

Tax Reporting Simplification and Firm Behavior *

Philipp Doerrenberg
University of Mannheim
doerrenberg@uni-mannheim.de

Alina Pfrang
Stanford University
apfrang@stanford.edu

Christin Schmidt
University of Mannheim
christin.schmidt@uni-mannheim.de

Draft Date: 10/22/2026

Abstract: Simplifying regulation and reducing bureaucratic costs are widespread policy objectives, yet evidence on their economic effects and on firms' behavioral responses remains limited. We study whether and how a major tax reporting simplification affects real business activity. Our setting leverages the European Union's 2021 VAT reform, which substantially simplified VAT reporting and remittance for firms exporting to EU member states. Combining novel transaction-level administrative data with a difference-in-differences design, we find that the simplified reporting significantly increases real economic activity. Treated firms execute roughly 34% more transactions, broaden their product scope, and expand into additional countries. Survey evidence confirms that firms perceive the reform as reducing compliance costs, and our mechanism tests are consistent with lower prices, freed-up firm resources, and reduced market-entry costs. We also document an unintended reporting consequence of the reform. For non-EU exporters, the simplified reporting applies only to transactions valued at EUR 150 or less. After the reform, the distribution of transactions exhibits pronounced excess mass below this threshold and a corresponding hole above it. Average prices and parcel weights decline, consistent with a strategic reporting response in which firms misreport values and split transactions into multiple parcels to qualify for the simplified regime.

*We thank Thomas Brosy, Alexander Edwards, Michael Love, Enlinson Mattos, Matthias Petutschnig (all discussants), Rebecca Lester, Marcel Olbert, Barbara Stage, Johannes Voget and participants at various conferences and workshops (Economic Growth and Public Policy Conference 2026, Stanford Initiative for Business, Taxation, and Society, WHU, WU Vienna, 118th National Taxation Association Annual Conference, Vienna Doctoral Consortium in Taxation 2025, IIPF Annual Congress 2025, University of Iowa, Mannheim Taxation Conference 2025, Doctoral Tax Seminar Mannheim 2025, University of Mannheim, German Federal Ministry of Finance, Standing Committee Public Economics at German Economic Association) for helpful comments and suggestions. For data support, we thank Hannes Fauser and Benedikt Zapf from the German Federal Statistical Office, Alexander Jonen from the German Federal Ministry of Finance, and the team of the German Customs Authority. We are grateful for funding through Leibniz-ScienceCampus Mannheim-Taxation. Alina Pfrang gratefully acknowledges funding from the Lazear-Liang postdoctoral fellowship at the Stanford Graduate School of Business. Christin Schmidt gratefully acknowledges financial support from the Graduate School of Economic and Social Sciences of the University of Mannheim and IDEUM.

1 Introduction

Simplifying regulation and reducing bureaucratic costs for businesses are stated goals of economic policy in countries worldwide.¹ Policymakers seek to reduce regulatory frictions and administrative burdens, arguing that simpler, less bureaucratic rules lower compliance costs and ultimately stimulate the economy. One area where calls for simplification are particularly prevalent is business taxation (European Commission 2020; OECD 2025a; Baer and De Mooij 2026). The tax environment in which firms operate is highly complex, and prior work finds that this complexity affects firm behavior along several margins (Zwick 2021; Amberger et al. 2025). Yet, despite the widespread policy objective of simplifying the tax system, empirical evidence on whether and how firms respond when complexity is actually reduced is limited. In this paper, we address this gap in the literature by studying whether simplified tax regulation affects business activity. Specifically, we study how a European Union (EU) reform that considerably simplified cross-border value-added tax (VAT) reporting affects firms' international transactions, including transaction counts, sales volume, and the scope of traded products and destination countries.

Conceptually, simplifying the tax system can affect firm activity in two ways. First, tax systems may be so complex that they are difficult to understand and interpret. Simplification may then help firms avoid costs related to misinterpreting the rules (Abeler and Jäger 2015; Zwick 2021). Second, tax complexity can give rise to administrative burdens that generate compliance costs. Complying with tax obligations requires firms to fulfill numerous reporting requirements, often in different languages (Amberger et al. 2025). Simplification can reduce such compliance costs and free up resources for core business activities. In this paper, we focus on reducing these administrative compliance costs.

To study this, we leverage the EU's 2021 VAT reform, which simplified tax reporting for cross-border business-to-consumer (B2C) transactions while leaving other characteristics, such as tax rates or bases, unchanged. This cross-border VAT setting is well suited to study firm responses to simplification. Complexity-induced compliance costs are especially pronounced for VAT, and even more so for cross-border transactions (International Monetary Fund 2001; Harju et al. 2019; Mascagni et al. 2023). VAT is also a major revenue source for EU member states, accounting for 15.7% of their total revenues (European Com-

¹For example, in 2025, the OECD convened a high-level symposium on "Simplifying for Success," bringing together government and business leaders to address regulatory complexity (OECD 2025b). Similarly, the 2024 Draghi report on EU competitiveness identified regulatory simplification as a key lever for restoring Europe's economic dynamism (European Union 2024).

mission 2022b).² Moreover, the continued growth of globalized online shopping through platforms such as Amazon, Temu, and Shein has led to a rise in cross-border B2C transactions (Mínguez and Minondo 2025).

In the EU, cross-border B2C transactions are generally taxed on a destination basis. This means that VAT is owed in the consumer's country, and the exporting firm has to report and remit it abroad, which often requires the assistance of a local tax advisor.³ Consider a German firm selling goods online to households in France and Bulgaria. Before the reform, it had to register for VAT separately in France and in Bulgaria, filing returns under each country's rules, completing each set of forms, and often filing in the local language. The reform we study introduced two major simplification schemes, the One Stop Shop (OSS) and the Import One Stop Shop (IOSS) portals, that let exporting firms report and remit VAT for all destination countries through a single portal. The OSS is available to EU firms exporting to other member states, and the IOSS to non-EU firms exporting to EU consumers. For the firm in our example, this eliminates the need to register in France and Bulgaria or to engage local tax advisors in either country. It now registers only in Germany and reports its French and Bulgarian sales through a single OSS return filed in its own language.⁴ Importantly, the change did not affect business-to-business (B2B) transactions.

The stated objective of the EU reform was to reduce compliance costs and, ultimately, stimulate business activity. We expect the reform to affect firms' cross-border activity along three channels. First, firms may pass some of the savings from lower compliance costs on to their customers (*price pass-through*), resulting in lower prices and greater demand. Second, simplifying VAT registration and reporting potentially frees up resources that firms can redirect toward their sales activities (*resource freeing*), for example by directing human or financial resources toward international marketing or expanding the range of products sold. Third, a single portal for all cross-border sales reduces the fixed costs of expanding to an additional destination country (*geographic expansion*). Before the reform, entering a new market required firms to acquire country-specific knowledge, including knowledge of local language and documentation requirements, and often to engage additional tax advisors. By reducing these costs, the reform may make entry into new export markets

²Generally, consumption taxes are among the largest sources of tax revenue for governments worldwide. In OECD countries, consumption taxes account for roughly 30% of total tax revenue, compared with 12% for corporate income taxes (OECD 2024; Ghosh et al. 2025).

³Although consumers pay VAT as part of the purchase price, the exporting firm is responsible for registering, reporting, and remitting the tax to the authorities in the destination country.

⁴Figure 1 Panel (a) illustrates this change contrasting the pre- and post-reform reporting environment for B2C sales within the EU.

more attractive and allow firms to reach new customers.

However, these positive effects on trading activity may not materialize if firms incur adjustment costs when adopting the new portal or have already optimized their systems under the prior regime, leaving little scope for increases in sales activity. The reform’s potential to stimulate activity also depends on whether firms perceive it as reducing complexity. To obtain a first impression of how firms view the reform, we collect survey data through the German Business Panel (Bischof et al. 2025; Gassen and Muhn 2025; Winter et al. 2025). The survey evidence indicates that firms perceive the new portal as reducing VAT filing complexity through more standardized procedures and greater filing efficiency.

To empirically study the effects of the simplified EU VAT system on firms, we use several high-frequency administrative datasets from Germany at the firm and transaction levels. Germany is one of the EU’s most active participants in cross-border commerce, making it an economically important setting that likely to carries external validity for other major economies. The datasets include tens of millions of observations and have not previously been available to researchers. Specifically, we combine VAT returns, foreign trade statistics, and customs data from before and after the reform.

In our first set of analyses, we assess the real effects of the OSS on German firms’ within-EU sales activity. We employ a difference-in-differences (DiD) research design that compares the change in sales activity of treated B2C firms before and after the simplification reform with the corresponding change among unaffected B2B firms over the same period. We link monthly transaction-level foreign trade data to firm-level VAT return data from 2018 to 2023 and classify treated firms based on five-digit industry codes.

We find that the number of cross-border transactions among treated firms increases significantly relative to control firms following the reform. The treatment effect is economically sizable, with treated firms exporting roughly 34% more transactions than control firms. This equals about 4 additional transactions per firm-month relative to the pre-reform average. The increase in transaction counts is not accompanied by a significant increase in sales revenue. We return to this gap when testing for price effects. We further find increases in both product scope and the number of destination countries served. To confirm that these results are not driven by pre-existing trend differences between treatment and control firms, we plot coefficients from a dynamic DiD specification. Pre-reform coefficients are close to zero and statistically insignificant, supporting the parallel trends assumption, while the treatment effect builds gradually following the reform.

We further assess the robustness of our findings through an alternative comparison in which both treated and control firms operate in the B2C sector. The new portal is not available for B2C transactions by EU firms to non-EU countries, allowing us to compare German B2C firms that primarily export to EU member states with those that primarily export to non-EU countries. The results closely mirror those from our main specification. We find a similar increase in transaction counts, as well as similar effects on sales, product scope, and destination countries.

To shed light on the mechanisms underlying these effects on business activity, we examine the three channels outlined above. First, *price pass-through* could explain why transaction counts increase while sales revenue does not increase significantly. Firms may pass part of their compliance cost savings on to customers through lower prices. Consistent with this channel, we find that mean firm-product prices decline by 2.6% after the reform. Second, the *resource-freeing* channel suggests that firms redirect released administrative capacity toward their sales activities, for example by expanding the range of products they sell. We therefore examine the product scope response and test whether it is stronger where the reform frees up more resources. Firms that exported to multiple countries before the reform had to meet recurring reporting obligations in each of these countries, so the single portal should free up the most capacity for them. In line with this channel, we find that their product scope response is stronger than that of firms exporting to a single country. Third, we examine the *geographic expansion* channel. A reduction in destination-specific fixed costs should facilitate geographic expansion, particularly among firms with limited administrative resources. Consistent with this prediction, we find that the number of destination countries increases significantly among small and medium-sized firms but not among large firms. Our survey evidence points to one such destination-specific cost. Firms identify the ability to file in their native language as a key advantage of the portal, indicating that language barriers are among the country-specific costs the reform removes.

In a second set of analyses, we turn to the second part of the reform, the IOSS. It extends the same single-portal simplification to non-EU firms exporting to consumers in the EU, but unlike the OSS it applies only to transactions valued EUR 150 or less. Returning to our earlier example, we now consider a Chinese firm selling to consumers in Germany and France. Under the reform, it can use the IOSS to report all transactions below EUR 150 through a single portal, whereas previously it had to register and report in each country

separately.⁵ Such eligibility thresholds are a common feature of regulatory and tax policy. Prominent examples include simplified accounting (Bernard et al. 2018) and tax regimes (Aghion et al. 2025), both of which rely on size-based (e.g., revenue) cutoffs.⁶

These thresholds, however, give firms a second way to respond. Beyond adjusting their real activity, as we document for the OSS, firms can engage in strategic reporting to access a regime's benefits without changing their underlying business. In the IOSS, this could mean understating transaction values or splitting a transaction worth more than EUR 150 into several smaller parcels that each fall below the cutoff. Real and reporting responses have different implications for evaluating the simplification reform. Real responses reflect the policy working as intended, whereas reporting responses are an unintended consequence that may erode the tax base. Assessing whether both types of responses occur is therefore important but difficult in most settings (Lester and Olbert 2025). The threshold in the IOSS setting allows us to do so. We first examine whether the IOSS generates real effects similar to those of the OSS, and then analyze firm behavior around the threshold to provide evidence of strategic reporting alongside these real responses.

For the IOSS analysis, we use transaction-level customs data comprising roughly 250 million raw transactions from 2018 to 2023. We find that eligible B2C imports increase significantly after the reform, both in transaction counts and sales volume, indicating that the simplification effect extends to non-EU firms. These effects are considerably larger than under the OSS, suggesting that responses around the eligibility threshold may contribute to the overall effect. We therefore zoom into firm responses around this threshold.

Following the logic of a bunching analysis, we plot the number of B2C transactions in narrow transaction value bins around the EUR 150 threshold, separately for the pre- and post-reform period (Burgstahler and Dichev 1997). Before the reform, we observe modest bunching below the threshold, which is expected because transactions below this value are exempt from tariffs throughout our sample period. Apart from this bunching, the distribution is smooth and shows no missing mass above the threshold. After the introduction of the simplified portal, a pronounced missing mass appears just above the threshold, accompanied by excess mass below it. This shift indicates that transactions

⁵Figure 1 Panel (b) illustrates this change, contrasting the pre- and post-reform reporting environment for B2C sales from non-EU firms to EU consumers.

⁶More specific examples are the U.S. Qualified Small Business Stock exclusion under Section 1202, which grants tax benefits only to firms whose gross assets fall below a specified threshold, and international regulations such as the Global Minimum Tax and Country-by-Country Reporting which apply only to large multinational firms above certain revenue thresholds, exempting smaller firms from these requirements.

move below the eligibility threshold after the reform. Following Bernard et al. (2018), we estimate that after the reform B2C transactions become up to 49% more likely than B2B transactions to be declared below EUR 150.

In additional tests, we confirm that this response is driven by the simplification reform. The shift is absent for B2B transactions, for which the portal is unavailable. The tariff exemption cutoff also cannot explain the result because the same exemption existed before the reform without producing a missing mass above the threshold.⁷ Separate analyses of transactions from Germany’s two most important non-EU trading partners, the United States and China, yield similar results, although the response is somewhat stronger for China.

We next assess whether real or reporting responses to the threshold account for this shift. Real responses alone cannot fully explain our findings. While marginal price reductions or an expanded supply of lower-priced goods could generate the excess mass below the threshold, neither can explain the pronounced missing mass that extends well beyond it. The evidence therefore suggests that reporting responses, such as understated values or parcel splitting, also play a role.

To test specifically for parcel splitting, we examine transaction weights. If firms divide a transaction into several lighter parcels to bring each below the threshold, the average transaction weight should decline within a given product, a change that a real price reduction would not produce. For example, a transaction worth EUR 170 split into two lighter parcels now appears as two sub-threshold transactions, changing how the transaction is reported without changing the underlying business activity. Consistent with splitting, we find that the average weight of B2C transactions declines by approximately 0.8 kg relative to B2B transactions after the reform. As additional evidence, we show that the shift below the threshold is concentrated among divisible products such as clothing and footwear, which can be shipped in several parcels, and is largely absent for non-divisible products. Together, these results point to an unintended reporting response in which firms split single transactions into several lower-valued parcels to qualify for the simplified portal.

Our paper contributes to three streams of literature. First, we add to the literature on tax and reporting complexity. Prior research shows that complex tax and reporting systems impose substantial economic costs by reducing refund uptake (Zwick 2021), foreign direct investment (Esteller-More et al. 2021; Euler et al. 2024), employment growth (Brown et

⁷As a further check, we examine products subject to tariffs separately from those that are not and find consistent results for both.

al. 2025), and the effectiveness of tax policy (Amberger et al. 2025), and by weakening firms' information environments and disclosure quality (Brown et al. 2023). Related work examines how firms cope with complexity under existing tax and accounting rules, for instance by using tax preparers (Zwick 2021), developing in-house accounting expertise (Chychyla et al. 2019), or relying on taxpayer assistance centers (Armstrong and Glaeser 2026). We extend this literature by studying how firms respond to a regulatory change that directly reduces complexity. We show that simplified tax reporting increases cross-border business activity, including transaction counts, product scope, and geographic reach.

