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Abstract

We analyse the export performance of emerging market firms faced with a reversal of trade liberalization. Using firm-level data over 2008-2011 in a difference-in-difference approach, we analyse the consequences for firms' exports of a trade barrier for imports of iron and steel introduced in Indonesia in 2009. The introduction of this trade barrier reduced exports of Indonesian manufacturing firms in the affected sectors by 5%. We uncover heterogeneous firm-level responses. We explore two mechanisms that affect the relationship between reversal of trade liberalization and emerging market firms' exports (internationalization and size), and the resilience of manufacturing firms that provide services.

Keywords: emerging market firms, exports, reversal of trade liberalization, importers, foreign-owned firms, SMEs, services.

Reversal of trade liberalization and emerging market firms' exports

Highlights

- We study the relationship between reversal of trade liberalization and firms' exports in emerging markets.
- We uncover heterogeneous firm-level responses to reversal of trade liberalization by focusing on the role of the internationalization and size of the firm, and on the resilience of firms that provide services.
- The reversal of trade liberalization episode analysed reduces exports of emerging market firms in the affected sectors by 5%.
- Firms engaged in importing activities, foreign-owned firms, and small and medium-sized enterprises register a greater decrease in exports.
- Manufacturing firms that provide services are resilient to reversal of trade liberalization and export more.

Abstract

We analyse the export performance of emerging market firms faced with a reversal of trade liberalization. Using firm-level data over 2008-2011 in a difference-in-difference approach, we analyse the consequences for firms' exports of a trade barrier for imports of iron and steel introduced in Indonesia in 2009. The introduction of this trade barrier reduced exports of Indonesian manufacturing firms in the affected sectors by 5%. We uncover heterogeneous firm-level responses. We explore two mechanisms that affect the relationship between reversal of trade liberalization and emerging market firms' exports (internationalization and size), and the resilience of manufacturing firms that provide services.

Keywords: emerging market firms, exports, reversal of trade liberalization, importers, foreign-owned firms, SMEs, services.

1. Introduction

Emerging markets have undergone radical changes in response to increasing globalization and openness to international competition (Elango and Pattnaik 2007). However, this trend seems to have begun a reverse with growing scepticism surrounding globalization, as well as with global tendencies in the form of protectionist policies and re-introduction of trade barriers.

This study provides first empirical evidence to clarify the consequences of reversal of trade liberalization on firms' exports in emerging markets. Although it is common practice for emerging markets to restrict imports in order to protect their sensitive industries from import competition,¹ a better grasp of the mechanisms through which reversals of trade liberalization affect exports in emerging market firms (EMFs) is needed. In this paper, we uncover heterogeneous firm-level responses to reversal of trade liberalization. To do so, we focus on the role of the internationalization and size of the firm. In addition, we explore the resilience of firms in the affected sectors that provide services.

Analysing the relationship between reversal of trade liberalization and EMFs' exports sets the stage for a more in-depth understanding of the effects of de-globalization on cross-country flows.² Evidence indicates that policies aimed at protecting domestic industries run the risk of weakening exports of EMFs from affected industries (see, e.g., Okamoto and Sjöholm 2000). However, firms may adapt to protectionism and counteract the impact of trade policy interventions (Cuervo- Cazorra et al. 2020). It is also possible that emerging markets are beneficiaries of increasing barriers to trade and tariff rates set up between them (i.e., emerging markets) and other countries (such as the US, China, the EU, and UK). Hence, when reversal

¹ For example, Márquez-Ramos (2016) mentioned the case of Argentina, where authorities controlled foreign purchases to maintain the foreign currency accounts balanced and implemented a number of strategies to boost the use of local components (see footnote 23 in Márquez-Ramos 2016). From the historical perspective of the developed world, infant industry protection was also exercised in the French Empire during the Napoleonic Wars in order to boost the competitiveness in the long run (Juhász 2018).

² Witt (2019) defines de-globalization as “the process of weakening interdependence among nations” (page 1054).

of trade liberalization occurs on a global scale, the new context may offer an opportunity for EMFs, and lead to firms engaging in increased importing (of inputs and/or intermediates) and/or exporting (of final goods) activities.³ As a consequence, reversal of trade liberalization may not result in significant reductions in EMFs' exports.

Our empirical analysis is for Indonesian manufacturing firms over the period 2008-2011. In February 2009, Indonesia introduced new procedures for the import of iron and steel, representing a form of non-tariff measures (NTMs). For emerging markets, understanding the uses and implications of NTMs is essential for formulation and implementation of effective development strategies. On the one hand, NTMs can be a tool to achieve the Sustainable Development Goals in many areas, e.g., in health and environment. On the other hand, as 90% of global trade is subject to NTMs, these policy measures have a growing impact on international trade (UNCTAD and World Bank 2018). Indeed, NTMs not only increase trade costs more than tariffs, but also reduce trade flows among countries to a higher extent (Márquez-Ramos, Martínez-Zarzoso, and Suárez-Burguet 2012). Our analysis provides a better understanding of the trade-off between trade costs and regulatory benefits for firms in emerging markets.

Our main innovation is that we focus on the consequences of reversal of trade liberalization for EMFs. This analysis is relevant because, in recent years, even some developed countries have re-imposed controls on trade and investment (consider, for example, the China-US trade war and Brexit). We contribute to the literature in three ways. Firstly, by introducing a comprehensive quantitative analysis in a difference-in-difference approach, we provide a useful methodological framework for analysing how trade policy interventions affect firms'

³ For example, there is anecdotal evidence that firms in developed countries shift capacity to their subsidiaries and plants in EMFs to supply the Chinese market as a means to circumvent high tariffs.

exports. We go one step further and we introduce a triple difference specification to uncover heterogeneous firm-level responses to reversal of trade liberalization.

Secondly, with our unique case study for Indonesia, we provide evidence that reversal of trade liberalization decreases exports of firms in the affected sectors. In addition, we provide a better understanding of the mechanisms that matter on the negative relationship between reversal of trade liberalization and EMFs' exports. Specifically, we contribute to the existing theory with our focus on firms' internationalization and size. As a consequence of reversal of trade liberalization in emerging markets, firms engaged in importing activities reduce their exports to a greater extent than non-importers, and foreign-owned firms register a greater decrease in exports than their domestic counterparts. The exports of small and medium-sized enterprises (SMEs) decrease to a greater extent than those of large firms.

