259)	0.087 (0.138)	-0.242 (0.224)
$NTM_{ji,t-1}$	-0.070 (0.133)	-0.082 (0.199)	0.229 (0.150)	0.258 (0.302)
$NTM_{ji,t}$	0.115 (0.123)	0.610*** (0.213)	0.053 (0.147)	-0.239 (0.298)
$NTM_{ji,t+1}$	0.116 (0.126)	0.191 (0.214)	-0.224 (0.143)	-0.054 (0.306)
PTA	1.226*** (0.314)	-0.068 (0.629)	0.630** (0.257)	-0.449 (0.431)
Intra-EU	0.807* (0.487)	0.109 (0.752)	-0.084 (0.410)	0.170 (0.696)
Observations	3,068	1,330	2,409	1,315
R-squared	0.29	0.23	0.34	0.30

Notes: Coefficients with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.6: Sectoral results — part 4

Dependent variable:	(27)	(28)	(29)
FDI projects	Electrical equipment	Machinery n.e.c.	Motor vehicles & trailers
$Tariff_{ji,t-1}$	-0.340 (0.316)	-0.351 (0.251)	0.505** (0.198)
$Tariff_{ji,t}$	-0.114 (0.285)	-0.263 (0.249)	0.172 (0.201)
$Tariff_{ji,t+1}$	0.677** (0.321)	0.479* (0.283)	-0.062 (0.202)
$NTM_{ji,t-1}$	0.895** (0.431)	-0.102 (0.316)	0.243 (0.254)
$NTM_{ji,t}$	1.451*** (0.445)	0.458 (0.329)	-0.541** (0.252)
$NTM_{ji,t+1}$	0.743* (0.400)	-0.505 (0.312)	-0.305 (0.233)
PTA	-0.530 (0.694)	0.766 (0.645)	0.245 (0.343)
Intra-EU	2.317* (1.217)	-0.713 (0.494)	-0.398 (0.532)
Observations	776	958	1,720
R-squared	0.26	0.28	0.27

Notes: Coefficients with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.7: Aggregate regression results using *OECD* data

Dependent variable:	(1)	(2)	(3)	(4)
FDI stock (USD million)	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	0.024 (0.027)	0.057** (0.026)	-0.010 (0.031)	0.001 (0.069)
$Tariff_{ji,t}$	0.051* (0.031)	0.104*** (0.033)	-0.006 (0.037)	0.034 (0.055)
$Tariff_{ji,t+1}$	0.009 (0.037)	0.061 (0.038)	0.003 (0.037)	-0.081 (0.052)
$NTM_{ji,t-1}$	-0.044 (0.036)	-0.043 (0.035)	0.005 (0.042)	0.021 (0.054)
$NTM_{ji,t}$	0.006 (0.032)	-0.004 (0.030)	0.039 (0.042)	0.064 (0.056)
$NTM_{ji,t+1}$	-0.018 (0.036)	-0.032 (0.034)	0.010 (0.042)	0.053 (0.055)
PTA	0.019 (0.043)	0.036 (0.042)	0.036 (0.042)	0.036 (0.042)
Intra-EU	-0.101* (0.060)	-0.083 (0.064)	-0.083 (0.064)	-0.083 (0.064)
Observations	17,319	17,319	17,319	17,319
R-squared	0.99	0.99	0.99	0.99

Notes: Coefficients with robust standard errors in parentheses. Significance: *** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$.

Table A.8: Excluding the US as tariff-imposing FDI destination: all projects vs. manufacturing

Dependent variable:	(1)	(2)	(3)	(4)
	Aggregate	Low intensity	Medium intensity	High intensity
<i>All FDI projects</i>				
$Tariff_{ji,t-1}$	0.042**	0.021	0.068***	0.255***
$Tariff_{ji,t}$	0.019	0.011	-0.015	0.052
$Tariff_{ji,t+1}$	0.045**	0.040**	0.023	0.020
Observations			35,967	
R-squared			0.83	
<i>Manufacturing only</i>				
$Tariff_{ji,t-1}$	-0.015	-0.010	-0.050	-0.030
$Tariff_{ji,t}$	-0.045	-0.011	-0.079	-0.208**
$Tariff_{ji,t+1}$	0.028	0.049	0.033	-0.005
Observations			14,495	
R-squared			0.59	

Notes: Entries are point estimates; stars denote significance (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$). Standard errors and non-tariff controls are omitted for brevity and are available upon request.