Second, we contribute to the literature on the real effects of reporting regulation and firms' strategic responses to reporting incentives. Prior research primarily examines the consequences of additional tax reporting requirements, including Country-by-Country Reporting mandates (De Simone and Olbert 2022; Nessa et al. 2025) and measures aimed at curbing tax avoidance (Bilicka et al. 2025). In contrast, we study a reform that reduces reporting burdens and show that simplified tax reporting increases business activity by lowering compliance costs. Furthermore we document reporting responses alongside the real responses. Using transaction weights, we separate parcel splitting from real price adjustments (De Simone et al. 2020). Observing both responses in the same setting speaks directly to the interaction that Lester and Olbert (2025) call on accounting researchers to examine. Our findings show that eligibility-based reporting incentives can undermine the objectives of simplification, extending the literature on how tax reporting regulations can induce strategic firm behavior (Williams and Williams 2021; Kelley et al. 2024).

Third, we contribute to the literature on how VAT rules shape firm behavior. Prior work examines how VAT adoption and tax rates affect investment (Jacob et al. 2019; Chen et al. 2023), payout behavior (Jacob et al. 2024), cross-border revenue allocation (De Simone and Olbert 2025), and product mix (Ghosh et al. 2025), while a separate compliance literature shows that the VAT's third-party reporting structure affects the extent to which firms report transactions (Pomeranz 2015; Naritomi 2019). We connect these streams by studying how simplified VAT reporting affects both business activity and reporting behavior. Using high-frequency transaction-level data, we show that simplified reporting expands real economic activity, while an eligibility threshold within the simplified regime induces strategic reporting. Our focus on VAT also responds to a call by Dyreng et al. (2025) to study non-income taxes, which remain underexplored despite their growing fiscal importance.

2 Institutional Details and Conceptual Framework

2.1 Simplifying VAT Reporting

VAT is a broad-based consumption tax levied on most goods and services in over 170 countries worldwide.⁸ Unlike the U.S. retail sales tax, which is collected only at the final point of sale, VAT is collected at each stage of the supply chain. Firms charge VAT on their sales (output VAT), reclaim VAT paid on their purchases (input VAT), and remit the difference to the tax authority.⁹ For cross-border B2C transactions, VAT is generally assessed on a destination basis, meaning that the tax is owed in the country where the consumer resides and at that country's applicable rate.¹⁰ Critically, the obligation to report, collect, and remit the VAT falls on the selling firm rather than the consumer.

We study firms exporting goods to consumers in EU member states. Our setting distinguishes between EU firms selling to consumers in other EU member states (intra-community sales) and non-EU firms selling to consumers in the EU (extra-community imports). In both cases, the selling firm is responsible for registering for VAT, reporting transactions, and remitting the collected tax to the destination country. Prior to the reform, this created a highly fragmented compliance environment. A firm selling to consumers across multiple EU member states had to register for VAT separately in each destination country, navigate the distinct reporting systems of each national tax authority, and file returns according to each country's specific requirements. Given that the EU comprises 27 member states, each with its own registration procedures, filing deadlines, return formats, language requirements, and VAT rates ranging from 17% to 27%, these firms faced considerable complexity. Even modest expansion into additional markets required firms to manage an entirely new set of administrative requirements for each country entered.

To reduce this complexity, the EU introduced the VAT e-commerce package in July 2021. The reform established two simplification tools that allow firms to report and remit VAT for multiple jurisdictions through a single online portal in one EU member state: the *One Stop Shop* for intra-community sales and the *Import One Stop Shop* for extra-community imports.

⁸For a comprehensive overview of VAT systems, see Keen (2013) and OECD (2024).

⁹An exemption applies to small businesses. For example, in Germany, small businesses whose sales in the previous year did not exceed EUR 17,500 and whose current sales do not exceed EUR 50,000 are exempt from VAT.

¹⁰The destination principle applies to firms exceeding an annual threshold of EUR 10,000 in total cross-border sales and thus to the majority of firms. Firms below this threshold follow the origin principle.

The OSS is available to EU firms selling to consumers in other EU member states and can be used for B2C transactions of any value. Rather than registering separately in each destination country, firms register once in their home member state and submit monthly returns covering all their intra-EU B2C sales. The portal calculates the VAT owed to each destination country based on the applicable local rate, and the firm remits the total amount to its home country's tax authority, which then distributes the revenues to the respective member states. Firms typically select their home country as the member state of registration, allowing them to report in their own language. Registration for the OSS is voluntary. Firms that do not use the OSS must continue to register separately in each country where they sell to consumers. The reform thus creates a strong incentive to adopt the OSS, particularly for firms operating across multiple countries, as it eliminates the need to manage different national VAT systems.

To illustrate the scope of the change, consider a German firm that sells products to final customers in France and Bulgaria (see Figure 1 Panel (a)). Prior to the reform, this typically required either engaging an external tax advisor in each destination country or building substantial in-house capacity to manage two separate VAT registrations, each with its own deadlines, forms, and language requirements. Under the reformed system, the firm registers once and reports all cross-border B2C transactions through a single standardized portal in German. If it subsequently decides to enter a new market, e.g., the Netherlands, no additional VAT registration or country-specific setup is required.

Our second setting, the IOSS, provides an analogous simplification for firms located outside the EU that sell goods to EU consumers (see Figure 1 Panel (b)). A critical feature of the IOSS is that it applies only to transactions valued at EUR 150 or less.¹¹ Under the IOSS, VAT is charged to consumers at the point of sale, and firms report and remit the collected VAT monthly to their chosen EU member state. The EUR 150 threshold creates a discrete change in reporting requirements. Transactions for which firms can use the IOSS benefit from streamlined reporting, faster customs clearance, and a reduced administrative burden. Transactions above the threshold, by contrast, require full import VAT and customs declarations and the associated procedural complexities. The EUR 150 threshold coincides

¹¹We use the term *transaction* interchangeably with the legal term *consignment*. Following the definition in the legal text of the VAT e-commerce package, a consignment (transaction) refers to goods packed together and dispatched simultaneously by the same supplier to the same consignee under a single transport contract. The EUR 150 threshold applies to the total transaction value rather than to individual parcels within a transaction, excluding transport and insurance costs, and VAT.

with the tariff exemption threshold.¹² Because the exemption predates the reform and remained unchanged, any change in behavior around the threshold after the reform is attributable to the IOSS rather than to the tariff exemption.

Alongside the IOSS, the deemed supplier provision was introduced, under which on-line marketplaces facilitating sales by non-EU sellers are treated as the supplier for VAT purposes and bear the responsibility for collecting and remitting the tax. Crucially, this provision applies to transactions both above and below EUR 150, so it does not generate differential incentives around the threshold and is therefore unlikely to confound the behavioral responses we document. The reform also abolished the former EUR 22 VAT exemption for low-value imports, meaning that all goods imported into the EU became subject to VAT regardless of value. To avoid confounding effects from this change, we exclude transactions valued below EUR 30 from our analyses.

Importantly, neither the OSS nor the IOSS changes the VAT burden itself, as the applicable rate remains that of the destination country. The application and amount of tariffs are also unaffected. Both portals apply exclusively to B2C transactions and do not change the reporting obligations for B2B sales, which we leverage as a control group in our empirical analysis. Table 1 summarizes the key changes implemented by the reform.

2.2 Conceptual Framework

Complying with tax obligations can impose substantial costs on firms beyond the tax liability itself (e.g., James 1990; Amberger et al. 2025; Brown et al. 2025). The European Commission estimates that EU businesses spend a combined EUR 204 billion annually on tax compliance and that firms regard VAT and corporate tax as the most burdensome taxes to comply with (European Commission 2022a). Selling across borders amplifies the VAT compliance burden, because each destination country adds its own set of obligations. Before the reform we study, firms selling to consumers in multiple EU member states had to maintain a separate VAT registration in each destination country, meet country-specific documentation and filing requirements, and often rely on external tax advisors to navigate procedures in foreign languages.

To conceptually derive how simplified tax reporting can reduce these burdens, we

¹²Tariffs apply to some extra-community imports. In general, they apply only to transactions above EUR 150. However, whether a specific product is subject to customs duties and the applicable rate depends on the type of product.

draw on prior work that distinguishes between fixed and ongoing tax compliance costs (Sandford 1973; Blumenthal and Slemrod 1992; Blumenthal and Slemrod 1995) and apply this distinction to our cross-border VAT setting. Fixed compliance costs arise from setting up the systems needed to meet tax obligations and are largely independent of transaction volume. In our setting, they are incurred mainly when a firm begins selling in a new destination country and include VAT registration, acquiring country-specific knowledge, and setting up the administrative processes needed to meet local requirements. These costs are thus part of the fixed costs of market entry studied in the trade literature (Melitz 2003). Ongoing compliance costs are the recurring costs of operating these systems and meeting tax obligations over time. In our setting, they are incurred once a firm has established its compliance system in a destination country and include maintaining transaction-level records, applying destination-specific rules, and preparing recurring filings.

Regulatory simplification directly targets these compliance costs by lowering the resources firms must devote to meeting their tax obligations. Unlike the use of tax preparers, in-house expertise, or taxpayer assistance, which prior literature studies as ways for firms to manage existing complexity (Chychyla et al. 2019; Zwick 2021; Armstrong and Glaeser 2026), simplification reduces the underlying reporting requirements. The reform we study reduces both fixed and ongoing compliance costs. By allowing firms to report VAT for all destination countries through a single portal, it eliminates the need for separate registrations, thereby lowering the fixed cost of entering a new destination country and establishing the associated compliance system. Consolidating recurring reporting in a single system also lowers ongoing compliance costs by making reporting easier to standardize and automate. Building on prior evidence from other settings that lower tax and regulatory costs stimulate entrepreneurship and business activity (Klapper et al. 2006; Djankov et al. 2010), we expect the reform to increase firms' cross-border activity. We examine firm responses along four margins, namely transaction counts, sales revenue, product scope, and the number of destination countries served.

To explain how lower compliance costs may translate into changes along these four margins, we consider three mechanisms. First, firms may pass part of their compliance cost savings on to consumers through lower prices (*price pass-through*). Lower prices can increase demand and, in turn, business activity. However, because lower prices and greater demand have opposing effects on sales revenue, the effect on revenue is theoretically

ambiguous.

Second, lower ongoing compliance costs may free up human and financial resources that firms can redirect toward revenue-generating activities (*resource freeing*). Instead of devoting the same administrative capacity to jurisdiction-specific reporting, firms can invest these resources in international marketing, product development, or expanding the range of products sold. This mechanism therefore predicts both higher transaction counts and broader product scope. We expect the product scope response to be particularly pronounced among firms already operating across several destination countries. These firms faced greater ongoing reporting burdens before the reform and can use the released capacity to broaden their product offerings within existing markets.

Third, lower fixed destination-specific compliance costs may encourage firms to enter additional markets (*geographic expansion*). The single portal eliminates separate VAT registrations and reduces the need to acquire country-specific tax knowledge or rely on local tax advisors. We therefore expect the increase in destination countries served to be particularly pronounced among small and medium-sized firms, whose limited administrative resources make fixed compliance costs more likely to constrain entry.

These predicted effects, however, may not materialize immediately or uniformly across firms. Adopting the new system can create adjustment costs, and firms that had already invested in efficient compliance systems under the prior regime may realize smaller gains. The effects may also be limited if firms are unaware of the portal or do not perceive it as meaningfully simplifying compliance (Hoopes et al. 2015; Cui et al. 2022). Thus, although we expect simplification to increase cross-border business activity, the magnitude and timing of the response remain uncertain. The particular margin on which a firm responds may also depend on whether the reform primarily affects its pricing, resource allocation, or market-entry decisions.

As under the OSS, we expect simplified reporting through the IOSS to generate a general increase in real business activity. Unlike the OSS, however, the IOSS is available only for transactions valued at EUR 150 or less. Beyond the general increase in activity, this eligibility threshold may induce additional firm responses around the cutoff. First, firms may respond along real margins by expanding the supply of lower-priced goods or reducing prices to bring transactions below the cutoff. Second, they may also respond through strategic reporting by understating transaction values or splitting a single transaction into several parcels to qualify for the portal (De Simone et al. 2020; Kelley et al. 2024; Aghion

et al. 2025). These responses differ in whether underlying business activity changes. Real responses involve changes in prices or products, whereas reporting responses change how transactions are reported without a corresponding change in underlying activity. This distinction motivates our analysis of real and reporting responses under the IOSS.

2.3 Firm Survey

To better understand how firms perceive the reform, we conduct a survey among German firms. The survey was administered by the German Business Panel (Bischof et al. 2025; Gassen and Muhn 2025; Winter et al. 2025) during spring and summer 2025, roughly four years after the implementation of the EU VAT e-commerce reform. This timing ensures that firms had sufficient experience to form well-grounded views. Responses were collected anonymously through an online questionnaire administered via Qualtrics.

The survey evidence speaks directly to the frictions discussed above, namely whether the reform was sufficiently salient and whether firms perceived it as genuinely simplifying the system. We ask a total of 3,276 firms whether they engage in cross-border B2C sales within the EU. About 21% report engaging in such sales in recent years and receive follow-up questions about their VAT filing practices and OSS adoption. Among OSS users, 63% report that VAT filing has become simpler under the OSS. They cite standardized reporting procedures, efficiency gains, and the ability to file in their native language as the main advantages. These responses indicate that, among adopting firms, the reform was both salient and perceived as delivering meaningful simplification, mitigating concerns that limited awareness or skepticism about the reform’s benefits would suppress a real response. Finally, we ask firms whether the OSS prompted them to expand their sales to additional EU member states. Notably, 11% of firms report that it did, providing preliminary survey-based evidence consistent with the geographic expansion mechanism discussed above. Key survey results are summarized in Figure 2.

3 Effect of Simplified Reporting on Business Activity

3.1 Empirical Strategy

We first study the OSS to estimate the effect of simplified VAT reporting on firms’ cross-border business activity. Unlike the IOSS, the OSS applies to transactions of any value

and does not impose an eligibility threshold. It therefore does not create the threshold-based incentives for strategic reporting that arise under the IOSS, allowing us to focus on real changes in business activity. We employ a difference-in-differences research design. Our baseline specification compares treated B2C firms to control B2B firms selling to EU member states before and after the reform. Since B2B transactions are not eligible for the OSS, the evolution of B2B exports provides a benchmark against which to assess changes in intra-EU B2C sales attributable to the reform. We note that not all firms in the treatment group adopt the OSS despite its simplification benefits, and our estimates should therefore be interpreted as intent-to-treat effects. Official sources document rapid and continued OSS adoption in Germany and across the EU.¹³

We employ a Poisson pseudo-maximum likelihood (PPML) estimator, which is well suited for count-based outcome variables and handles the prevalence of zeros in trade data more effectively than log-linear alternatives (Santos Silva and Tenreyro 2006; Cohn et al. 2022; Chen and Roth 2023; Wooldridge 2023). Specifically, for firm i and month t we estimate the following specification:

$$BusinessActivity_{it} = \exp(\beta_1(TREAT_i \times POST_t) + \mathbf{W}_{it} + \alpha_i + \alpha_t) \varepsilon_{it} \quad (1)$$

where $BusinessActivity_{it}$ captures a firm's monthly cross-border business activity, measured alternatively as the number of transactions (*Count*), total sales volume (*Sales*), the number of distinct goods traded cross-border (*Goods*), and the number of distinct destination countries (*Countries*). $TREAT_i$ is an indicator variable equal to one for firms exposed to the OSS reform and zero otherwise. In the baseline specification, $TREAT_i$ equals one for B2C firms selling within the EU and zero for B2B firms trading within the EU. Following prior literature, we classify retailers and wholesalers primarily engaged in B2C sales as the treatment group (De Simone and Olbert 2025).¹⁴ $POST_t$ equals one for the post-reform period from July 2021 to December 2023 and zero otherwise. Firm fixed effects (α_i) absorb time-invariant heterogeneity across firms, while year-month fixed effects (α_t) capture aggregate shocks common to all firms in a given period. Standard errors are clustered at the firm level.