Finally, we introduce and test a new theoretical insight about the resilience of firms that are service providers. Our results validate this insight empirically in an emerging market, as we find that importing firms in the affected sectors that also perform manufacturing services export more after reversal of trade liberalization. Most research focuses on firms in developed countries, which may adapt to reversal of trade liberalization by simplifying global value chains and building local supply chains, nurturing domestic partners. In contrast, firms in emerging markets may find problems to adapt to reversal of trade liberalization. Value-chain activities involving service provision may mitigate the negative effect of reversal of trade liberalization on EMFs' exports.

The rest of the paper is organized as follows. Section 2 presents the theoretical background and sets out the main hypotheses. Section 3 presents the empirical analysis. Section 4 details the results. Section 5 provides a discussion of managerial relevance, study limitations, and directions for further research. Finally, Section 6 concludes.

2. Theoretical background and hypotheses

2.1. Theoretical background

This research is related to previous literature on the effects of trade liberalization and imports on firms' exports. In contrast to most existing research that has focused on firms in developed countries, our focus is on firms in emerging markets. We go one step further and we analyse the consequences that reversal of trade liberalization has for EMFs.

There is extensive quantitative evidence on the benefits of trade liberalization for firms (see, e.g., Amiti and Konings 2007) and on the positive relationship between firms' imports and exports (see, e.g., Wagner 2012). The reasoning is that firms that use imported inputs in their production process are more productive, and importing can have such a great impact on productivity that these firms subsequently become successful exporters (see, e.g., Bas and Strauss-Kahn 2014; Bernard et al. 2018). In addition, trade liberalization benefits EMFs through increased access to previously unavailable inputs, and through a wider variety of inputs that are available to importing firms compared to firms that use only domestic providers (see, e.g., Márquez-Ramos, Martínez-Zarzoso, and Parra 2012). However, firm-level responses to trade liberalization are heterogeneous: only a minority of firms export and these firms are larger than firms that do not export (see, e.g., Melitz and Redding 2013).

Firms' imports and exports have long been recognized as complementary (see, for example, Welch and Luostarinen 1993 and Karlsen et al. 2003),⁴ and there are sound empirical analyses that use firm-level data to examine the role of imports in exports (Bernard et al. 2018; Bertrand 2011; Hummels et al. 2018). However, a shortcoming of the existing literature is that it has mainly focused on firms in developed countries.

⁴ In an analysis of inward-outward connections in internationalization, Welch and Luostarinen (1993) point out that "developments on the inward side are bound to open up new opportunities on the outward side" (page 51). Karlsen et al. (2003) highlight the importance of learning-by-importing. These authors point out that "inward activities like purchases of machinery, the procurement of raw materials and semi-finished goods provide opportunities for building relations with foreign actors. They also offer opportunities to learn about foreign trade techniques and ways of using various operation modes, and by active use of such knowledge companies should be in a better position to start or extend outward foreign operations" (page 385).

Since our focus is on EMFs, the concept of “emergingness” is key, in line with the literature emphasizing the importance of the differences between firms in emerging and in advanced economies (see, e.g., Awate et al. 2015; Ramamurti 2012). In the context of emerging markets, reversal of trade liberalization may oblige firms to buy fewer foreign components (inputs and/or intermediates), which might be cheaper and/or of higher quality than local components. This is particularly important for EMFs because reversal of trade liberalization results in higher trade barriers, which limit EMFs’ access to market opportunities and technology that is already standard in developed countries. Indeed, under a trade liberalization context, firms in emerging markets take advantage of the higher technological content of imported inputs from developed countries (Bas and Strauss-Kahn 2014; Florensa et al. 2015; Smeets and Warzynski 2010).⁵ When there are restrictions on imports in EMFs, other potential benefits, such as indirect export advantages through cost reduction, higher flexibility, and additional resources; as well as upgrades of market knowledge, manufacturing technologies, and managerial expertise (Bertrand 2011; Li 2007; Satta et al. 2014), are also restricted.

Firms’ exports may react to reversal of trade liberalization because imports and exports are interrelated (e.g., Bas and Strauss-Kahn 2014; Bertrand 2011). Although government interventions or regulations in sensitive industries of emerging markets are aimed at establishing competitive and mature industries, it has been shown that the state of sensitive industries might deteriorate, even after years of protection and government support (see Okamoto and Sjöholm 2000, for the case of the automotive industry in Indonesia). Government interventions can create a protective environment where the low level of competition allows

⁵ The relationship between the origins of imported inputs and total factor productivity (TFP) has been studied by comparing the effects of imports from OECD countries and those from low-wage countries: both categories of imports were found to have a positive effect on productivity, but the impact of imports from OECD countries was more pronounced (Smeets and Warzynski 2010). In this vein, Bas and Strauss-Kahn (2014) find that importing more varieties of inputs raises TFP, and this positive effect is magnified for imported inputs from developed countries thanks to the diffusion of modern technologies embodied in imported intermediate inputs. In a country-level study, Florensa et al. (2015) report that Latin American countries exported more when they imported more intermediate capital goods from the European Union than from developing regions.

firms to operate inefficiently. Opening an emerging market to trade introduces foreign firms as additional competitors and domestic industries are forced to respond by becoming more competitive (Jensen and Miller 2018). Trade barriers increase trade costs and reduce trade among countries, as supported by the gravity literature (Head and Mayer 2014; Márquez-Ramos, Martínez-Zarzoso, and Suárez-Burguet 2012). Also, increases in input costs and protectionism are relevant threats to the supply chain (Boehm et al. 2019; Economist Intelligence Unit 2009). In line with this brand of literature, reversal of trade liberalization is expected to reduce EMFs' exports, as it increases trade costs and entails a deterioration of trade conditions for firms in the affected sectors. However, a second brand of the literature highlights that firms move faster than governments, adapting to protectionism and counteracting the impact of trade policy interventions (Annunziata 2018; Cuervo- Cazorra et al. 2020). As a consequence, a reversal of trade liberalization may not result in significant reductions in cross-border trade. Therefore, whether reversal of trade liberalization leads to decreases in EMFs' exports has to be analysed from an empirical perspective.

In the same way there are heterogeneous firm-level responses to trade liberalization (Melitz and Redding 2013), one may expect heterogeneous firm-level responses to reversal of trade liberalization. There are characteristics in firms in emerging markets that contribute to explain why some firms find it more difficult to adapt to reversal of trade liberalization. For this analysis, we follow the related literature on the determinants of EMFs' export intensity (Márquez-Ramos, Martínez-Zarzoso, and Parra 2012), and we focus on the role of firms' internationalization and size in shaping the relationship between reversal of trade liberalization and EMFs' exports. Next, we follow the literature that states that services trade may weather demand shocks better than goods trade (Borchert and Mattoo 2010), and we focus on the resilience of EMFs that provide services.