Table A.9: Excluding the US as tariff-imposing FDI destination: FDI stocks (*OECD*)

Dependent variable:	(1)	(2)	(3)	(4)
	Aggregate	Low intensity	Medium intensity	High intensity
$Tariff_{ji,t-1}$	0.007	0.046*	-0.032	-0.058
$Tariff_{ji,t}$	0.046	0.112***	-0.008	0.032
$Tariff_{ji,t+1}$	-0.004	0.041	-0.017	-0.085
Observations			16,633	
R-squared			0.99	

Notes: Entries are point estimates; stars denote significance (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$). Standard errors and coefficients for other control variables (e.g. NTMs, PTAs, fixed effects) are omitted for brevity and available upon request.

A.2 Robustness checks

Table A.10: Excluding China as tariff-imposing FDI destination: all projects vs. manufacturing

Dependent variable:	(1)	(2)	(3)	(4)
	Aggregate	Low intensity	Medium intensity	High intensity
<i>All FDI projects</i>				
$Tariff_{ji,t-1}$	0.042**	0.017	0.067***	0.191***
$Tariff_{ji,t}$	0.025	0.017	-0.007	0.006
$Tariff_{ji,t+1}$	0.038**	0.035*	0.030	-0.022
Observations			36,107	
R-squared			0.84	
<i>Manufacturing only</i>				
$Tariff_{ji,t-1}$	-0.020	-0.020	-0.049	-0.087
$Tariff_{ji,t}$	-0.042	-0.010	-0.070	-0.233**
$Tariff_{ji,t+1}$	0.022	0.046	0.036	-0.018
Observations			14,618	
R-squared			0.62	

Notes: Entries are point estimates; stars denote significance (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$). Standard errors and non-tariff controls are omitted for brevity and are available upon request.

Table A.11: Winsorising the dependent variable: greenfield FDI (*fDi Markets*)

Dependent variable:	(1)	(2)	(3)	(4)
	Aggregate	Low intensity	Medium intensity	High intensity
<i>All FDI projects</i>				
$Tariff_{ji,t-1}$	0.029*	0.015	0.040*	0.077*
$Tariff_{ji,t}$	-0.002	0.002	-0.030	-0.050
$Tariff_{ji,t+1}$	0.048***	0.051***	0.049**	0.015
Observations			36,646	
R-squared			0.80	
<i>Manufacturing only</i>				
$Tariff_{ji,t-1}$	-0.031	-0.031	-0.051	-0.147*
$Tariff_{ji,t}$	-0.039	-0.005	-0.055	-0.243***
$Tariff_{ji,t+1}$	0.038	0.050	0.070	0.020
Observations			14,919	
R-squared			0.56	

Notes: Entries are point estimates; stars denote significance (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$). Standard errors and other controls are omitted for brevity and available upon request.

Table A.12: Winsorising the dependent variable: FDI stocks (*OECD*)

Dependent variable: FDI stock (USD million)	(1) Aggregate	(2) Low intensity	(3) Medium intensity	(4) High intensity
$Tariff_{ji,t-1}$	0.028	0.060***	−0.0178	−0.043
$Tariff_{ji,t}$	0.043	0.085***	0.006	0.027
$Tariff_{ji,t+1}$	0.027	0.060*	0.036	−0.041
Observations	17,319			
R-squared	0.99			

Notes: Entries are point estimates; stars denote significance (*** $p < 0.01$, ** $p < 0.05$, * $p < 0.1$). Standard errors and other controls are omitted for brevity and available upon request.

Acknowledgements

We would like to thank an anonymous referee, Maria Grazia Attinasi, the participants of an internal ECB seminar, the members of the Advisory Task Force on the OECD Codes of Liberalisation and of the OECD Investment Promotion Agency Network for their helpful comments and suggestions.

The views expressed in this paper are those of the authors and do not necessarily represent those of the European Central Bank.

Isabella Moder (Corresponding author)

European Central Bank, Frankfurt am Main, Germany; email: isabella.moder@ecb.europa.eu

Tajda Spital

European Central Bank, Frankfurt am Main, Germany; email: tajda.spital@ecb.europa.eu

© European Central Bank, 2025

Postal address 60640 Frankfurt am Main, Germany

Telephone +49 69 1344 0

Website www.ecb.europa.eu

All rights reserved. Any reproduction, publication and reprint in the form of a different publication, whether printed or produced electronically, in whole or in part, is permitted only with the explicit written authorisation of the ECB or the authors.

This paper can be downloaded without charge from www.ecb.europa.eu, from the [Social Science Research Network electronic library](#) or from [RePEc: Research Papers in Economics](#). Information on all of the papers published in the ECB Working Paper Series can be found on the [ECB's website](#).

PDF

ISBN 978-92-899-7495-0

ISSN 1725-2806

doi: 10.2866/5897536

QB-01-25-244-EN-N