¹³According to the German Federal Government, 23,638 businesses had already registered for the OSS by 6 August 2021, only weeks after the reform's introduction (German Federal Government 2021), and the European Commission documents a continued increase in OSS registrations across the EU, describing the VAT e-commerce package as a successful reform (European Commission 2025).

¹⁴See Appendix Table A.3 for the industry descriptions and codes included in the treatment group.

In some specifications, we additionally include a vector of control variables ($\mathbf{W}_{it}$). These include pre-treatment average cross-border transaction counts and/or sales volume interacted with a linear time trend (specification labeled as *cross-border trade controls*), or pre-treatment values of the number of employees and total firm sales interacted with a linear time trend (specification labeled as *firm-level controls*). We use pre-treatment control variables to avoid bad controls. The coefficient of interest is β_1 , which captures the average change in business activity for treated firms relative to control firms following the reform. A positive and significant β_1 is consistent with the reform stimulating cross-border business activity.

We choose the B2B control group for two reasons. First, both groups operate within the same intra-European market and are exposed to common macroeconomic and trade conditions. Second, B2B transactions are not affected by the OSS because they are ineligible for the portal. Our identifying assumption is that, absent the reform, cross-border business activity of B2C and B2B firms would have evolved in parallel. Consistent with this assumption, pre-reform trends in business activity are similar across the two groups, as we show in Section 3.3.

A potential concern is that the reform indirectly affects B2B firms if expanded B2C activity substitutes for distribution through wholesalers and retailers, thereby reducing demand for B2B transactions. We do not view this as a material threat to identification. The substitution channel would require foreign retail consumers to shift toward direct cross-border online purchases from German firms rather than purchasing through domestic intermediaries that import their products from German firms, a margin that is less immediate and less likely to be driven by the OSS reform. Moreover, if firms were to shift their business model from B2B toward direct-to-consumer sales following the reform, this would attenuate our estimates rather than inflate them, since treatment status is assigned based on pre-reform industry classification and a firm switching toward B2C post-reform would be counted as a control firm expanding its activity, pushing the estimated treatment effect downward.

Nevertheless, B2C and B2B firms may differ systematically in their business models, customer structures, and trading behavior in ways not fully captured by firm fixed effects and pre-treatment controls. We therefore estimate an alternative specification that restricts the comparison to B2C firms only. Specifically, we compare German B2C firms primarily exporting to EU member states with those primarily exporting to non-EU countries. Since

extra-EU transactions are not eligible for the OSS, this setup exploits variation in reform exposure within the same customer segment and industry classification, thereby reducing concerns about systematic differences between B2C and B2B firms. Firms with more than 60% of their pre-reform exports directed to EU destinations are classified as treated, while firms with less than 40% of their pre-reform exports directed to the EU are classified as the control group.¹⁵ We use this within-B2C comparison as a robustness test of our baseline design. The results remain qualitatively and quantitatively consistent.

3.2 Data, Sample and Descriptives

For the OSS analysis, we combine two German administrative data sources to test whether simplified tax reporting affects firm-level business activity. The foreign trade statistics record all cross-border transactions by German firms at the transaction level, providing detailed information on transaction values, product codes, and destination countries.¹⁶ The VAT return data contain annual firm-level information on total taxable turnover and firm characteristics including industry sector and number of employees.¹⁷

Appendix Table A.2 reports our sample construction. We begin by merging the foreign trade statistics with the VAT return data using a firm identifier, obtaining a firm-transaction level dataset covering the years 2018 to 2023. We exclude observations with missing industry codes because we identify treatment and control groups based on the five-digit industry classification. We then restrict the sample to intra-EU exports. We separately exclude transactions involving Great Britain, as the Brexit coincides with our sample period. We also exclude transactions subject to excise duties because they are governed by a separate tax regime, as well as firms that had already registered under the predecessor Mini-One-Stop-Shop (MOSS) regime.¹⁸

To construct our firm-level outcome variables, we aggregate the transaction-level data to a firm-month panel. Our variables of interest are the number of transactions (*Count*), total sales value (*Sales*), the number of distinct products sold (*Goods*), and the

¹⁵Appendix Table A.7 reports summary statistics for this alternative sample. The gap between the two thresholds is intended to avoid misclassifying firms with mixed export destinations.

¹⁶This dataset is provided by the German Research Data Center of the Federal Statistical Office and Statistical Offices of the Federal States, DOI: <https://doi.org/10.21242/51911.2024.00.05.1.1.0>.

¹⁷This dataset is provided by the German Research Data Center of the Federal Statistical Office and Statistical Offices of the Federal States, DOI: <https://doi.org/10.21242/73311.2023.00.01.1.1.0>.

¹⁸The Mini-One-Stop-Shop was the predecessor to the OSS, introduced in 2015 for cross-border B2C sales of digital services. We exclude firms that were able to register for MOSS prior to the reform to ensure a clean pre-reform baseline. See Appendix Table A.4 for details.

number of distinct destination countries (*Countries*) for each firm-month. This sample selection procedure yields 8.6 million firm-month observations covering 348,004 firms.¹⁹

Table 2 reports summary statistics for the variables used in our main analyses. Panel A reports descriptive statistics for treated B2C firms and Panel B for B2B control firms. On average, a German B2C firm conducts around 12 cross-border transactions per month, compared to 21 for B2B firms. B2C firms trade with two partner countries and often sell a single type of good, whereas B2B firms generally operate across more markets (3) and offer a wider product range (2). These differences in levels are expected given the distinct nature of B2C and B2B trade. They do not affect the validity of our DiD design, which requires parallel pre-reform trends rather than comparable outcome levels. We assess this assumption in Section 3.3.

Appendix Table A.5 provides an overview of the main destination countries and most commonly traded goods for cross-border B2C sales by German firms in the pre-reform period. Panel A shows that the most frequent destination countries are geographically close to Germany. Austria is the most common destination, followed by the Netherlands, France, and Poland. Austria's prominence is consistent with the shared language and geographic proximity lowering barriers to cross-border trade. Panel B reports the most frequently exported product categories.²⁰

3.3 Results

Table 3 presents the results of estimating Equation 1 to test whether simplified VAT reporting increases cross-border business activity. Panel A reports estimates including only fixed effects, Panel B adds cross-border trade controls, and Panel C replaces these with firm-level controls.

Across all three specifications, the estimated effect on transaction counts is positive, statistically significant, and similar in magnitude, consistent with the reform increasing cross-border business activity. Our preferred specification in Panel B, which includes cross-border trade controls, implies that B2C firms increase their number of cross-border transactions by approximately 34% relative to control firms following the reform.²¹ Relative to the pre-reform average of 12 transactions per firm-month, this corresponds to an increase

¹⁹Note that not all firms have cross-border transactions in each month of our sample period.

²⁰Full product group descriptions are provided in Appendix Table A.6.

²¹The underlying coefficient estimate is calculated as $(\exp(0.295) - 1) \times 100$.

of approximately 4 transactions per firm-month.

For sales volume, the point estimates are positive and similar across Panels A to C, but they are not statistically significant and considerably smaller than the estimated effects on transaction counts. This pattern is in line with the theoretically ambiguous revenue effect discussed in Section 2.2. The weaker response of sales volume relative to transaction counts suggests that the average value per transaction may have declined following the reform, consistent with firms passing on compliance cost savings to consumers. We test this interpretation in Section 3.4.

We next examine whether simplified reporting increases the number of distinct goods traded cross-border. We find a positive and statistically significant effect of approximately 5.4%, suggesting that firms expand their product scope following the reform. This is consistent with the resource-freeing mechanism, whereby lower ongoing compliance costs free up resources that firms can redirect toward broadening their product offerings. We test this channel in Section 3.4.

Finally, we examine the effect on the number of destination countries. We find a positive and statistically significant effect across all specifications. Our preferred estimate implies an increase of approximately 2.0%, suggesting that firms broaden their geographic reach following the introduction of the OSS. This pattern is consistent with the reform reducing the fixed compliance costs of entering additional destination countries, which we examine further in Section 3.4.

To examine the dynamics of the treatment effect and to confirm that the results are not driven by pre-existing trend differences between treatment and control firms, Figure 3 presents event-study estimates based on our preferred specification, in which we interact the B2C indicator with year-quarter indicators instead of the *Post* indicator. Aggregating the monthly firm-level panel to the firm-quarter level allows us to display the full post-reform period and trace how firm responses evolve over time following the introduction of the OSS. Across all panels, the coefficients for the pre-reform quarters are close to zero and statistically insignificant, supporting the parallel trends assumption underlying our DiD design. We observe a temporary spike in the fourth quarter of 2020 (event quarter -2), which we attribute to the COVID-19 pandemic. This was the first Christmas season during which EU citizens faced lockdown restrictions, generating a sudden but short-lived increase in cross-border transactions. The spike is absent in the product scope and destination countries panels, consistent with a transitory demand shock rather than a structural

change in firm behavior.²²

Following the introduction of the OSS, the estimated effect on transaction counts becomes statistically significant two quarters after the reform and continues to increase through the end of the sample period. The effects on product scope and destination countries also emerge gradually, becoming statistically significant within the first year after the reform and generally increasing thereafter. This gradual response is consistent with the adjustment costs discussed in Section 2.2, as firms may require time to adopt the new reporting system and adjust their product offerings or geographic reach. The timing may also reflect that the reform took effect in July, in the middle of most firms' fiscal year, and that firms tend to implement major operational changes at the beginning of a new fiscal year. Such changes may include both adopting the new reporting regime and subsequently expanding into new markets or product categories. The event-study estimates for sales volume fluctuate across post-reform quarters and are imprecise, yielding no clear dynamic pattern.

As a robustness test and to address concerns that the estimated effects reflect systematic differences between B2C and B2B firms, we restrict the comparison to B2C firms only. Specifically, we compare firms primarily exporting to EU member states with those primarily exporting to non-EU countries. Under this design, a general divergence between B2C and B2B firms would not generate a positive treatment effect, since both the treatment and control groups consist of B2C firms.

Table 4 reports the results. Across all specifications, the coefficient on the interaction term remains positive and statistically significant for transaction counts, product scope, and destination countries. The sales volume coefficient, while positive, is not statistically significant, consistent with the more modest and noisier sales volume effects already observed in the baseline results. The magnitudes are broadly comparable to the baseline, though smaller on average. This is expected given that we classify firms by their share of exports to EU destinations, which does not fully separate firms by OSS exposure. Overall, the within-B2C results reduce the concern that the increase in cross-border activity following the OSS introduction is driven by structural differences between B2C and B2B firms.²³

²²We are not concerned that the COVID-19 pandemic confounds our main results. No major border closures for goods were imposed between the countries in our sample around the time of treatment. In addition, results are unchanged when we include an indicator variable for lockdown months (untabulated).

²³Appendix Figure A.1 shows the event-study graph, which supports the parallel trends assumption.

3.4 Mechanisms

We next examine the mechanisms through which simplified reporting may increase cross-border business activity. Following the conceptual framework in Section 2.2, we test three channels: price pass-through, resource freeing, and geographic expansion.

We first test whether the increase in business activity is partly driven by firms passing lower compliance costs through to consumers in the form of *reduced prices*, which in turn can stimulate demand. To do so, we examine whether the prices treated firms charge for a given product decline relative to control firms after the reform. The baseline estimates in Table 3 already point in this direction. The estimated increase in transaction counts is considerably larger than the corresponding estimate for sales volume, suggesting that average transaction values may have declined. To test this directly, we construct a firm-product-month panel and calculate the mean transaction value for each product a firm sells in a given month. We then regress the logarithm of this average product price on $TREAT_i \times POST_t$, including firm-product and year-month fixed effects. The coefficient thus captures within-firm-product price changes for treated firms relative to control firms following the reform.

Panel A of Table 5 reports the results. In Column (1), we find a statistically significant decline in the average product price of approximately 2.6% following the reform, consistent with firms passing part of their compliance cost savings on to consumers. This price decline helps explain the small and statistically insignificant effect on sales volume, as lower prices offset part of the increase in transactions. An alternative explanation is that mean transaction values decline because the composition of transactions changes within a product category. For example, the simplified system may lead firms to sell smaller product variants or smaller quantities per transaction. To examine this explanation, Column (2) repeats the analysis using average transaction weight per firm-product as the outcome variable. If the decline in transaction values reflects a shift toward lighter or smaller transactions, mean transaction weight should also decrease. We find that the estimated effect on transaction weight is close to zero and statistically insignificant. This result suggests that the decline in transaction values reflects within-product price adjustments rather than a shift toward lighter or smaller transactions.

We next test the *resource freeing* channel, which predicts that lower ongoing compliance costs free up resources that firms can reallocate toward revenue-generating activities. One such activity is broadening the range of goods a firm offers, which requires adminis-

trative capacity for sourcing, product listings, and marketing. We therefore use the number of distinct goods traded as our main outcome for this channel. Unlike transaction counts, which may also increase because of lower prices or entry into new markets, product scope more directly captures whether firms use released capacity to expand their offerings. We expect this response to be particularly pronounced for firms that already exported to multiple destination countries before the reform. Because these firms managed recurring reporting obligations across several jurisdictions, the single portal should generate larger reductions in their ongoing compliance burden and release more administrative capacity.

To examine this, we split the sample by the number of destination countries served prior to the reform, distinguishing firms already active across multiple markets from those exporting to only a single destination. Panel B of Table 5 reports the results. Consistent with the resource-freeing channel, the increase in the number of distinct goods is considerably stronger among firms that already exported to multiple countries, at approximately 8.4% compared with 2.3% for firms serving a single country (Columns 1 and 2). This pattern suggests that firms facing greater ongoing reporting burdens before the reform use the released administrative capacity to broaden their product offerings. Product scope also increases significantly across all firm-size groups (Columns 3 to 5), suggesting that the resource-freeing response is not limited to firms with fewer administrative resources.

Finally, we test the *geographic expansion* channel, which predicts that lower destination-specific fixed costs make it easier for firms to enter new markets. We expect this response to be particularly pronounced for firms most constrained by these costs. Small and medium-sized firms may be more constrained by destination-specific fixed costs because they have fewer administrative resources to register for VAT, acquire country-specific knowledge, and set up local filing processes. To examine this, we split the sample by firm size into small, medium-sized, and large firms (fewer than 50, 50 to 250, and more than 250 employees). Columns (3) to (5) of Panel C in Table 5 show estimated increases in destination countries of approximately 2.2% for small firms and 5.5% for medium-sized firms. Both estimates are statistically significant. By contrast, the estimate for large firms is close to zero and statistically insignificant. This pattern is consistent with reductions in fixed compliance costs being particularly valuable for firms with limited administrative resources. Our survey evidence points to one such destination-specific cost. Firms identify the ability to file in their native language as a key advantage of the OSS, indicating that language barriers are among the country-specific costs the reform removes

(see Section 2.3).

We also examine whether the geographic expansion response varies with firms' prior geographic scope. Firms serving only one destination before the reform may have been more constrained by fixed entry costs, as expanding to another country required an additional VAT registration and compliance with country-specific filing requirements. Columns (1) and (2) of Panel C show that the estimated increases in destination countries are nearly identical for both groups, at approximately 1.9% and 2.0%, respectively. We therefore find no evidence that the geographic expansion response varies with firms' prior geographic scope. This suggests that administrative resources, rather than prior market experience, determine how constraining destination-specific fixed costs are.