2.2. Reversal of trade liberalization and emerging market firms' exports: The role of internationalization and size of EMFs

To analyse how firms' internationalization shapes the relationship between reversal of trade liberalization and EMFs' exports, we differentiate between two forms of internationalization: importing and foreign ownership. First, we test for the existence of an importing channel as our baseline mechanism because the trade policy analysed itself is aimed at restricting imports. We hypothesize that reversal of trade liberalization reduces EMFs' export intensity, and we expect that the negative effect on exports of introducing an import barrier is exacerbated for importing EMFs. The reasoning is that higher trade barriers limit EMFs' access to a number of potential benefits (Bas and Strauss-Kahn 2014; Bertrand 2011; Florensa et al. 2015; Li 2007; Satta et al. 2014; Smeets and Warzynski 2010). This is related to previous literature on EMFs' internationalization motives (see Cuervo-Cazurra et al. 2015): following a reversal of trade liberalization, firms in emerging markets may find it increasingly difficult to avoid poor home country conditions and to exploit resources abroad. If such a mechanism matters, those EMFs in the affected sectors engaging in importing activities register a greater drop in exports than EMFs (in the affected sectors) that do not engage in these activities. Therefore, the hypothesized negative effect of reversal of trade liberalization on EMFs' exports is expected to be larger for importing firms. Our first hypothesis reads as follows:

Hypothesis 1: reversal of trade liberalization in emerging markets reduces exports of non-importers and importers, while this negative effect is stronger (more negative) for importing firms.

Second, we test whether reversal of trade liberalization has consequences for firms engaging in other internationalization activities: foreign ownership. In this vein, Salomon and Shaver

(2005) highlight that foreign-owned firms may decide to allocate production and output very differently from their domestic counterparts because they have a larger global network. Satta et al. (2014) point out the importance of inward investment as a determinant of EMFs' internationalization. According to these authors, it is worth considering the shift from a firm-level to a network-level logic for multinational EMFs because they rely on links with foreign partners to acquire technology, market knowledge, and resources to accelerate their internationalization. In line with Salomon and Shaver (2005) and Satta et al. (2014), we test whether the export intensity of firms with foreign capital declines more than that of domestic firms due to reversal of trade liberalization, as firms linked with foreign partners are expected to be more negatively affected. Therefore, our second hypothesis reads as follows:

Hypothesis 2: reversal of trade liberalization in emerging markets reduces exports of domestic and foreign-owned firms, while this negative effect is stronger (more negative) for foreign-owned firms.

Finally, we focus on variation in firm size and check additional heterogeneous responses to reversal of trade liberalization. A factor that might explain an heterogeneous firm-level response by size is information on foreign markets (see, e.g., Dickstein and Morales 2018; Márquez-Ramos 2011). With more information on foreign markets, firms are less likely to make mistakes that are important to export. Indeed, SMEs may benefit less from improving their information because, for most of SMEs, their optimal decision is not to export. In addition, while large firms have access to country-by-country information on market-specific demand and trade costs shifters, SMEs do not (Dickstein and Morales 2018). Therefore, while reversal of trade liberalization increases trade costs for SMEs and large firms, SMEs are less likely to

exploit potential existing information on foreign markets, so they reduce their exports to a higher extent.⁶ Our third hypothesis reads as follows:

Hypothesis 3 (H3): reversal of trade liberalization in emerging markets reduces exports of SMEs more than those of large firms.

2.3. Reversal of trade liberalization and emerging market firms' exports: The resilience of service providers

Previous literature has emphasized the importance of considering services vs. manufacturing activities in both EMFs and in advanced country firms (Di Gregorio et al. 2009; Jensen 2009, 2012). Vandermerwe and Rada (1988) state that when firms do not control services crucial to their own business they become vulnerable. Lodefalk (2014) claims that manufacturing firms can prepare for and sustain exports by raising their services content in production, and that firms can overcome existing trade barriers through the use of services. Ariu et al. (2020) validates that the provision of services increases firms' manufacturing exports. Although the evidence provided by Lodefalk (2014) and Ariu et al. (2020) is from firms in developed countries (Sweden and Belgium, respectively), we learn that services provision may complement manufacturing exports. In the context of our research, complementarity between services provision and manufacturing exports might occur when, for example, the demand for services might not collapse in the same way as it does for manufactures following the introduction of a trade barrier. This is in line with Borchert and Mattoo (2010), who highlight that services trade weathered the global financial crisis better than goods trade. These authors

⁶ This is consistent with previous literature emphasizing that the internationalization patterns and strategies of SMEs differ from those adopted by large firms (see, e.g., Bagheri et al. 2019), and also with previous research showing that SMEs are more vulnerable to the effects of trade barriers than large firms are (Fliess and Busquets 2006).

advance a resilience of services hypothesis for developed countries. We test a resilience of service providers' hypothesis for EMFs in our empirical analysis.

We introduce and test a new theoretical insight about the resilience of EMFs that are service providers. This is in line with Lodefalk (2014) and Ariu et al. (2020), and also with Li et al. (2017), who state that when firms' resources and capabilities can be deployed in multiple geographical and country settings, firms may increase their participation in outward activities. In our empirical analysis, we test whether importing manufacturing EMFs that engage in services may benefit from reversal of trade liberalization. These firms may be better prepared to adapt to reversal of trade liberalization and to overcome its negative consequences in terms of export intensity. Our fourth hypothesis reads as follows:

Hypothesis 4 (H4): reversal of trade liberalization in emerging markets increases exports of those importing manufacturing EMFs that provide services.

3. Empirical analysis

3.1. Identification strategy

In February 2009, Indonesia introduced new procedures for the import of iron and steel. Under the Decree of the Minister of Trade No 08/M-DAG/PER/2/2009, several iron and steel products may only be imported by Registered Importers or Producer Importers; additional procedures related to technical verification and submission of reports were also introduced. We rely on this episode to gain a better understanding of the consequences of reversal of trade liberalization for EMFs. Specifically, our focus is on the effect of reversal of trade liberalization on EMFs' exports.