4 Strategic Responses to Simplified Reporting

4.1 Empirical Strategy

The OSS analysis shows that regulatory simplification increases real cross-border business activity. The IOSS allows us to study the same simplification under a design feature common to simplified regimes in tax and accounting regulation, namely an eligibility threshold that restricts access to qualifying firms or transactions (Bernard et al. 2018; Aghion et al. 2025). The IOSS mirrors the OSS in its core functionality, enabling non-EU firms to report and remit VAT through a single portal, but is available only for transactions valued at EUR 150 or less. As discussed in Section 2.2, this threshold may induce firms to respond not only along real margins but also along the reporting margin. For example, firms may understate the declared value of a transaction or split a larger shipment into several parcels that each fall below EUR 150 to qualify for the portal. The IOSS therefore lets us examine whether the simplification effect documented under the OSS extends to a threshold-based regime and document the coexistence of real and reporting responses.

Our empirical analysis of this second setting draws on transaction-level customs data, which we describe in Section 4.2. These data differ from those used in the OSS analysis in two aspects. The dataset does not contain firm identifiers, which prevents aggregation at the firm level, and they record transactions at an annual rather than monthly frequency.

We proceed in three steps. First, we test whether simplification increases business activity below the threshold. To do so, we employ a DiD design that compares the number

and sales volume of eligible B2C imports with those of ineligible B2B imports before and after the introduction of the IOSS. We restrict the sample to transactions valued between EUR 30 and EUR 150 to avoid confounding effects from the simultaneous abolition of the former EUR 22 VAT exemption for low-value imports. Since the reform took effect in July 2021, we also drop 2021 from the sample to avoid a partially treated year. Because the data lack a firm-level panel structure, we aggregate transactions to the product-country-year level. This allows us to include product-country fixed effects, which absorb time-invariant differences across product-country pairs such as product demand or bilateral trade relationships, and year fixed effects, which capture common time-varying shocks. As in the OSS analysis, we estimate the model using PPML. A positive effect for eligible B2C transactions would indicate that the simplification effect documented under the OSS extends to the IOSS. However, because access to the simplified regime depends on an eligibility threshold, the estimate may also capture transactions that shift from above to below EUR 150 after the reform. We examine this possibility in the next two steps.

Second, we examine whether the eligibility threshold induces firms to adjust their transactions around the cutoff. Following the logic of a bunching analysis (Burgstahler and Dichev 1997; Saez 2010; Chetty et al. 2011; Best and Kleven 2018; Coles et al. 2022), we plot the distribution of declared transaction values around the EUR 150 cutoff before and after the reform, separately for B2C and B2B transactions. For this analysis, we use the unaggregated transaction-level data and restrict the sample to transactions valued between EUR 120 and EUR 180. An excess mass of B2C transactions just below the threshold after the reform, together with a missing mass above it, would indicate that firms adjust their transactions to qualify for the simplified portal. Because B2B transactions are not eligible for the IOSS, their distribution serves as a benchmark for the B2C distribution. This comparison also separates the effect of the reform from the customs duty exemption for transactions of EUR 150 or less, which applies throughout the sample period and to both B2C and B2B imports. To quantify the shift in the distribution, we complement this visual evidence with a DiD regression following Bernard et al. (2018), which estimates whether B2C transactions became more likely than B2B transactions to be declared at or below EUR 150 after the reform.

Third, we examine whether the excess mass below the threshold reflects real or reporting responses to the threshold itself. Beyond the increase in activity documented in the first step, firms can respond to the cutoff by actually lowering prices or by misreport-

ing transactions. Both can generate bunching below EUR 150, but they have different implications for the distribution above it. Real responses such as marginal price reductions should mainly affect transactions priced just above EUR 150, whereas a decline in transactions well above the threshold is more consistent with reporting responses. To examine these responses more directly, we study how declared transaction values and transaction weights change after the reform. A decline in transaction values would be consistent with price reductions that bring transactions below the threshold. These reductions, however, can be real, if firms actually charge less, or reported, if firms understate the value of the transaction. Declared transaction values can also fall if firms split a transaction into several parcels that each fall below the threshold. Transaction weights allow us to identify this specific form of strategic reporting. If firms split transactions, we expect both the average declared value and the average weight per transaction to decline within a given product. If firms instead lower prices or understate values, only the declared value should decline, while weight remains unchanged. To test this, we aggregate transactions valued between EUR 120 and EUR 180 to the product-country-year level and estimate a DiD regression using OLS, with B2B transactions as the control group. Our outcome variables are the mean and median declared transaction value and the mean and median transaction weight. We include product or product-country fixed effects and year fixed effects.

As an additional test of parcel splitting, we classify goods as divisible or non-divisible and compare the distribution of B2C transaction values around the threshold for both groups before and after the reform. Because only divisible goods can be shipped in several parcels, bunching driven by parcel splitting should be concentrated among divisible goods, whereas bunching among non-divisible goods would point to real price reductions or understated values.

As in the OSS analysis, our estimates capture the intent-to-treat effect of the reform, since not all eligible B2C imports are processed through the IOSS. Take-up is substantial, however. In our data, the average take-up rate over the post-reform period is 73%, rising from 57% in 2022 to 81% in 2023. Our estimates therefore capture the effect of using the portal and, if anything, understate it.

4.2 Data, Sample, and Descriptives

Our analysis of the IOSS draws on a third administrative data source: transaction-level customs data on imports into Germany from non-EU countries, provided by the Ger-

man customs authority for the years 2018 to 2023.²⁴ The dataset covers all imports from non-EU countries into Germany with declared transaction values up to EUR 1,500 and contains information on the declared transaction value and weight, year, product type, country of origin, and transaction type (B2C or B2B).

Appendix Table B.2 reports our sample selection procedure. We exclude intra-EU transactions, private transactions, transactions with missing or invalid country codes, and transactions involving goods subject to excise duties, which are not eligible for the IOSS. We also exclude transactions originating from Great Britain, which became a non-EU country during our sample period. We restrict the sample to transactions valued above EUR 30 to avoid confounding effects from the simultaneous abolition of the EUR 22 VAT exemption, and drop all transactions from the transitional year 2021, as the reform was implemented in July of that year and the available data contain only a yearly indicator, making it impossible to determine whether a given transaction occurred before or after the reform date.

Classifying transactions as B2C or B2B presents an additional challenge. While the dataset contains a transaction type indicator, this indicator is recorded only for the post-reform period. We therefore implement a data-driven imputation strategy. For each four-digit product code, we calculate the relative frequency of B2C and B2B designations among classified post-reform transactions and assign unclassified pre-reform transactions of that product type to whichever category predominates. Because B2C designations predominate in most product codes, this approach may result in misclassifying some B2B transactions as B2C in the pre-reform period. Since B2B transactions are unaffected by the reform, this misclassification would bias our estimates toward zero, and thus represents a conservative assumption.²⁵ After applying all restrictions, our final sample comprises approximately 58 million transactions.

Our analyses draw on two samples derived from this transaction-level dataset. For the DiD analysis of business activity, we aggregate transactions valued between EUR 30 and EUR 150 to the product-country-year level, the most granular aggregation available given the absence of firm identifiers. For the analyses around the threshold, we restrict the

²⁴The dataset is sourced from the ATLAS import registration system and from ATLAS Impost, a registration system introduced alongside the VAT e-commerce package to handle transactions valued up to EUR 150.

²⁵To validate that our classification approach does not drive our results, we implement two alternative B2C classifications. The first is a strict product-based classification that assigns each transaction to the same B2C or B2B category in both the pre- and post-reform periods. The second is a more lenient manual classification based on a broader set of product codes. The results under both alternative approaches are reported in Appendix B.3 and are qualitatively similar with the baseline findings.

sample to transactions valued between EUR 120 and EUR 180. We use this sample at the transaction level for the distributional analyses and aggregate it to the product-country-year level for the DiD analysis of declared values and weights. Where necessary, we adjust the window around the threshold for specific analyses, as described below.

Table 6 presents pre-reform summary statistics for both samples, covering the years 2018 to 2020 and reported separately for B2C and B2B transactions. Panel A reports statistics at the product-country-year level. The average B2C product-country-year records 232 transactions and a total sales volume of EUR 15,780. Panel B reports statistics at the transaction level. For B2C transactions between EUR 120 and EUR 180, the average transaction value is EUR 147 and the median weight is 4 kg. B2B transactions have comparable transaction values but are heavier than their B2C counterparts.²⁶

4.3 Results

Simplification and business activity. We start by testing whether the simplification effect documented in the OSS setting extends to the IOSS context, where access to the simplified portal is restricted to transactions valued at EUR 150 or less. Table 7 reports DiD estimates comparing B2C and B2B imports valued between EUR 30 and EUR 150 before and after the introduction of the IOSS, estimated using PPML at the product-country-year level. Consistent with the OSS results in the previous section, we find a large, positive, and statistically significant increase in B2C activity following the reform, both in the number of transactions and in sales volume, indicating that the simplification effect extends to non-EU firms exporting to the EU. Figure 4 supports the parallel trends assumption, with pre-reform coefficients statistically indistinguishable from zero. As in the OSS setting, the increase in transaction counts exceeds the increase in sales volume. Notably, however, both effects are considerably larger in magnitude than those documented for the OSS. Because our sample is restricted to transactions just below the threshold, these larger effects may partly reflect transactions that shift from above to below EUR 150 after the reform, rather than a pure increase in business activity.

Responses around the eligibility threshold. To assess whether the larger effects reflect responses around the threshold, we examine the distribution of declared transaction values

²⁶Additional descriptive statistics are provided in Appendix Tables B.3 and B.4, which report the main countries of origin for imports into Germany and the most frequently imported product categories among B2C transactions.

around EUR 150 for B2C and B2B imports, separately for the pre- and post-reform periods. Figure 5 displays histograms of transaction frequencies in the EUR 120 to EUR 180 range. Panels (a) and (b) show the distribution for B2C imports and Panels (c) and (d) for B2B imports.

In the pre-reform period, we observe a modest concentration of transactions just below the EUR 150 threshold in both the B2C and B2B distributions (Panels (a) and (c)), consistent with the pre-existing tariff exemption for goods valued at EUR 150 or less. More importantly, Panel (b) reveals a pronounced shift in the post-reform B2C distribution. The number of transactions just below the threshold increases substantially relative to the pre-reform period, while a corresponding decline is visible above it, producing a clear missing mass in the distribution. This pattern is not mirrored in the B2B distributions (Panels (c) and (d)), which remain largely unchanged around the threshold before and after the reform, consistent with B2B transactions being ineligible for the IOSS. The divergence between the B2C and B2B distributions in the post-reform period suggests that the simplified reporting regime has incentivized firms to declare a greater share of transactions at or below the EUR 150 eligibility threshold.²⁷

To quantify this shift, we follow Bernard et al. (2018) and estimate at the transaction level whether B2C transactions become more likely than B2B transactions to be declared at or below EUR 150 after the reform using a DiD regression. The dependent variable is an indicator equal to one if the declared transaction value is at or below EUR 150 and zero otherwise, and the coefficient of interest captures whether B2C transactions became more likely than B2B transactions to be reported below the cutoff after the reform. We estimate the specification using logit with product fixed effects (Column 1) and country fixed effects (Column 2), and using PPML with product-country fixed effects (Column 3), across three bandwidths of EUR ± 1 , ± 10 , and ± 30 around the threshold.

Table 8 presents the results. Across all specifications and bandwidths, the coefficient on the B2C and post-reform interaction is positive and statistically significant. In the narrowest bandwidth of EUR ± 1 around the threshold, the logit estimate implies that B2C transactions became approximately 34% more likely to be declared below the threshold relative to B2B transactions following the reform. Expanding the bandwidth to EUR ± 30 yields a larger estimate of approximately 49%, suggesting that the shift in declared values

²⁷Because the pre-reform period spans three years and the post-reform period two years, we focus on the shape of the distributions rather than absolute counts. Appendix Figure B.1 plots relative frequencies and shows the same pattern.

extends across a broader range of transaction values rather than being confined to the immediate vicinity of the threshold. We return to this pattern when distinguishing real from reporting responses in the next subsection.

We conduct several tests to rule out alternative explanations for this pattern. First, we verify that the results are not driven by our B2C classification approach by replicating the analysis using both a strict product-based classification, which assigns each transaction to the same category in the pre- and post-reform periods, and a more lenient B2C definition. Appendix Figures B.2 and B.3 confirm qualitatively similar patterns under both approaches.

Second, we address the concern that the observed leftward shift in declared transaction values may reflect tariff evasion rather than a response to the IOSS. To assess this, we separately plot the transaction value distribution for B2C transactions that are subject to tariffs and those that are not. Figure 6 shows that the leftward shift appears in both groups. For goods not subject to any tariff, the only remaining financial incentive to declare transactions at or below EUR 150 is access to the simplified VAT reporting portal, which directly supports the interpretation that the IOSS is the primary driver of the observed pattern.

Third, we examine whether the distributional shift is consistent across source countries. Figure 7 presents transaction value distributions for Germany's two most important non-EU trading partners, China and the United States. Both countries exhibit a clear leftward shift in the B2C distribution in the post-reform period, though the effect is somewhat more pronounced for China.²⁸ Taken together, these results show that firms shift transactions below the eligibility threshold after the reform. We next examine whether this shift reflects real or reporting responses to the threshold.

Real versus reporting responses. We next examine whether the shift below the threshold reflects real or reporting responses to the threshold. Firms may respond along the real margin by genuinely reducing prices or expanding the supply of lower-priced goods, or along the reporting margin by understating transaction values or splitting parcels without changing their underlying business activity.

We first examine whether declared transaction values decline. Panel A of Table 9 reports DiD estimates for mean and median transaction values in the EUR 120 to EUR 180 range. Across all specifications, B2C transaction values decline significantly relative

²⁸The corresponding B2B distributions are reported in Appendix Figure B.4. We also replicate the analysis for Switzerland, Japan, and Norway and find qualitatively consistent results across all three countries.

to B2B transactions, with Column (1) implying an average reduction of EUR 2.31. The event-study estimates in Panels (a) and (b) of Figure 8 show flat pre-trends and a post-reform decline. This decline is consistent with genuine price reductions but also with understated transaction values. Importantly, a pure real response cannot fully explain the distributional evidence. Marginal price reductions could generate excess mass just below the threshold, but not the pronounced missing mass well above it or the larger effects at wider bandwidths in Table 8.

To test whether reporting responses are additionally present, we examine transaction weights, which allow us to identify parcel splitting. Splitting transactions can lower average weights on both sides of the threshold. Below EUR 150, it introduces smaller, lighter parcels. Above EUR 150, it removes relatively heavy shipments, lowering the average weight of the remaining transactions. Panel B of Table 9 reports the results.²⁹ Across all specifications, the effect is negative and statistically significant, with Column (1) implying a reduction of approximately 0.82 kg in the average weight of B2C relative to B2B transactions. Panels (c) and (d) of Figure 8 show flat pre-trends and a significant post-reform decline. This decline is consistent with firms splitting higher-valued transactions into multiple lighter parcels to qualify for the IOSS portal.^{30,31}

Because the weight analysis requires excluding implausible weight observations, we complement it with a test that does not rely on weight data. We return to the transaction-level data and examine whether the distributional shift in reported values is more pronounced for products that can plausibly be divided into multiple parcels. We manually classify all four-digit product codes into divisible products, such as clothing and footwear, and non-divisible products, such as large electronics or furniture, and replicate the histogram analysis separately for each group. Because only divisible products can be shipped in several parcels, bunching driven by parcel splitting should be concentrated among divisible products. Figure 9 shows that the leftward shift in the B2C distribution around the EUR 150 threshold is substantially more pronounced for divisible products, whereas the

²⁹To limit the influence of outliers and data errors, such as confusion between grams and kilograms, we exclude observations above the 75th percentile of the pre-reform weight distribution. Because B2B transactions are considerably heavier on average (Table 6), we apply group-specific cutoffs of 25 kg for B2C and 95 kg for B2B transactions.

³⁰Appendix Figure B.6 provides complementary descriptive support for this result. It plots mean transaction weights for each EUR 1 bin between EUR 120 and EUR 180. After the reform, average B2C weights decline across the entire value range, including above the threshold, whereas B2B weights remain stable.

³¹This parcel splitting is more plausibly driven by firms than by consumers. The threshold applies to the net price, while consumers pay the gross price under the IOSS, so the cutoff is not salient to consumers and they are unlikely to split orders strategically.

distribution for non-divisible products remains largely unchanged after the reform. This pattern provides further support for parcel splitting as an underlying mechanism.

Taken together, the transaction value and weight evidence points to reporting responses as an important driver of the shift below the threshold. Firms split higher-valued transactions into multiple parcels that are each declared below the threshold, representing an unintended consequence of the threshold-based design of the IOSS. The decline in declared values may additionally reflect genuine price reductions at the margin alongside understated transaction values.

5 Conclusion

Simplifying regulation and reducing bureaucratic costs for businesses are stated goals of economic policy worldwide, yet empirical evidence on whether and how firms respond when complexity is actually reduced remains limited. We study the EU’s 2021 VAT reform, which introduced the OSS and IOSS portals to substantially simplify cross-border VAT registration and reporting for B2C transactions. Using high-frequency administrative data from Germany that have not previously been available to researchers, we document two sets of firm responses to the reform.

Our analysis identifies two complementary sets of firm responses to the reform. For the OSS, which simplified intra-EU B2C exports for German firms without an eligibility threshold, we find that treated firms substantially increased their cross-border business activity. Transaction counts rose by roughly 34%, accompanied by broader product scope and expansion into new destination countries, while sales revenue did not increase significantly. Our mechanism tests are consistent with the reform reducing both ongoing and fixed compliance costs. Firms appear to pass part of these savings on to consumers, as mean product prices decline by approximately 2.6%. Firms that already exported to multiple countries expand their product scope more strongly, consistent with freed-up resources being used to broaden their product offerings within existing markets. Finally, the increase in destination countries is concentrated among small and medium-sized firms, for whom destination-specific registration and filing requirements were likely most binding.

For the IOSS, which restricts access to the simplified regime to transactions valued at EUR 150 or less, the reform generated both an increase in business activity and strategic reporting responses. Transaction counts and sales volume for eligible B2C imports

increased substantially, and considerably more than under the OSS. The post-reform distribution of transactions exhibits pronounced excess mass just below the threshold and a missing mass above it, a pattern that real responses alone cannot fully rationalize. To document reporting responses alongside real effects we examine declared transaction values and weights. Declared values decline after the reform, consistent with both genuine price reductions and understated values. Transaction weights also decline, and the shift below the threshold is substantially more pronounced for divisible products. Both findings point to firms splitting higher-valued transactions into multiple lighter parcels that each fall below the threshold. This reporting response constitutes an unintended consequence of pairing simplification with an eligibility threshold.

Overall, our findings speak to a broader tension in regulatory simplification. Reducing compliance costs can meaningfully stimulate economic activity, but eligibility thresholds, a common design feature of simplified tax regimes, can simultaneously induce strategic reporting behavior that undermines the policy's objectives. Observing real and reporting responses within a single setting speaks directly to the interaction that Lester and Olbert (2025) call on accounting researchers to examine, and suggests that the behavioral consequences of simplification depend on how the simplified regime is designed. Our findings are relevant to ongoing policy debates, including EU proposals to extend the IOSS to all imports regardless of value (European Commission 2023), and contribute to a broader understanding of how simplified tax regimes shape firm behavior and whether simplification can deliver on its stated economic objectives.

References

- Abeler, J. and Jäger, S. (2015). Complex Tax Incentives. *American Economic Journal: Economic Policy* 7, 1–28. DOI: 10.1257/pol.20130137.
- Aghion, P., Gravouelle, M., Stantcheva, S., and Lequien, M. (2025). Tax Simplicity or Simplicity of Evasion? Evidence from Self-Employment Taxes in France. NBER Working Paper w24049. National Bureau of Economic Research. DOI: 10.3386/w24049.
- Amberger, H., Gallemore, J., and Wilde, J. (2025). Corporate Tax System Complexity and Investment Sensitivity to Tax Policy Changes. *Journal of Accounting Research*. DOI: 10.1111/1475-679x.70040.
- Armstrong, D. M. and Glaeser, S. (2026). Does Taxpayer Assistance Encourage Entrepreneurship? *Journal of Accounting and Economics* 81, 101839. DOI: 10.1016/j.jacceco.2025.101839.
- Baer, K. and De Mooij, R. (2026). The Art of Taxation – Why Raising Revenue Is Central to Development. *IMF Finance & Development*.
- Bernard, D., Burgstahler, D., and Kaya, D. (2018). Size Management by European Private Firms to Minimize Proprietary Costs of Disclosure. *Journal of Accounting and Economics* 66, 94–122.
- Best, M. C. and Kleven, H. J. (2018). Housing Market Responses to Transaction Taxes: Evidence from Notches and Stimulus in the U.K. *The Review of Economic Studies* 85, 157–193. DOI: 10.1093/restud/rdx032.
- Bilicka, K., Casi, E., Seregini, C., and Stage, B. M. B. (2025). Tax Strategy Disclosure: A Greenwashing Mandate? *Journal of Accounting Research* 63, 1857–1915. DOI: 10.1111/1475-679X.12617.
- Bischof, J., Doerrenberg, P., Rostam-Afschar, D., Simons, D., and Voget, J. (2025). The German Business Panel: Firm-Level Data for Accounting and Taxation Research. *European Accounting Review* 34, 1499–1527. DOI: 10.1080/09638180.2024.2403467.
- Blumenthal, M. and Slemrod, J. (1995). Recent Tax Compliance Cost Research in the United States. *Tax Compliance Costs: Measurement and Policy*. Ed. by C. T. Sandford. Bath: Fiscal Publications, 142–172.
- Blumenthal, M. and Slemrod, J. (1992). The Compliance Cost of the U.S. Individual Income Tax System: A Second Look after Tax Reform. *National Tax Journal* 45, 185–202. DOI: 10.1086/NTJ41788959.

- Brown, J. L., Casas-Arce, P., Kenchington, D. G., and White, R. M. (2025). Real Effects of Non-Streamlined Sales Tax Administration: Evidence from the Florida Hotel Industry. *Journal of Accounting Research* 63, 1917–1951. DOI: 10.1111/1475-679X.70001.
- Brown, N. C., Huffman, A. A., and Cohen, S. (2023). Accounting Reporting Complexity and Non-GAAP Earnings Disclosure. *The Accounting Review* 98, 37–71. DOI: 10.2308/TAR-2018-0760.
- Burgstahler, D. and Dichev, I. (1997). Earnings Management to Avoid Earnings Decreases and Losses. *Journal of Accounting and Economics* 24, 99–126. DOI: 10.1016/S0165-4101(97)00017-7.
- Chen, J. and Roth, J. (2023). Logs with Zeros? Some Problems and Solutions. *The Quarterly Journal of Economics* 139, 891–936. DOI: 10.1093/qje/qjad054.
- Chen, Z., Jiang, X., Liu, Z., Serrato, J. C. S., and Xu, D. Y. (2023). Tax Policy and Lumpy Investment Behaviour: Evidence from China’s VAT Reform. *The Review of Economic Studies* 90, 634–674. DOI: 10.1093/restud/rdac027.
- Chetty, R., Friedman, J. N., Olsen, T., and Pistaferri, L. (2011). Adjustment Costs, Firm Responses, and Micro vs. Macro Labor Supply Elasticities: Evidence from Danish Tax Records. *The Quarterly Journal of Economics* 126, 749–804. DOI: 10.1093/qje/qjr013.
- Chychyla, R., Leone, A. J., and Minutti-Meza, M. (2019). Complexity of Financial Reporting Standards and Accounting Expertise. *Journal of Accounting and Economics* 67, 226–253. DOI: 10.1016/j.jacceco.2018.09.005.
- Cohn, J. B., Liu, Z., and Wardlaw, M. I. (2022). Count (and Count-Like) Data in Finance. *Journal of Financial Economics* 146, 529–551.
- Coles, J. L., Patel, E., Seegert, N., and Smith, M. (2022). How Do Firms Respond to Corporate Taxes? *Journal of Accounting Research* 60, 965–1006.
- Cui, W., Hicks, J., and Xing, J. (2022). Cash on the Table? Imperfect Take-Up of Tax Incentives and Firm Investment Behavior. *Journal of Public Economics* 208, 104632. DOI: 10.1016/j.jpubeco.2022.104632.
- De Simone, L., Lester, R., and Markle, K. (2020). Transparency and Tax Evasion: Evidence from the Foreign Account Tax Compliance Act (FATCA). *Journal of Accounting Research* 58, 105–153. DOI: 10.1111/1475-679X.12293.

- De Simone, L. and Olbert, M. (2025). How Do Multinational Companies Respond to Destination-Based Consumption Taxes? *Review of Accounting Studies* 31, 413–452. DOI: 10.1007/s11142-025-09923-2.
- De Simone, L. and Olbert, M. (2022). Real Effects of Private Country-by-Country Disclosure. *The Accounting Review* 97, 201–232. DOI: 10.2308/TAR-2020-0714.
- Djankov, S., Ganser, T., McLiesh, C., Ramalho, R., and Shleifer, A. (2010). The Effect of Corporate Taxes on Investment and Entrepreneurship. *American Economic Journal: Macroeconomics* 2, 31–64. DOI: 10.1257/mac.2.3.31.
- Dyrengr, S. D., Hoopes, J. L., and Maydew, E. L. (2025). The Scope of Tax Accounting Research. *The Journal of the American Taxation Association*, 1–10. DOI: 10.2308/JATA-2024-032.
- Esteller-More, A., Rizzo, L., and Secomandi, R. (2021). The Role of Tax System Complexity on Foreign Direct Investment. *Applied Economics* 53, 5208–5220.
- Euler, I., Harst, S., Schanz, D., Sureth-Sloane, C., and Voget, J. (2024). Tax Complexity and Foreign Direct Investment. Working Paper No. 160. TRR 266 Accounting for Transparency.
- European Commission (2020). Package for Fair and Simple Taxation. Brussels: European Commission.
- European Commission (2023). Proposal for a Council Directive Amending Directive 2006/112/EC as Regards VAT Rules Relating to Taxable Persons Who Facilitate Distance Sales of Imported Goods and the Application of the Special Scheme for Distance Sales of Goods Imported from Third Territories or Third Countries and Special Arrangements for Declaration and Payment of Import VAT. Tech. rep. COM/2023/262 final. European Commission.
- European Commission (2025). Report on the Application of the VAT E-Commerce Package for 2024.
- European Commission (2022a). Tax Compliance Costs for SMEs: An Update and a Complement – Final Report. Publications Office of the European Union. DOI: 10.2873/180570.
- European Commission (2022b). VAT Gap in the EU – Report 2022. Publications Office of the European Union. DOI: 10.2778/109823.
- European Union (2024). The Future of European Competitiveness. European Commission Report.

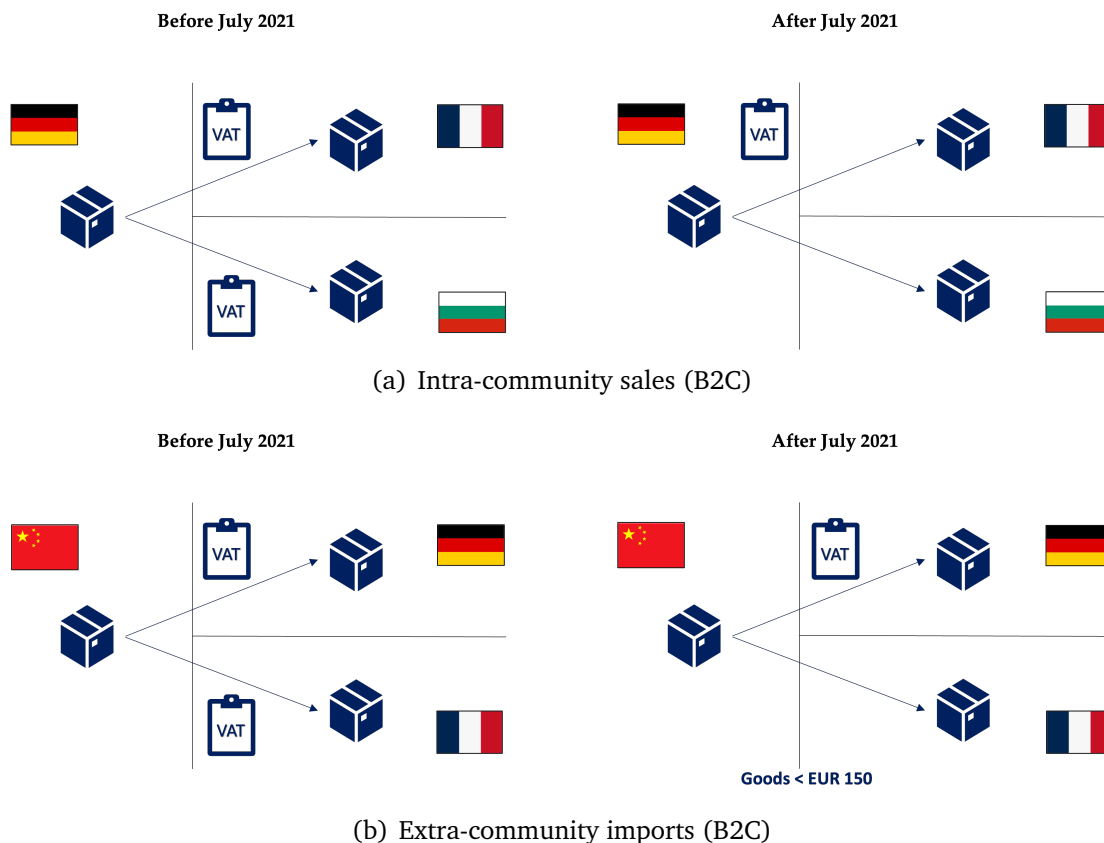
- Gassen, J. and Muhn, M. (2025). Financial Transparency of Private Firms: Evidence from a Randomized Field Experiment. *Journal of Accounting Research* 63, 413–460. DOI: 10.1111/1475-679X.12568.
- German Federal Government (2021). Answer to a Parliamentary Inquiry on the VAT E-Commerce Package. German Bundestag, Drucksache 19/31978.
- Ghosh, P., Jacob, M., Kang, Y., and Zhang, J. (2025). Consumption Tax and Corporate Product Mix Decisions. *Journal of Accounting and Economics*. DOI: 10.1016/j.jacceco.2026.101898.
- Harju, J., Matikka, T., and Rauhanen, T. (2019). Compliance Costs vs. Tax Incentives: Why Do Entrepreneurs Respond to Size-Based Regulations? *Journal of Public Economics* 173, 139–164. DOI: 10.1016/j.jpubeco.2019.02.003.
- Hoopes, J. L., Reck, D. H., and Slemrod, J. (2015). Taxpayer Search for Information: Implications for Rational Attention. *American Economic Journal: Economic Policy* 7, 177–208. DOI: 10.1257/pol.20140050.
- International Monetary Fund (2001). VAT and International Trade. *The Modern VAT*. Washington, DC: International Monetary Fund.
- Jacob, M., Michaely, R., and Müller, M. A. (2019). Consumption Taxes and Corporate Investment. *The Review of Financial Studies* 32, 3144–3182. DOI: 10.1093/rfs/hhy132.
- Jacob, M., Michaely, R., and Rossi, S. (2024). The VAT Trap: How Consumption Tax Hikes Make Firms Pay Out More and Invest Less. FEB-RN Research Paper No. 28. DOI: 10.2139/ssrn.4690867.
- James, S. (1990). Administrative and Compliance Costs of Taxation. *The Economic Journal* 100, 1011–1012. DOI: 10.2307/2233702.
- Keen, M. (2013). The Anatomy of the VAT. *National Tax Journal* 66, 423–446. DOI: 10.17310/ntj.2013.2.06.
- Kelley, S. O., Lewellen, C. M., Lynch, D. P., and Samuel, D. M. (2024). “Just BEAT It” Do Firms Reclassify Costs to Avoid the Base Erosion and Anti-Abuse Tax (BEAT) of the TCJA? *Journal of Accounting and Economics* 77, 101648. DOI: 10.1016/j.jacceco.2023.101648.
- Klapper, L., Laeven, L., and Rajan, R. (2006). Entry Regulation as a Barrier to Entrepreneurship. *Journal of Financial Economics* 82, 591–629.