Our empirical model draws from Angrist and Pischke (2009), who provide a detailed presentation of empirical frameworks for policy evaluation. For this study, we consider the

new procedures for the import of iron and steel in Indonesia as a quasi-natural experiment that provides a shock in imports. The variation in imports then allows causal inference under a difference-in-difference framework. This framework is particularly useful when the treatment varies at the group (rather than individual) level. We test our hypotheses for Indonesian manufacturing firms in the affected sectors j (i.e., treated firms). We form our baseline regression equation as follows:

$$Exports_{ijt} = \beta_0 + \beta_1 Treated_j \times Post_t + X'_{it}\theta + \delta_j + \gamma_t + \epsilon_{it}, \quad (1)$$

where ijt indicates firm i in sector j during year t ; $Treated_j$ equals 1 if firm i is in the iron and steel sectors (treatment group) and 0 otherwise (control groups); $Post_t$ equals 1 if period t is 2009 onwards (post-treatment period) and 0 otherwise (pre-treatment period); X'_{it} is a vector of firm-year control variables (size, productivity, and foreign ownership); δ_j is a set of sector dummies or fixed effects (each one representing the sector of a firm's main product, at 5-digit level); γ_t refers to year dummies or fixed effects; and ϵ_{it} represents a zero-mean error term. The parameter of primary interest, captured by β_1 , indicates the effect of reversal of trade liberalization on firms' exports.⁷

Identification in the difference-in-difference setting relies on a parallel trends assumption, that is, the assumption that in the absence of policy intervention, the change in exports for firms in the iron and steel sectors would not have been different from the change in exports for other firms. Using average export intensity, we demonstrate visually that this assumption holds (see Figure 1). From 2006 to 2008, firms in both affected and non-affected sectors follow a similar

⁷ More specifically, β_1 captures the average differential change in exports from the pre- to post-treatment period for the treatment groups relative to the change in exports for the control groups.

(downward) trend.⁸ However, when the new procedures for importing in the iron and steel sectors were imposed in 2009, the trends started to diverge. This descriptive analysis indicates a parallel trend under counterfactuals, supporting our identification strategy and the causal interpretation of our estimates. To boost the credibility of the parallel trend assumption and to ensure that our findings are robust, we will also condition on firm size, labour productivity, and foreign ownership (represented by X'_{it} in equation 1), and we will use two alternative control groups, one alternative period, and two placebo tests.⁹

Insert Figure 1 about here

Methodologically speaking, Hypotheses 1 to 3 tell us that the treatment effect is more pronounced for specific subsets of EMFs (i.e., importing and foreign-owned firms, and SMEs), while Hypothesis 4 tell us that the treatment effect affects differently to a subset of EMFs (i.e., importing manufacturing firms providing services). We can check this with a triple differences approach that considers each subset separately and distinguishes less sensitive *versus* more sensitive EMFs (e.g., non-importers vs. importers).

Our identification strategy allows us to test Hypotheses 1 to 4 and, at the same time, it serves as a robustness check for our baseline hypothesis (i.e., that EMFs' export intensity is negatively affected by reversal of trade liberalization). When extending equation 1 to consider triple differences, the regression equation becomes:

⁸ We use data on 2006 and 2008 to run this test, but we do not have the information for 2007. From 2006 on, it seems that firms' export intensity has decreased in both treated and control firms. Conversely, from the year of the trade policy intervention (i.e., 2009), firms' export intensity has increased. However, this increase is smaller for (iron and steel) firms in the treatment group than for firms in the control group.

⁹ It is worth noting that researchers can never directly test the underlying identification assumption; however, they can perform robustness tests to support its validity.

$$\begin{aligned}
Exports_{ijt} = & \alpha_0 + \alpha_1 Treated_j \times Post_t \times Mechanism_i \\
& + \alpha_2 Treated_j \times Post_t + \alpha_3 Treated_j \times Mechanism_i + \alpha_4 Post_t \\
& \times Mechanism_i + X'_{it}\theta + \delta_j + \gamma_t + \epsilon_{it},
\end{aligned} \tag{2}$$

where $Mechanism_i$ is a dummy that equals 1 if firm i is subject to a specific mechanism or subset, framed in Hypotheses 1 to 4. In equation 2, our parameter of interest (α_1) captures how different the difference-in-difference estimates are for each of the following subsets (i.e., triple differences). $Mechanism_i$ equals 1 for:

- ...importing firms (for Hypothesis 1, i.e., compared to non-importers),
- ...foreign-owned firms (for Hypothesis 2, i.e., compared to domestic firms),
- ...SMEs (for Hypothesis 3, i.e., compared to large firms),
- ...firms providing services (for Hypothesis 4, compared to manufacturing firms that do not provide services).

3.2. Data and measures

We use data of manufacturing firms from the “Manufacturing Survey of Large and Medium-Sized Firms (Survei Industri Besar/Sedang, IBS)”, which is an annual census, conducted by the Indonesian Statistical Agency (BPS), of all manufacturing firms in Indonesia with 20 or more employees. The questionnaire, administered at the national level, is anonymous and covers a number of Indonesian establishments’ characteristics, such as output, input use, details about expenditures, and ownership structure. This data set allows us to introduce the emerging markets’ perspective and leveraging from two specific and valuable data characteristics: the panel information, to account for effects of reversal of trade liberalization and changes over time, and information about firms’ exports, imports, ownership structure, size, and service provision.

We measure export intensity as the percentage ratio of exports to total sales, in line with previous related literature (Lodefalk 2014). Since this information is unavailable for the year 2007, we start our period of analysis in 2008. We measure our (firm-year) control variables (i.e., size, productivity, and foreign ownership) as follows: to measure size, we take the natural logarithm of the total number of employees. To measure labour productivity, we calculate (the log of) the ratio of total sales to the total number of employees. Our measure of foreign ownership is the percentage of foreign ownership in the firm's ownership structure.

We generate our indicator for the treatment groups based on the information that we extract from the “Provisions on Iron and Steel Importation” (Decree of the Minister of Trade No 08/M-DAG/PER/2/2009).¹⁰ Announced on 18 February 2009, this decree introduced new procedures for the import of iron and steel including updated registration requirements, pre-shipment import technical verification procedures, and submission of quarterly reports on imports. This regulation excludes steel and iron: (i) in the automotive industry, electronics industry, ship dock industry and their relevant components; (ii) subject to import verification based on the User Specific Duty Free Scheme; and (iii) for the industrial needs in Free Trade Zones, Free Ports and Bonded Zones. Taking into account exclusion (i), we match the list of affected sectors mentioned in the regulation with the sector classifications in our primary data set.¹¹ For exclusion (iii), the only relevant economic zone, or special economic zone (SEZ), for the period analysed in this research, is Batam district in Riau province. We will take this special district into account in a placebo test, as SEZs exempt selected goods for selected manufacturers from

¹⁰ See the information provided by the Global Trade Alert regarding this measure (“Indonesia: New procedures for the import of steel and iron products into Indonesia”), and also about the products and sectors affected (available at <https://www.globaltradealert.org/state-act/166/indonesia-new-procedures-for-the-import-of-steel-and-iron-products-into-indonesia>).