- Lester, R. and Olbert, M. (2025). Firms' Real and Reporting Responses to Taxation: A Review. *Journal of Accounting and Economics* 80, 101837. DOI: 10.1016/j.jacceco.2025.101837.
- Mascagni, G., Dom, R., Santoro, F., et al. (2023). The VAT in Practice: Equity, Enforcement, and Complexity. *International Tax and Public Finance* 30, 525–563. DOI: 10.1007/s10797-022-09743-z.
- Melitz, M. J. (2003). The Impact of Trade on Intra-Industry Reallocations and Aggregate Industry Productivity. *Econometrica* 71, 1695–1725. DOI: 10.1016/j.jfineco.2005.09.006.
- Mínguez, R. and Minondo, A. (2025). The Increasing Share of Low-Value Transactions in International Trade. *Review of World Economics*, 1–18. DOI: 10.1007/s10290-025-00618-z.
- Naritomi, J. (2019). Consumers as Tax Auditors. *American Economic Review* 109, 3031–3072. DOI: 10.1257/aer.20160674.
- Nessa, M. L., Persson, A. V., Song, J. Z., Towery, E. M., and Vernon, M. E. (2025). The Effect of US Country-by-Country Reporting on US Multinationals' Tax-Motivated Income Shifting and Real Activities. *Journal of Accounting Research* 63, 951–988. DOI: 10.1111/1475-679X.12594.
- OECD (2024). Consumption Tax Trends 2024. OECD Report.
- OECD (2025a). Enhancing Simplicity to Foster Tax Certainty and Growth: OECD Report to the G20. Paris: OECD Publishing. DOI: 10.1787/086f71ab-en.
- OECD (2025b). Simplifying for Success. OECD High-level symposium.
- Pomeranz, D. (2015). No Taxation without Information: Deterrence and Self-Enforcement in the Value Added Tax. *American Economic Review* 105, 2539–2569. DOI: 10.1257/aer.20130393.
- Saez, E. (2010). Do Taxpayers Bunch at Kink Points? *American Economic Journal: Economic Policy* 2, 180–212. DOI: 10.1257/pol.2.3.180.
- Sandford, C. T. (1973). Hidden Costs of Taxation. Vol. 6. Institute for Fiscal Studies.
- Santos Silva, J. M. C. and Tenreyro, S. (2006). The Log of Gravity. *The Review of Economics and Statistics* 88, 641–658. DOI: 10.1162/rest.88.4.641.
- Williams, B. and Williams, B. M. (2021). Real Effects of Financial Reporting on Innovation: Evidence from Tax Law and Accounting Standards. *The Accounting Review* 96, 397–425. DOI: 10.2308/TAR-2018-0582.

- Winter, R., Doerrenberg, P., Eble, F., Rostam-Afschar, D., and Voget, J. (2025). The Asymmetric Incidence of Business Taxes: Survey Evidence from German Firms. *American Economic Journal: Economic Policy* (conditionally accepted).
- Wooldridge, J. M. (2023). Simple Approaches to Nonlinear Difference-in-Differences with Panel Data. *The Econometrics Journal* 26, C31–C66. DOI: 10.1093/ectj/utad016.
- Zwick, E. (2021). The Costs of Corporate Tax Complexity. *American Economic Journal: Economic Policy* 13, 467–500. DOI: 10.1257/pol.20180406.

Tables and Figures

Figure 1: Simplifying VAT Reporting



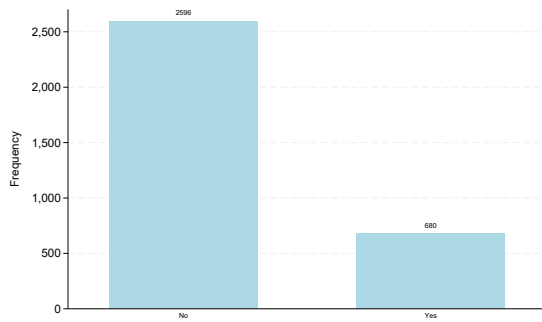
Notes: This figure illustrates the regulatory changes introduced by the EU VAT e-commerce package of July 2021. Panel (a) summarizes the changes for intra-community B2C sales under the One Stop Shop (OSS), which replaced the requirement for EU firms to register and file VAT separately in each destination member state with a single registration and unified reporting portal in the firm's home member state. Panel (b) summarizes the changes for extra-community B2C imports under the Import One Stop Shop (IOSS), which introduced an analogous single-portal system for non-EU firms selling goods to EU consumers, applicable to transactions valued at EUR 150 or less. In both panels, the left side depicts the pre-reform registration and reporting environment and the right side depicts the simplified post-reform system.

Table 1: Key Regulatory Changes under the EU VAT E-Commerce Package

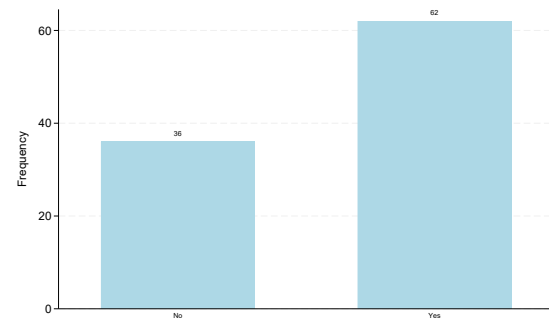
Panel A: Intra-community sales (B2C)			
		Before July 2021	After July 2021
VAT registration & reporting		In each destination country	Via OSS in one country
VAT rate		Of the destination country	Of the destination country
Panel B: Extra-community imports (B2C)			
		Before July 2021	After July 2021
VAT registration & reporting	EUR 0 – 150	In each destination country	Via IOSS in one country
	> EUR 150	In each destination country	In each destination country
(Import) VAT rate		Of the destination country	Of the destination country
(Import) VAT	EUR 0 – 22	Import VAT exempt	VAT via IOSS
	EUR 22 – 150	Import VAT	VAT via IOSS
	> EUR 150	Import VAT	Import VAT
Tariffs	EUR 0 – 150	Tariff exempt	Tariff exempt
	> EUR 150	Tariff applicable for selected products	Tariff applicable for selected products

Notes: This table summarizes the key regulatory changes introduced by the EU VAT e-commerce package in July 2021. Panel A outlines the changes for intra-community B2C sales by EU firms to consumers in other EU member states. Prior to the reform, such firms were required to register for VAT and file returns separately in each destination country. The One Stop Shop (OSS), introduced in July 2021, replaced this fragmented system with a single registration portal in the firm's home member state, through which all intra-EU B2C sales can be reported and VAT remitted. The applicable VAT rate remains that of the destination country in both regimes. Panel B outlines the changes for extra-community B2C imports by non-EU firms selling goods to EU consumers, categorized by transaction value. The Import One Stop Shop (IOSS) introduced an analogous single-portal system for these firms, but applies only to transactions valued at EUR 150 or less. For transactions above this threshold, the pre-reform requirement to register and report separately in each destination country remains unchanged. The reform also abolished the pre-existing EUR 22 import VAT exemption for low-value goods, meaning that all imports became subject to VAT regardless of value. The tariff exemption for goods valued below EUR 150, which predates the reform, remains unchanged. Tariffs apply only to selected product categories. Goods not subject to tariffs remain tariff-free regardless of their transaction value.

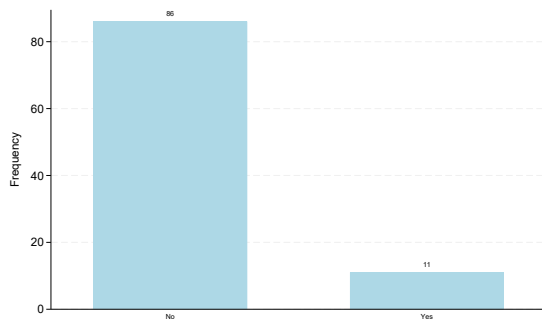
Figure 2: Survey Evidence on Perceptions of the Simplification Reform



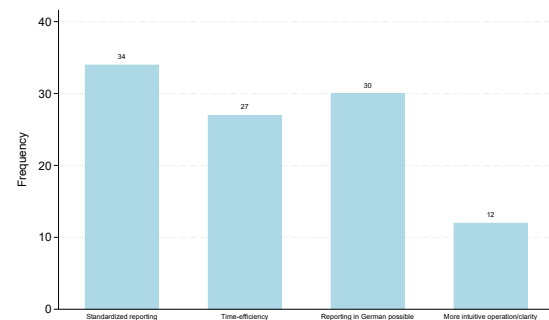
(a) Has your company sold goods/services to final customers in other EU member states in recent years (2020 to date)? $N=3,276$



(b) Has the VAT declaration of B2C transactions to other EU member states been simplified by using the OSS portal in your company? $N=99$



(c) Does your company deliver to additional EU member states as a result of using the OSS portal? $N=99$



(d) To what extent has the OSS portal simplified the VAT declaration of B2C transactions? $N=62$

Notes: This figure shows the main results of the survey administered by the German Business Panel in spring 2025 with a total of 3,276 respondents, of which 99 actively use the OSS portal.

Table 2: OSS – Descriptive Statistics

Panel A:		B2C firms				
	Mean	SD	P1	P50	P99	Obs
<i>Dependent variables:</i>						
Count	12.46	299.90	1.00	1.00	159	2,164,005
Sales (EUR)	71,730.34	2,035,667.45	19.00	2,471.00	768,542	2,164,005
Goods	1.45	3.21	1.00	1.00	15	2,164,005
Countries	1.69	2.88	1.00	1.00	18	1,942,829
<i>Control variables:</i>						
Pre mean no. employees	40.46	596.42	0.00	2.00	515	1,910,398
Pre mean total sales (mio. EUR)	10.83	190.46	0.03	0.72	106.76	1,910,398
Pre mean count (DE-EU)	11.40	230.26	1.00	1.00	145	1,929,071
Pre mean EU-sales (mio. EUR)	0.07	1.85	0.00	0.00	0.67	1,929,071
<i>No. of firms</i>						111,081
Panel B:		B2B firms				
	Mean	SD	P1	P50	P99	Obs
<i>Dependent variables:</i>						
Count	21.12	190.82	1.00	1.00	352	6,464,674
Sales (EUR)	358,847.14	7,386,305.71	43.00	10,715.00	5,205,454	6,464,674
Goods	2.06	3.73	1.00	1.00	20	6,464,674
Countries	3.33	4.81	1.00	1.00	22	5,929,356
<i>Control variables:</i>						
Pre mean no. employees	63.94	975.61	0.00	8.86	739	6,043,055
Pre mean total sales (mio. EUR)	26.48	641.28	0.04	2.48	292.99	6,043,055
Pre mean count (DE-EU)	21.39	192.24	1.00	1.00	345	6,121,399
Pre mean EU-sales (mio. EUR)	0.35	6.79	0.00	0.02	4.75	6,121,399
<i>No. of firms</i>						236,923

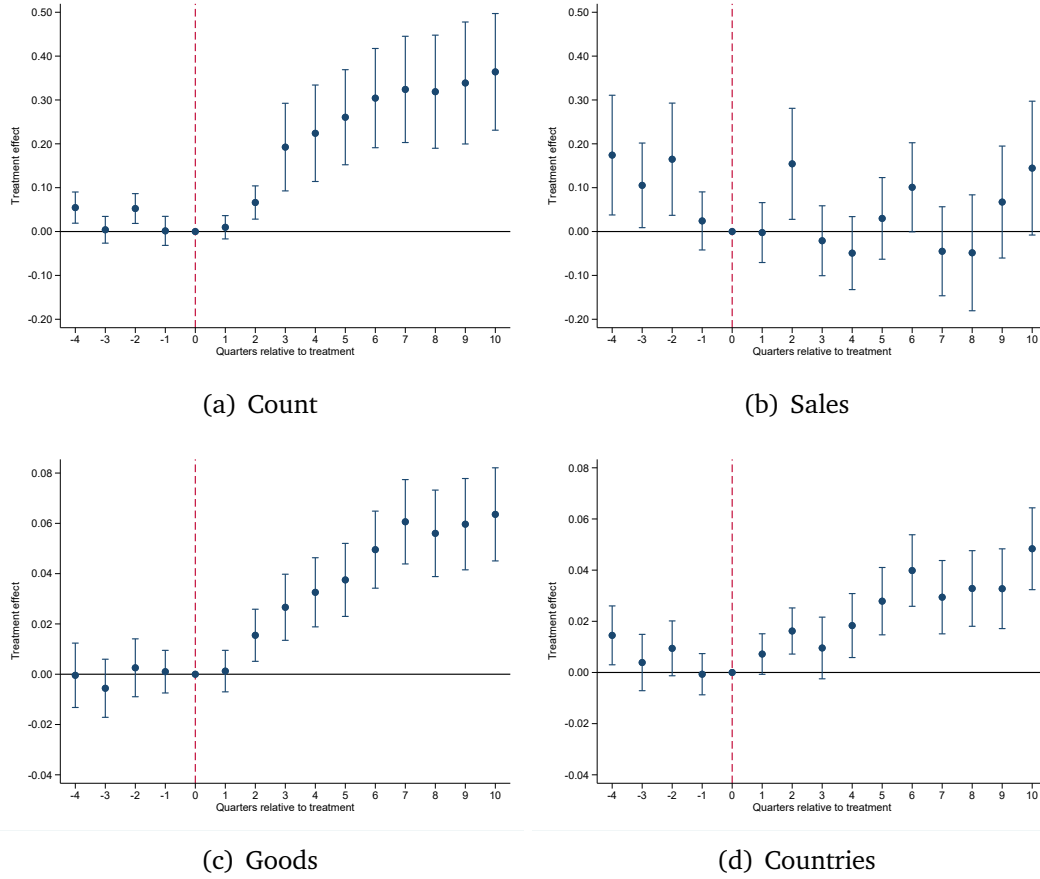
Notes: This table reports the descriptive statistics for the main variables used in the OSS analysis, covering the period January 2018 to December 2023. The data combine the German foreign trade statistics with VAT return data and are aggregated at the firm-month level, such that each observation represents a firm's total cross-border activity in a given month. Panel A reports statistics for treated B2C firms and Panel B for control B2B firms. Appendix A.1 provides variable definitions.

Table 3: OSS – Effect of Simplified Reporting on Business Activity

Panel A: Fixed effects				
	<i>Count</i> (1)	<i>Sales</i> (2)	<i>Goods</i> (3)	<i>Countries</i> (4)
B2C x Post	0.298*** (0.062)	0.072 (0.045)	0.039*** (0.006)	0.010*** (0.005)
<i>Firm FE</i>	X	X	X	X
<i>Year-month FE</i>	X	X	X	X
<i>Pseudo R2</i>	0.94	0.95	0.48	0.57
<i>Observations</i>	8,628,679	8,628,679	8,628,679	7,864,644
Panel B: Fixed effects and cross-border trade controls				
	<i>Count</i> (1)	<i>Sales</i> (2)	<i>Goods</i> (3)	<i>Countries</i> (4)
B2C x Post	0.295*** (0.070)	0.081 (0.052)	0.053*** (0.006)	0.020*** (0.005)
<i>Firm FE</i>	X	X	X	X
<i>Year-month FE</i>	X	X	X	X
<i>Pseudo R2</i>	0.94	0.95	0.49	0.58
<i>Observations</i>	8,050,470	8,050,470	8,050,470	7,286,435
Panel C: Fixed effects and firm-level controls				
	<i>Count</i> (1)	<i>Sales</i> (2)	<i>Goods</i> (3)	<i>Countries</i> (4)
B2C x Post	0.285*** (0.058)	0.066 (0.043)	0.047*** (0.006)	0.022*** (0.005)
<i>Firm FE</i>	X	X	X	X
<i>Year-month FE</i>	X	X	X	X
<i>Pseudo R2</i>	0.94	0.95	0.49	0.58
<i>Observations</i>	7,953,453	7,953,453	7,953,453	7,190,817

Notes: This table presents DiD estimates of the effect of the OSS on cross-border business activity, estimated using PPML. The dependent variables are measured at the firm-month level and capture four dimensions of a firm's cross-border activity: the number of transactions (Column 1), total sales volume (Column 2), the number of goods traded (Column 3) and the number of destination countries (Column 4). The treatment group consists of B2C firms and the control group of B2B firms. The post-reform period covers July 2021 to December 2023 and the pre-reform period January 2018 to June 2021. All specifications include firm fixed effects and year-month fixed effects. Panel B additionally includes pre-reform cross-border trade controls interacted with a linear time trend, and Panel C replaces these with firm-level pre-reform controls. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Figure 3: OSS – Dynamic Effect of Simplified Reporting on Business Activity



Notes: This figure presents event-study estimates of the effect of the OSS introduction on cross-border business activity, obtained by replacing the *Post* indicator in Equation 1 with separate year quarter indicators. To display the full post-reform period, the monthly firm-level panel is aggregated to the firm-quarter level. The treatment group consists of German B2C firms and the control group of B2B firms. The specification includes firm and year quarter fixed effects and pre-reform cross-border trade controls interacted with a linear time trend. Coefficients are plotted relative to the quarter immediately preceding the reform (Q2 2021), marked by the dashed vertical line. Standard errors are clustered at the firm level and the blue bands denote 95% confidence intervals.

Table 4: OSS – Effect of Simplified Reporting on Business Activity
(Treatment Intensity)

Panel A	Fixed effects			
	Count (1)	Sales (2)	Goods (3)	Countries (4)
Intra-EU B2C x Post	0.196** (0.088)	0.044 (0.068)	0.098*** (0.012)	0.170*** (0.010)
Firm FE	X	X	X	X
Year-month FE	X	X	X	X
Pseudo R2	0.95	0.94	0.49	0.48
Observations	1,547,105	1,547,105	1,547,105	1,530,582
Panel B:	Fixed effects and cross-border trade controls			
	Count (1)	Sales (2)	Goods (3)	Countries (4)
Intra-EU B2C x Post	0.149** (0.063)	0.016 (0.071)	0.113*** (0.013)	0.191*** (0.013)
Firm FE	X	X	X	X
Year-month FE	X	X	X	X
Pseudo R2	0.95	0.94	0.49	0.48
Observations	1,547,105	1,547,105	1,547,105	1,530,582
Panel C:	Fixed effects and firm-level controls			
	Count (1)	Sales (2)	Goods (3)	Countries (4)
Intra-EU B2C x Post	0.110* (0.063)	0.039 (0.077)	0.091*** (0.012)	0.201*** (0.011)
Firm FE	X	X	X	X
Year-month FE	X	X	X	X
Pseudo R2	0.95	0.94	0.49	0.48
Observations	1,537,690	1,537,690	1,537,690	1,521,359

Notes: This table presents DiD estimates of the effect of the OSS on cross-border business activity using an alternative treatment intensity specification, estimated using PPML. This specification restricts the sample to B2C firms only. The treatment group consists of B2C firms with more than 60% of pre-reform exports directed to EU member states, while the control group consists of B2C firms with less than 40% of pre-reform exports directed to EU member states. The dependent variables are measured at the firm-month level and capture four dimensions of a firm's cross-border activity: the number of transactions (Column 1), total sales volume (Column 2), the number of goods traded (Column 3) and the number of destination countries (Column 4). The post-reform period covers July 2021 to December 2023, and the pre-reform period covers January 2018 to June 2021. All specifications include firm fixed effects and year-month fixed effects. Panel B additionally includes pre-reform cross-border trade controls interacted with a linear time trend, and Panel C replaces these with firm-level pre-reform controls. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Table 5: OSS: Mechanism Tests

Panel A:		Price pass-through			
	Price (1)	Weight (2)			
B2C x Post	-0.026** (0.011)	0.002 (0.012)			
Firm-product FE	X	X			
Year-month FE	X	X			
Trade controls	X	X			
R2	0.82	0.91			
Observations	26,673,636	26,673,636			
Panel B:		Resource freeing (Goods)			
	Pre-reform countries		Firm size		
	Single (1)	Multiple (2)	Small (3)	Medium (4)	Large (5)
B2C x Post	0.023*** (0.005)	0.081*** (0.011)	0.041*** (0.007)	0.136*** (0.024)	0.071*** (0.023)
Firm FE	X	X	X	X	X
Year-month FE	X	X	X	X	X
Trade controls	X	X	X	X	X
Pseudo R2	0.03	0.58	0.30	0.58	0.69
Observations	4,513,956	2,749,974	6,692,272	982,376	278,805
Panel C:		Geographic expansion (Countries)			
	Pre-reform countries		Firm size		
	Single (1)	Multiple (2)	Small (3)	Medium (4)	Large (5)
B2C x Post	0.019*** (0.005)	0.020** (0.009)	0.022*** (0.006)	0.054*** (0.016)	-0.006 (0.022)
Firm FE	X	X	X	X	X
Year-month FE	X	X	X	X	X
Trade controls	X	X	X	X	X
Pseudo R2	0.02	0.51	0.46	0.54	0.56
Observations	4,513,947	2,749,837	5,961,516	952,972	276,329

Notes: This table presents tests of the three channels through which the OSS may affect cross-border business activity. Panel A tests price pass-through and is estimated using OLS at the firm-product-month level, with the logarithm of the mean transaction value (Column 1) and the logarithm of the mean transaction weight (Column 2) as dependent variables. Panels B and C test resource freeing and geographic expansion and are estimated using PPML at the firm-month level, with the number of goods traded (Panel B) and the number of destination countries (Panel C) as dependent variables. In Panels B and C, Columns (1) and (2) split the sample by whether a firm served a single or multiple destination countries before the reform, and Columns (3) to (5) split the sample by firm size, defined as small (<50 employees), medium (50–250 employees), and large (>250 employees). Results for the number of transactions are reported in Appendix Table A.8. The treatment group consists of B2C firms and the control group of B2B firms. The post-reform period covers July 2021 to December 2023 and the pre-reform period January 2018 to June 2021. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Table 6: IOSS – Descriptive Statistics

Panel A:		Product-Country Year Sample				
B2C Transactions between EUR 30 and EUR 150						
	Mean	SD	P1	P50	P99	Obs
Count	231.92	3,139.48	1.00	4.00	3,184.50	43,600
Sales (EUR)	15,781.48	185,102.60	31.00	332.00	235,472.00	43,600
Log (Pre sales)	5.32	3.14	0.00	5.59	12.21	43,600
B2B Transactions between EUR 30 and EUR 150						
	Mean	SD	P1	P50	P99	Obs
Count	120.31	1,797.71	1.00	3.00	1,908.00	36,163
Sales (EUR)	9,755.06	158,137.29	31.00	261.00	156,413.00	36,163
Log (Pre sales)	5.15	3.09	0.00	5.44	11.97	36,163
Panel B:		Transaction Year Sample				
B2C Transactions between EUR 120 and EUR 180						
	Mean	SD	P1	P50	P99	Obs
Transaction value (EUR)	146.97	17.53	120.00	145.00	180.00	1,695,927
Weight (kg)	460.67	11,965.47	0.10	4.00	11,176.40	1,695,927
B2B Transactions between EUR 120 and EUR 180						
	Mean	SD	P1	P50	P99	Obs
Transaction value (EUR)	146.65	17.32	120.00	144.00	180.00	1,384,802
Weight (kg)	707.75	107,388.36	0.10	5.00	13,319.70	1,384,802

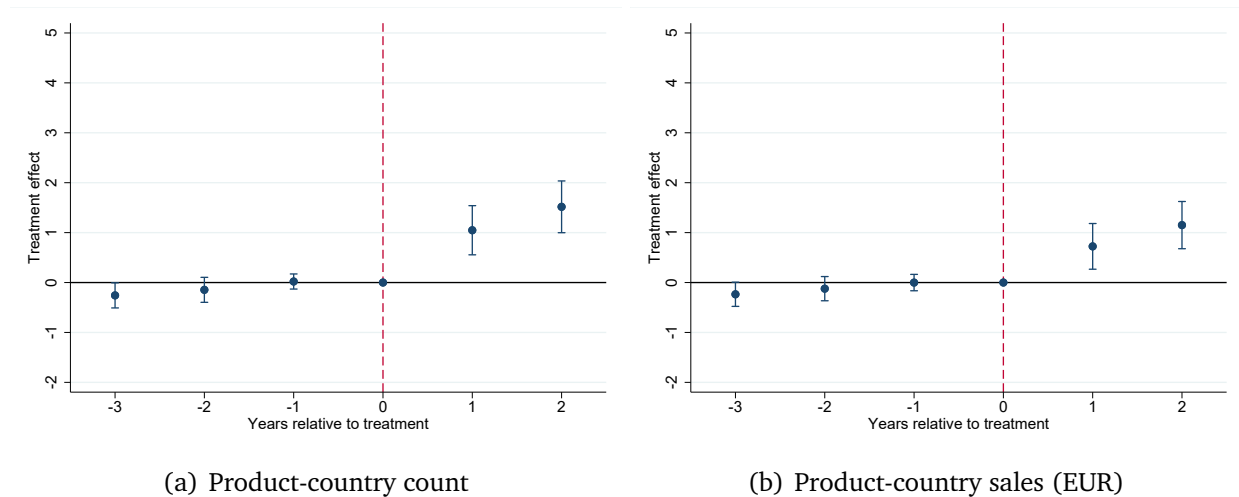
Notes: This table reports pre-reform descriptive statistics for the main variables used in the IOSS analysis, covering the period 2018 to 2020. The data are sourced from the German customs authority. Panel A reports descriptive statistics at the product-country year level for the aggregated sample used in Table 7, separately for B2C and B2B transactions valued between EUR 30 and EUR 150. Panel B reports descriptive statistics at the transaction year level, where each observation represents a single import transaction into Germany from a non-EU country. Statistics are reported separately for B2C and B2B transactions, each group between EUR 120 and EUR 180. Appendix B.1 provides variable definitions.

Table 7: IOSS – Effect of Simplified Reporting on Below-threshold Business Activity

	EUR 30 to EUR 150			
	<i>Product-country count</i>		<i>Product-country sales</i>	
	(1)	(2)	(3)	(4)
B2C × Post	1.369*** (0.269)	1.363*** (0.269)	1.047*** (0.239)	1.039*** (0.240)
<i>Product FE</i>	X		X	
<i>Product × Country FE</i>		X		X
<i>Year FE</i>	X	X	X	X
<i>Controls</i>	X	X	X	X
<i>Pseudo R²</i>	0.837	0.908	0.851	0.912
<i>Obs</i>	178,135	178,135	160,992	160,992

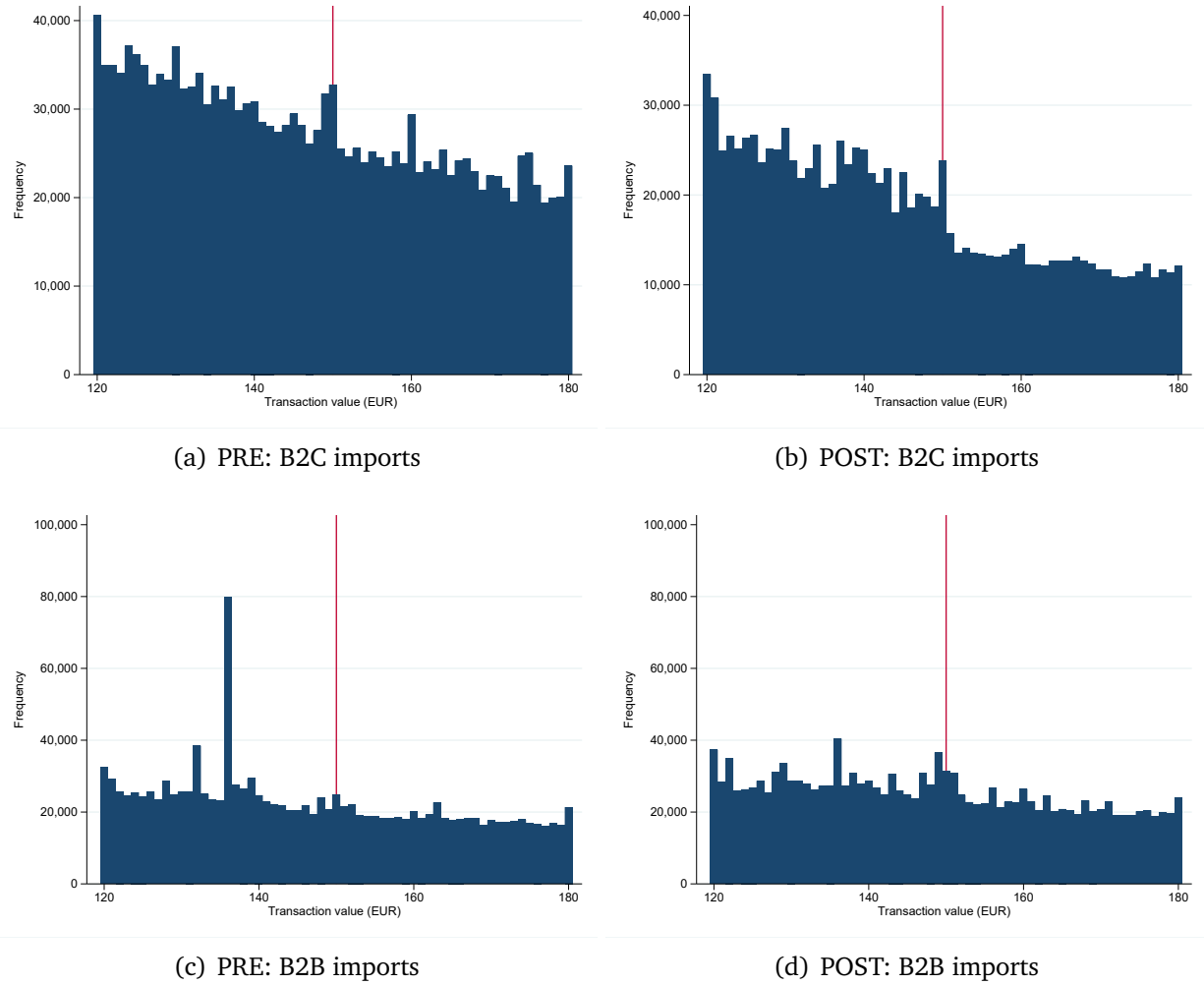
Notes: This table presents DiD estimates of the effect of the IOSS introduction on import activity for transactions valued between EUR 30 and EUR 150, estimated using PPML. The analysis is conducted at the product-country-year level. The dependent variables are the number of transactions (*Count*) and total sales volume (*Sales*), aggregated at the product-country-year level. The treatment group consists of B2C imports and the control group of B2B imports. Columns (1) and (3) include product and year fixed effects, while Columns (2) and (4) include product-country and year fixed effects. All specifications include controls for the pre-treatment level of sales. The post-reform period covers 2022 and 2023 and the pre-reform period 2018 to 2020. Standard errors are clustered at the product level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Figure 4: IOSS – Dynamic Effect of Simplified Reporting on Below-threshold Business Activity



Notes: This figure presents event-study estimates of the effect of the IOSS introduction on import activity for transactions valued between EUR 30 and EUR 150 estimated using PPML, obtained by replacing the *Post* indicator with separate year indicators. Panels (a) show the effect on the count of transactions and Panel (b) shows the effect on sales. All dependent variables are aggregated at the product-country-year level and the sample is restricted to transactions valued between EUR 30 and EUR 150. All specifications include product-country and year fixed effects, as well as controls for the pre-treatment level of sales. Coefficients are plotted relative to the year of the reform (2021), marked by the dashed vertical line. Standard errors are clustered at the product level and the shaded bands denote 95% confidence intervals.