¹¹ The list of sectors, at 5-digit level according to the classification established by the Indonesian statistical agency or BPS (which follows the structure of ISIC Revision 3), in the treatment groups is shown in Table A1 in the Appendix.

trade distortions (Grant 2020). We are unable, however, to obtain information regarding the User Specific Duty Free Scheme.

The raw data set includes 96,877 firm-year observations for the period 2008-2011. If we exclude firms that are not available in the data set for the entire period, we are left with 82,604 observations.

3.3. Descriptive statistics

Table 1 presents the summary statistics of our final data set. We subset the samples and generate the measures introduced above (regarding export intensity, firm size, labour productivity, and foreign ownership) to better understand Indonesian firms' characteristics. Table 1 also includes a number of additional variables that are relevant for the estimation of equations 1 and 2: foreign input (in %); (log of) the ratio of the income received from manufacturing services to the total number of employees; and five dummies that reflect the "status" of the firm, i.e., exporters, importers, foreign-owned, SMEs, and firms providing manufacturing services.¹² Column (1) in Table 1 shows the summary statistics for all firms. Column (2) shows the statistics for firms in the iron and steel sectors only (i.e., treated firms). We observe that (treated) firms in the affected sectors differ from the average firm with respect to a number of characteristics. In particular, these firms export less and import more, both in terms of intensive and extensive margins of trade.¹³ In addition, a higher percentage of treated firms have foreign ownership than the group of all firms.

We provide three alternatives for our control groups: all other manufacturing firms, i.e., not included in the iron and steel sectors, see column (3); excluding food and beverages (F&B)

¹² This dummy is generated from the question "other income received during year" and equals one if the income received from manufacturing services is higher than 0 in that year.

¹³ The extensive margin for exports can be defined as those exports that provide new market entrants, while the intensive margin is due to continued growth in sales of old exporters to the same destinations (see, e.g., Márquez-Ramos et al. 2015). In this vein, variables "Exports (% of total sales)" and "Foreign Input (%)" proxy for the intensive margin (for exports and imports, respectively); while variables "Exporter dummy" and "Importer dummy" proxy for the extensive margin, as they measure the number of exporting and importing firms, respectively.

sectors, see column (4); and excluding F&B and other non-metal sectors, see column (5). When we compare descriptive statistics in columns (3)-(5) of Table 1, we observe that the control group excluding F&B firms provides a middle ground between similarity and variation. Finally, column (6) shows that firms located in SEZs (i.e., in the Batam economic zone) export and import much more, are much larger, present much higher foreign-ownership rates, and provide more manufacturing services, on average, than the rest of the groups of firms considered in this research.

Insert Table 1 about here

4. Results

4.1. Baseline results

In Table 2, we present the baseline results of difference-in-difference regressions from equation 1.¹⁴ We find that the effects of reversal of trade liberalization on EMFs' exports are consistently negative and statistically significant, across different specifications. The magnitude of the effects ranges from -4.75 to -5.68 percentage points, which implies that reversal of trade liberalization causes EMFs' exports of treated firms (i.e., in the iron and steel sectors) to decrease by around 5%, all else being equal. Column (1) shows the estimates taking into account sectoral and time fixed effects, but not controlling for any firm-year controls. Columns (2), (3) and (4) show the results controlling for only the size of the firm, for only the labour productivity, and for the two variables together, respectively. We observe that both firm size and labour productivity are statistically significant and positive factors in explaining exports, with the coefficient for firm size being of greater magnitude than for labour productivity. When

¹⁴ The control group includes all Indonesian manufacturing firms with 20 or more employees, excluding those in the iron and steel sectors. The treatment group includes Indonesian manufacturing firms with 20 or more employees in the iron and steel sectors.

we control for both variables, the coefficient for labour productivity decreases (see column (4) in Table 2).¹⁵ In column (5), we add firms' foreign ownership in the regression analysis. We observe that this variable is statistically significant for explaining exports: an increase in foreign-ownership increases firms' exports, all else being equal.¹⁶ Regarding our variable of interest, we observe that controlling for size drags down the effect of the import policy introduced in Indonesia, reflected in the lower magnitudes in columns (2), (4) and (5), as compared to (1) and (3). Results in Table 2 validate our expectations about the negative consequences of reversal of trade liberalization for EMFs' exports. In addition, we observe that controlling for size, labour productivity, and foreign ownership leads to a more conservative estimate of the trade policy effect. Hence, we continue using the specification applied in column (5) of Table 2 for the rest of the empirical analysis.

Insert Table 2 about here

4.2. Robustness checks

We ensure that our baseline results are robust by using: 1) two alternative control groups, 2) an alternative period, and 3) two placebo tests. We re-run the difference-in-difference equation (i.e., equation 1) using three control variables (size, labour productivity, and foreign ownership), and sector and year fixed effects (as in the specification in column (5), Table 2), across our robustness checks. In Table 3, we present the obtained results.

The first two columns of Table 3 show our first robustness check using two alternative control groups. Column (1) shows the results when we exclude F&B sectors from our control groups,

¹⁵ In line with previous related literature, this indicates that firms' productivity is highly correlated with firm size.

¹⁶ Interestingly, it seems that foreign ownership dampens the effect of firms' productivity, as shown by the loss of significance of the productivity coefficient in column (5) of Table 2. In this regard, further research is needed for a better understanding of the complex relationship between foreign ownership, exports, and EMFs' productivity.

and column (2) shows the results when we include only other metal sectors in the control groups. We find that the estimates from both alternative specifications are consistent with our baseline results.¹⁷

Due to data limitations, we could not perform our empirical analysis using data prior to 2008. Hence, using a tighter time period that provides a balance between pre- and post- trade policy intervention allows us to further check the robustness of our baseline results. In column (3) of Table 3, we re-run our baseline regression using only observations in the 2008-2009 period. We find that the magnitude of the trade policy effect is lower than when considering the full period (by about -3.47%). This makes sense because the reversal of trade liberalization analysed was only officially enforced starting in 18 February 2009; thus, we are capturing the effect immediately after implementation. Crucially, our results remain statistically significant when using a restricted (shorter) time period.

Finally, we run two placebo tests using pseudo-treated observations in sectors that are not affected by the reversal of trade liberalization episode analysed in this research. Results are shown in the last two columns of Table 3. Firstly, in column (4), we use F&B sectors as the pseudo-treated sectors, and all other manufacturing firms as the control groups, excluding firms in the iron and steel sectors. Consistent with our expectations, we find that the coefficient associated with our variable of interest is not statistically significant. In column (5), we run another placebo test using firms located in Batam (SEZ) as the treatment groups. As mentioned in Section 3, the import restrictions for iron and steel sectors were not applicable to firms located in SEZs. In addition to the special treatment received by firms in SEZs, Table 1 showed

¹⁷ It is worth noting that the specification that uses only other metal sectors leads to a significant drop in the number of observations to 16,385 (from a total of 76,188), as shown when comparing column (2) in Table 3 and column (5) in Table 2. Although this identification strategy increases the similarity between the treatment and the control groups, we find that the tradeoff for variation is high. Conversely, in column (1) of Table 3 we observe a moderate drop to 53,871 observations. Given the conservative value of the coefficient, we argue that this alternative control group (excluding F&B sectors) is a better option for further analyses than including only other metal sectors, as it is stricter in terms of the control groups, but still maintains the variation from a rich sample population.

that these firms are very different in their characteristics when compared to firms in other Indonesian regions. Interestingly, we find that the effect of reversal of trade liberalization for these firms goes in the opposite direction (positive) and is statistically significant. This result reflects a “trade diversion” effect: firms in the affected sectors that are located in SEZs export more as a consequence of reversal of trade liberalization.

The findings from our robustness checks support our baseline results. We highlight two critical points here: (1) excluding F&B industries from the control groups provides a middle ground between variation and treatment-control similarity, while still yielding a conservative estimate, and (2) firms located in SEZs are very different and may bias our findings. Hence, in the following subsection, which tests Hypotheses 1 to 4, we exclude F&B firms and all firms located in Batam from our control groups.

Insert Table 3 about here

4.3. The role of firms’ internationalization and size (testing H1-H3), and the resilience of service providers (testing H4)

In Table 4, we present the results of the two mechanisms through which reversal of trade liberalization are hypothesized to affect EMFs’ export intensity differently: firms’ internationalization and size.¹⁸ To test our first hypothesis (H1), we run triple differences and we incorporate the importing status into the specification (based on equation 2). Thus, our

¹⁸ Note that Table 4 reports coefficient estimates for our parameter of interest in equation 2, i.e., α_1 . This captures how different the difference-in-difference estimates are for: 1) importing firms compared to non-importing firms (for H1, see “Treated.Post.Importer”), 2) foreign-owned firms compared to domestic firms (for H2, see “Treated.Post.FDI”), 3) SMEs compared to large firms (for H3, see “Treated.Post.SME”), and 4) firms providing manufacturing services compared to firms that do not provide services (for H4, see “Treated.Post.Services”). Table 4 also reports coefficient estimates of the DID variable (“Treated.Post”). In line with the expectations, the coefficient estimate for this variable is negative signed in all specifications, excluding the case of domestic and large firms in specifications for only importing firms (see columns 3 and 5, respectively). Full results are available upon request from the authors.

variable of interest is “Treated.Post.Importer”, that is, the interaction term of the treatment group dummy, post period dummy, and importing dummy (1 if the percentage of foreign input is higher than 0).¹⁹

After adjusting for the missing values, the number of observations drops only slightly to 53,200. The negative and statistically significant coefficient estimate for “Treated.Post.Importer”, shown in column (1) of Table 4, reveals that, when a firm is an importer, the negative effect of reversal of trade liberalization on EMFs’ export intensity is more pronounced. This result validates Hypothesis 1.

To test our second hypothesis (H2), our variable of interest is “Treated.Post.FDI”, that is, the interaction term of the treatment group dummy, post period dummy, and FDI dummy (1 if foreign ownership is higher than 10%). Results shown in column (2) of Table 4 reveal that when a firm is foreign-owned, reversal of trade liberalization reduces firms’ export intensity by 15.87%, all else being equal. This validates Hypothesis 2. In addition, when we limit our sample to only importing firms, the trade policy effect is more profound, at -16.59%, as shown in column (3) of Table 4. These results support the insight gleaned from our first hypothesis and point towards the idea that the exporting activity of internationalized firms in emerging markets is damaged by a reversal of trade liberalization.

To test our third hypothesis (H3), our variable of interest is “Treated.Post.SME”, that is, the interaction term of the treatment group dummy, post period dummy, and SME dummy (1 if revenue is higher than IDR 50 billion). Results in column (4) of Table 4 show that reversal of trade liberalization reduces SMEs’ export intensity by 10.73%, all else being equal. When we limit our sample to only importing firms, the policy effect is even higher (about -12.10%), as shown in column (5) of Table 4. These results validate our third hypothesis (i.e., reversal of

¹⁹ To be consistent with our previous robustness tests, all the specifications in this sub-section are performed using all observations but excluding firms in the F&B sectors and all firms located in Batam.

trade liberalization in emerging markets reduces exports of SMEs more than those of large firms).

Finally, to test our fourth hypothesis (H4), our variable of interest becomes “Treated.Post.Services”, that is, the interaction term of the treatment group dummy, post period dummy, and manufacturing services dummy (1 if income received from manufacturing services is higher than 0). Consistent with H4, we fail to find evidence of a significant effect of reversal of trade liberalization on EMFs’ exports for the regression including both importers and non-importers (see column (6) of Table 4); however, we find a positive and statistically significant effect when we limit our sample to only importers. According to our results, the reversal in trade liberalization analysed in Indonesia increased the export intensity of importing manufacturing firms that engaged in service provision. This validates our fourth hypothesis (i.e., reversal of trade liberalization in emerging markets increases exports of those importing manufacturing EMFs that provide services.).

Insert Table 4 about here

5. Managerial relevance, limitations, and further research directions

5.1. Managerial relevance

Drawing on the experience of Indonesia, we have provided a comprehensive analysis of the effects of reversal of trade liberalization on EMFs’ exports. Our analysis provides several pointers for managers. First, managers must acknowledge that internationalization and size of the firm matter on the relationship between reversal of trade liberalization and EMFs’ export performance. Overall, reversal of trade liberalization reduces EMFs’ exports. However, importing firms, foreign-owned firms, and SMEs register a greater decrease in exports. This confirms that there are heterogeneous firm-level responses to reversal of trade liberalization.

Second, managers must also acknowledge that geography matters. They need a good understanding of implications of national and international policies towards SEZs. Firms in the sectors affected by the reversal of trade liberalization episode analysed, but located in SEZs, increase their exports. Managers in EMFs may consider the re-location of some activities in SEZs in order to mitigate the negative consequences for exports arising from reversal or trade liberalization.

Third, according to the obtained results, manufacturing importing firms that provide services are resilient to reversal of trade liberalization. Therefore, managers in EMFs may opt to provide (more) services.

The reversal of trade liberalization episode analysed in this research emerged in a context in which a demand shock from the global financial crisis hit the global economy. As demand dried up, a number of countries, including Indonesia, attempted to shield off their domestic industries from foreign competition. Although the case study analysed relies on a 2009 phenomenon, it helps managers to understand the consequences that more recent de-globalization trends might have on firms in emerging markets.

5.2. Limitations and further research directions

Our study has limitations that should be addressed in the future. First, the “servicification” or “servitization” of manufacturing is a growing phenomenon (Lodefalk 2015; Vandermerwe and Rada 1988). However, because we only have access to administrative data on manufacturing firms in Indonesia, we have not been able to address either the differences between service and manufacturing firms in their importing/exporting activities and strategies. In addition, we have not been able to distinguish the importance of different services. Further investigation of how these phenomena shape the relationship between reversal of trade liberalization and EMFs’ exports is a promising avenue for future research.

Second, it is worth noting that reversal of trade liberalization may also affect domestic sales. For example, previous research has analysed the interrelationship between and determinants of exports and domestic sales (see, for example, Salomon and Shaver 2005 for the case of Spain). In line with previous evidence for EMFs, firms can increase product diversification through inputs, i.e., firms that use imported inputs sell a wider range of products in their domestic markets (for Indian firms, see Goldberg et al. 2010). The lack of detailed data on the different goods produced by each Indonesian firm prevents us from extending our analysis to domestic sales. This represents a second promising avenue for future research.

Third, we have observed that firms in Batam special economic zone present very different characteristics, and that they benefit from the analysed reversal of trade liberalization episode. This result, from a placebo test, is intuitive because these firms were excluded from the introduced import restriction. Although only firms in Batam were exempted during the time period under analysis, the number of industrial estates and special economic zones has since increased significantly. For those researchers whose research interests centre on SEZs and firm-level activity, Indonesia is an interesting case study. This represents a third promising avenue for future research.

Finally, although our results contribute to a better understanding of EMFs' involvement in value chains, one limitation of this study is that we cannot follow those value chains beyond the firms analysed. Further research could exploit additional variation for firms in emerging markets. This will depend on data availability. For example, researchers could use multiproduct-level data on raw materials from different origins and final products targeted at different destinations; researchers might also merge firm-level data with transaction-level data obtained from customs agencies to follow how global value chains in specific sectors are affected in different environments (e.g., with different levels of protection or in a de-

globalization context). Going beyond the analysed firms is a fourth promising avenue for future research.²⁰

6. Conclusion

We explore the consequences of reversal of trade liberalization for emerging market firms' exports. Specifically, we focus on the consequences of the new procedures introduced in Indonesia in 2009 for the import of iron and steel. Our research shows that emerging market firms' exports decrease because of reversal of trade liberalization. In addition, firm-level responses to reversal of trade liberalization are heterogeneous. Firms that engage in importing activities, as well as foreign-owned firms, register a greater decline in exports, and exports of small and medium-sized enterprises decrease more than those of large firms. Finally, importing manufacturing firms that provide services increase their exports as a consequence of reversal of trade liberalization. This research has important policy implications. Given the interdependencies and complementarities of importing and exporting activities, governments should bear in mind that policies which inhibit imports have negative consequences for exports.

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²⁰ One promising starting point is the method described by Fortanier et al. (2020) to measure global value chains beyond the industry level of analysis by introducing intra-industry firm heterogeneity.

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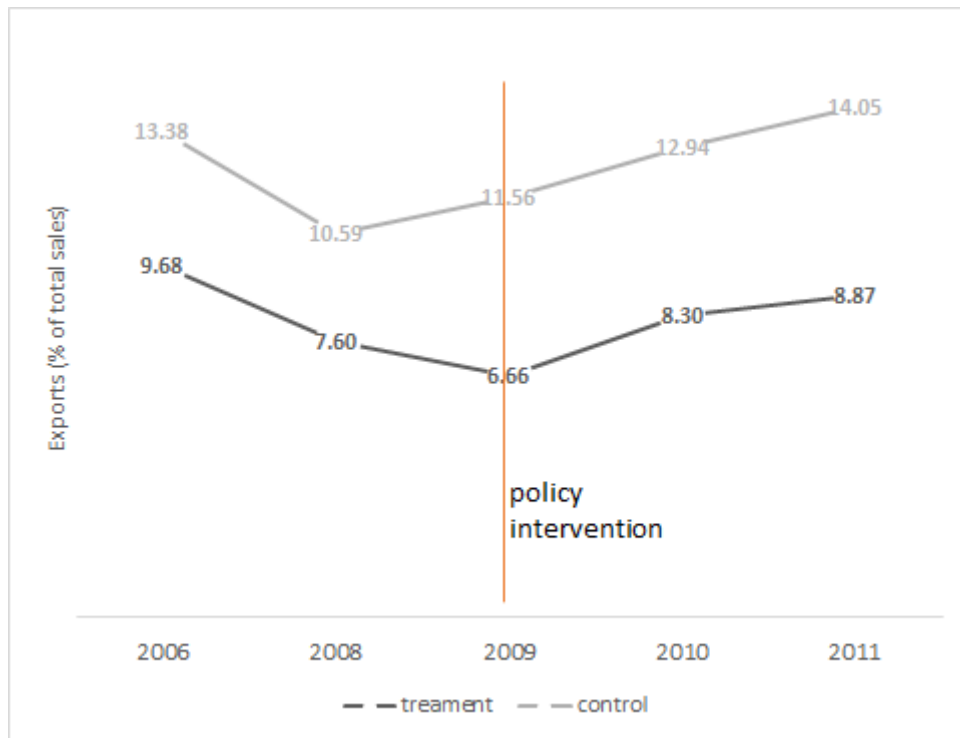
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TABLES AND FIGURES

Figure 1. Trends before and after policy intervention



Note: The control group includes all Indonesian manufacturing firms with 20 or more employees, excluding those in the iron and steel sectors. The treatment group includes Indonesian manufacturing firms with 20 or more employees in the iron and steel sectors.

Table 1. Summary Statistics

	mean (standard deviation)					
	alternative control groups					
	(1) all firms	(2) iron & steel (treatment group)	(3) all other manufact uring firms	(4) exclude F&B	(5) exclude F&B and other non-metal	(6) only firms located in Batam
Exports (% of total sales)	11.94 (29.60)	7.65 (23.13)	12.13 (29.83)	13.64 (31.30)	22.32 (38.52)	38.71 (45.91)
Ln (# of employees)	4.23 (1.20)	4.42 (1.13)	4.22 (1.20)	4.27 (1.21)	4.36 (1.22)	5.21 (1.39)
Ln (Sales/# of employees)	11.38 (1.48)	12.06 (1.42)	11.36 (1.48)	11.32 (1.44)	11.44 (1.29)	12.05 (1.38)
Foreign Ownership (%)	8.58 (26.74)	15.28 (33.86)	8.29 (26.35)	10.03 (28.79)	16.79 (35.92)	62.79 (47.54)
Foreign Input (%)	9.09 (24.37)	18.51 (33.05)	8.68 (23.85)	11.17 (26.72)	14.46 (30.26)	67.52 (41.80)
Ln (Manufacturing Services/# of employees)	9.35 (2.31)	10.34 (2.52)	9.29 (2.29)	9.44 (2.22)	9.63 (2.42)	11.22 (1.80)
<i>Dummies</i>						
Exporter dummy	0.18 (0.38)	0.15 (0.36)	0.18 (0.38)	0.20 (0.40)	0.30 (0.46)	0.48 (0.50)
Importer dummy	0.18 (0.38)	0.33 (0.47)	0.17 (0.38)	0.21 (0.40)	0.25 (0.43)	0.58 (0.49)
FDI dummy	0.10 (0.30)	0.18 (0.38)	0.10 (0.29)	0.11 (0.32)	0.19 (0.39)	0.64 (0.48)
SME dummy	0.16 (0.37)	0.26 (0.44)	0.16 (0.36)	0.15 (0.36)	0.16 (0.36)	0.24 (0.43)
Manufacturing Services dummy	0.22 (0.41)	0.30 (0.46)	0.22 (0.41)	0.26 (0.44)	0.26 (0.44)	0.57 (0.50)
<i>N</i>	82,604	3,388	79,216	56,532	14,516	1,021

Table 2. Baseline Results

	exports as a percentage of total sales				
	(1)	(2)	(3)	(4)	(5)
Treated.Post	-5.404*** (1.715)	-4.745*** (1.689)	-5.675*** (1.890)	-5.181*** (1.844)	-4.888*** (1.722)
Size		6.815*** (0.675)		6.990*** (0.837)	5.717*** (0.690)
Labour Productivity			2.033*** (0.284)	0.844*** (0.308)	0.361 (0.287)
Foreign Ownership					0.218*** (0.0156)
Sector dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
<i>N</i>	82,604	82,604	76,188	76,188	76,188
adj. <i>R</i> ²	0.213	0.272	0.227	0.284	0.312

Standard errors in parentheses, clustered by sector.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 3. Robustness Checks: Alternative Control Groups, Alternative Period, and Placebo Tests

	exports as a percentage of total sales				
	alternative control groups		(3)	placebo tests	
	(1)	(2)		(4)	(5)
	excluding F&B sectors	including only other metal sectors	using only 2008-2009 period	using F&B as pseudo-treated sectors	using Batam as pseudo-treated area
Treated.Post	-4.996*** (1.734)	-5.523*** (1.900)	-3.468*** (1.167)	-0.544 (1.873)	18.43*** (6.554)
Size	6.286*** (0.745)	5.923*** (0.713)	5.370*** (0.661)	5.855*** (0.707)	5.835*** (0.704)
Labour Productivity	0.204 (0.347)	-0.721* (0.381)	0.449* (0.252)	0.357 (0.298)	0.376 (0.297)
Foreign Ownership	0.226*** (0.0144)	0.246*** (0.0202)	0.208*** (0.0141)	0.218*** (0.0166)	0.220*** (0.0164)
Sector dummies	Yes	Yes	Yes	Yes	Yes
Year dummies	Yes	Yes	Yes	Yes	Yes
<i>N</i>	53,871	16,385	38,121	73,109	73,485
adj. <i>R</i> ²	0.310	0.310	0.287	0.314	0.315

Standard errors in parentheses, clustered by sector.

* $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Table 4. Mechanisms on Exports Intensity (Triple DID)

	exports as a percentage of total sales						
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
			only importing firms		only importing firms		only importing firms
Treated.Post.Importer	-4.889** (2.242)						
Treated.Post.FDI		-15.87*** (2.474)	-16.59*** (4.381)				
Treated.Post.SME				-10.73*** (2.636)	-12.10*** (3.216)		
Treated.Post.Services						2.128 (1.634)	8.496*** (2.689)
Treated.Post	-1.139 (0.690)	-0.571 (0.660)	0.795 (2.058)	-0.289 (0.784)	0.759 (2.254)	-2.549*** (0.841)	-6.684*** (2.207)
<i>N</i>	53,200	53,200	11,928	53,200	11,928	53,200	11,928
adj. <i>R</i> ²	0.311	0.300	0.323	0.276	0.310	0.308	0.341

Standard errors in parentheses, clustered by sector. All specifications include control variables, sectoral dummies, and year dummies. * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

APPENDIX

Table A1. List of sectors in the treatment groups

5-digit industry code (KLBI 2000)	Description
27101	Manufacture of Basic Iron and Steel
27102	Manufacture of Steel Rolling
27103	Manufacture of Metal Pipe and Pipe Fitting of Steel and Iron
27310	Casting of Iron and Steel Industry
28113	Manufacture of Fabricated Structural Steel Products
28120	Manufacture of Tanks, Reservoirs and Containers of Metal
28910	Forging, Pressing, Stamping and Roll-Forming of Metal, Powder Metallurgy Industry
28920	Machining, Treatment and Coating of Metals Industry
28931	Manufacture of Cutlery, Hand Tools For Agricultural
28932	Manufacture of Cutlery, Hand Tools For Carpentry Cut
28933	Manufacture of Cutlery and Hand Tools Used In Household
28939	Manufacture of General Hardware
28939	Repair of fabricated metals.
28991	Manufacture of Kitchen Appliances and Equipment of Table Metals
28992	Manufacture of Safety Deposit Box, Goods of Filling the Office and Kinds
28993	Manufacture of Chain, Springs and Screw
28994	Manufacture of Pails, Cans, Drums and Similar Containers of Metal
28995	Manufacture of Wire Products
28996	Manufacture of Making Profiles
28997	Manufacture of Metal Lamp
28999	Manufacture of Other Metal Products N.E.C
29270	Manufacture of Weapons and Ammunition