Figure 5: IOSS – Distribution of B2C and B2B Transaction Values around the Threshold



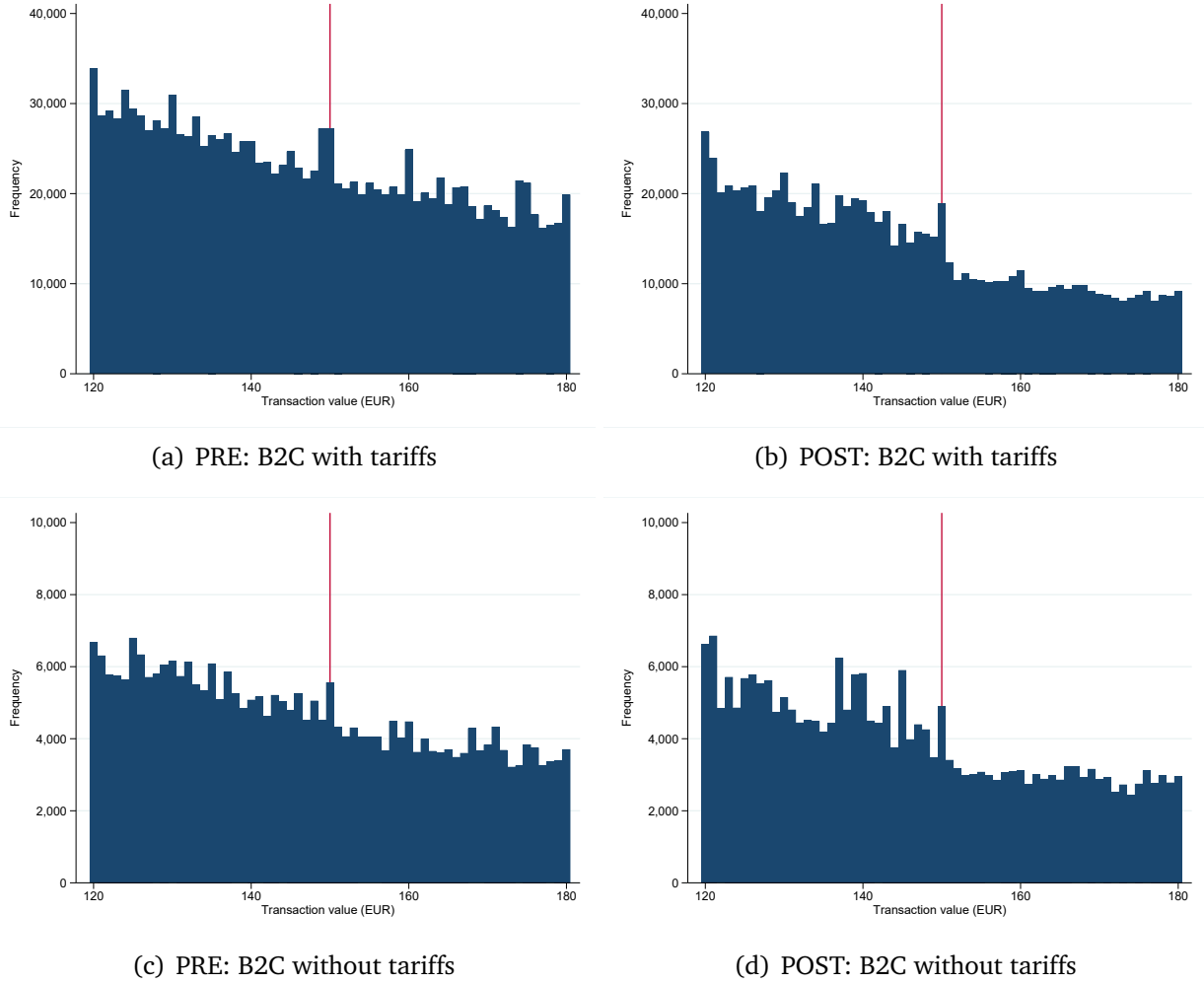
Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold, separately for B2C and B2B imports and for the pre- and post-reform. Panels (a) and (c) show the distribution of B2C and B2B imports in the pre-reform period (2018 to 2020), respectively, while Panels (b) and (d) show the corresponding distributions for the post-reform period (2022 to 2023). The sample is restricted to transactions valued between EUR 120 and EUR 180, and each bin corresponds to a EUR 1 interval. The dashed vertical line marks the EUR 150 IOSS eligibility threshold.

Table 8: IOSS – Likelihood of Below-threshold Reporting

	<i>Transaction value below threshold (= 1)</i>		
	(1)	(2)	(3)
Panel A: Bandwidth EUR ± 1			
B2C x Post	0.292*** (0.069)	0.317*** (0.084)	0.113*** (0.027)
<i>Estimator</i>	Logit	Logit	PPML
<i>Product FE</i>	X		
<i>Country FE</i>		X	
<i>Product x Country FE</i>			X
<i>Year FE</i>	X	X	X
<i>Pseudo R2</i>	0.042	0.021	0.031
<i>Observations</i>	217,008	217,160	211,693
Panel B: Bandwidth EUR ± 10			
B2C x Post	0.281*** (0.037)	0.276*** (0.042)	0.108*** (0.014)
<i>Estimator</i>	Logit	Logit	PPML
<i>Product FE</i>	X		
<i>Country FE</i>		X	
<i>Product x Country FE</i>			X
<i>Year FE</i>	X	X	X
<i>Pseudo R2</i>	0.009	0.004	0.008
<i>Observations</i>	1,894,877	1,894,933	1,883,802
Panel C: Bandwidth EUR ± 30			
B2C x Post	0.399*** (0.091)	0.454*** (0.150)	0.130*** (0.031)
<i>Estimator</i>	Logit	Logit	PPML
<i>Product FE</i>	X		
<i>Country FE</i>		X	
<i>Product x Country FE</i>			X
<i>Year FE</i>	X	X	X
<i>Pseudo R2</i>	0.021	0.006	0.009
<i>Observations</i>	5,810,286	5,810,301	5,796,284

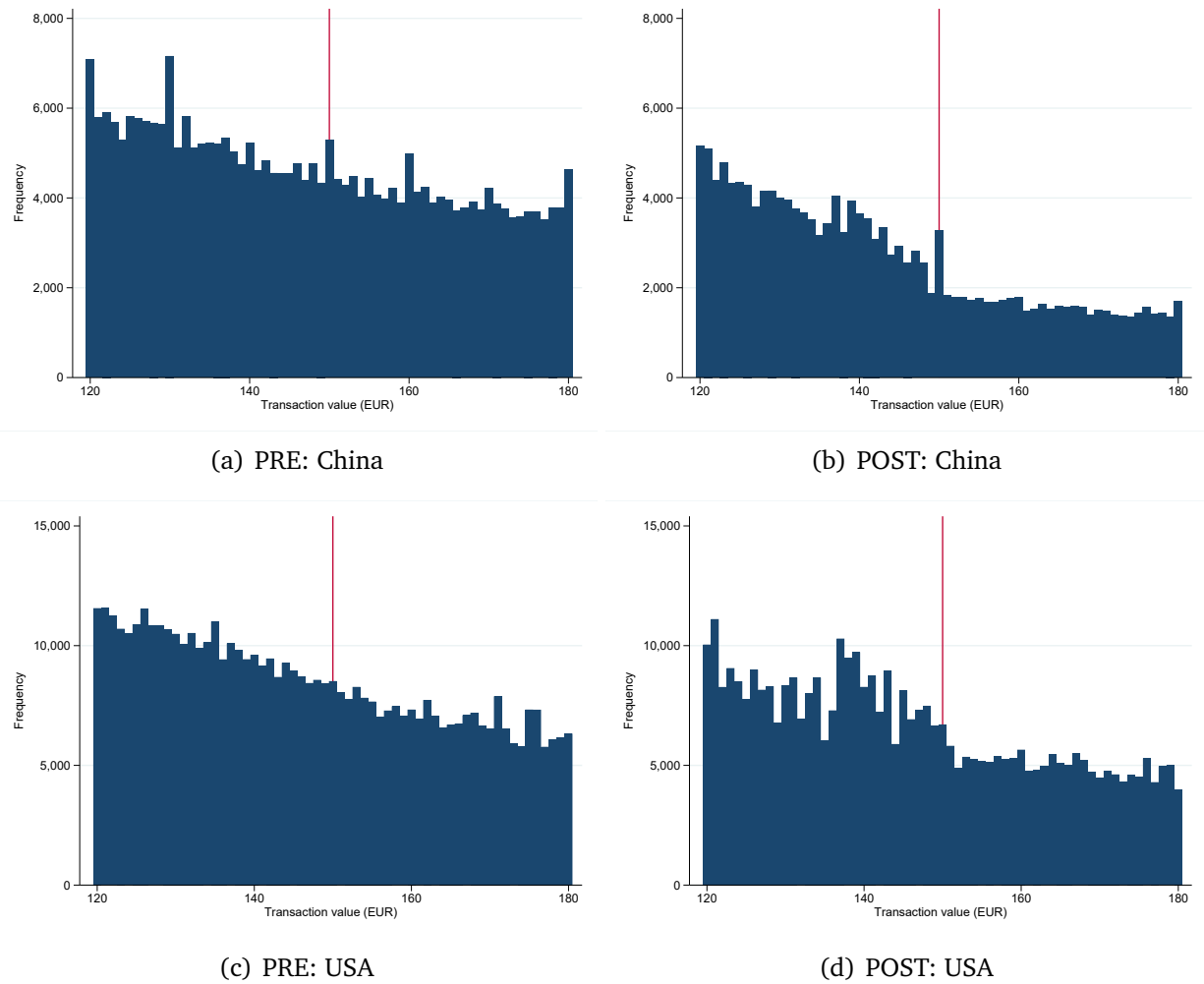
Notes: This table presents DiD estimates of the likelihood that a transaction is reported below the EUR 150 IOSS eligibility threshold, following the approach of Bernard et al. (2018). The dependent variable is an indicator equal to one if the declared transaction value falls at or below EUR 150 and zero otherwise, at the transaction level. The treatment group consists of B2C imports and the control group of B2B imports. Each panel restricts the sample to transactions within a different bandwidth around the threshold: EUR ± 1 in Panel A, EUR ± 10 in Panel B, and EUR ± 30 in Panel C. Columns (1) and (2) report logit estimates with product and country fixed effects, respectively, while Column (3) reports PPML estimates with product-country fixed effects. All specifications include year fixed effects. Standard errors are reported in parentheses. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

Figure 6: IOSS – Distribution of B2C Transaction Values by Tariff Status around the Threshold



Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold for B2C imports, separately by tariff status and for the pre- and post-reform periods. Panels (a) and (b) show the distribution for products subject to tariffs in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for products that are exempt from tariffs. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The dashed vertical line marks the EUR 150 IOSS eligibility threshold.

Figure 7: IOSS – Distribution of B2C Transaction Values from China and USA around the Threshold



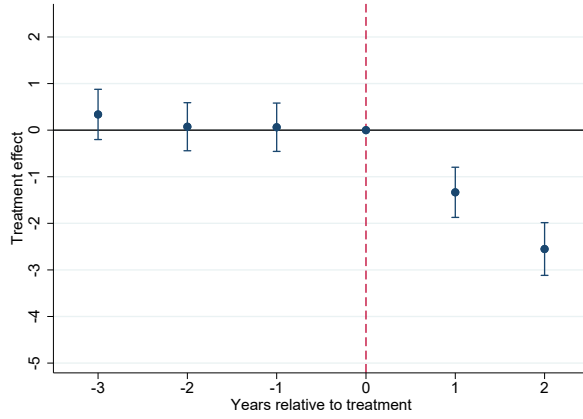
Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold for B2C imports from China and the United States, separately for the pre- and post-reform periods. Panels (a) and (b) show the distribution of B2C imports from China in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for B2C imports from the United States. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The dashed vertical line marks the EUR 150 IOSS eligibility threshold. The corresponding B2B distributions for both countries are reported in Appendix Figure B.4.

Table 9: IOSS – Effect of Simplified Reporting on Product-country Values and Weights around the Threshold

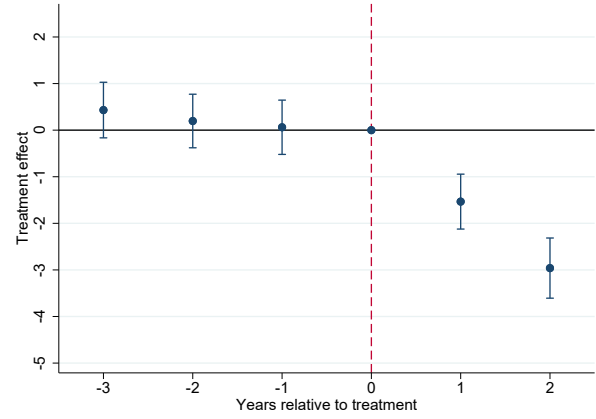
Panel A:	Product-country value (EUR)			
	Mean		Median	
	(1)	(2)	(3)	(4)
B2C x Post	-2.310*** (0.180)	-2.071*** (0.179)	-2.646*** (0.194)	-2.453*** (0.200)
<i>Product FE</i>	X		X	
<i>Product × Country FE</i>		X		X
<i>Year FE</i>	X	X	X	X
<i>Adj. R²</i>	0.02	0.10	0.02	0.09
<i>Obs</i>	104,402	92,364	104,402	92,364
Panel B:	Product-country weight (kg)			
	Mean		Median	
	(1)	(2)	(3)	(4)
B2C x Post	-0.819*** (0.178)	-0.897*** (0.161)	-0.800*** (0.184)	-0.967*** (0.169)
<i>Product FE</i>	X		X	
<i>Product × Country FE</i>		X		X
<i>Year FE</i>	X	X	X	X
<i>Adj. R²</i>	0.25	0.46	0.22	0.42
<i>Obs</i>	90,583	79,747	90,583	79,747

Notes: This table presents DiD estimates of the effect of the IOSS introduction on declared transaction values and transaction weights for B2C imports relative to B2B imports, estimated using OLS. All dependent variables are aggregated at the product-country-year level and the sample is restricted to transactions valued between EUR 120 and EUR 180. The treatment group consists of B2C imports and the control group of B2B imports. Panel A reports results for transaction values, with the dependent variable measured as either the mean or median declared transaction value in EUR per product-country-year. Panel B reports the corresponding results for transaction weights, with the dependent variable measured as either the mean or median transaction weight in kilograms per product-country-year. Observations above the 75th percentile of the weight distribution are excluded separately for B2C and B2B imports (25 kg for B2C, 95kg for B2B). Columns (1) and (3) include product and year fixed effects, while Columns (2) and (4) replace product fixed effects with product-country fixed effects. The post-reform period covers 2022 to 2023 and the pre-reform period 2018 to 2020. Standard errors are clustered at the product level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

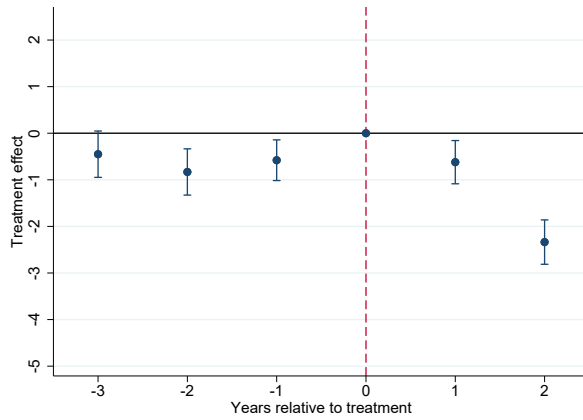
Figure 8: IOSS – Dynamic Effect of Simplified Reporting on Product-country Values and Weights around the Threshold



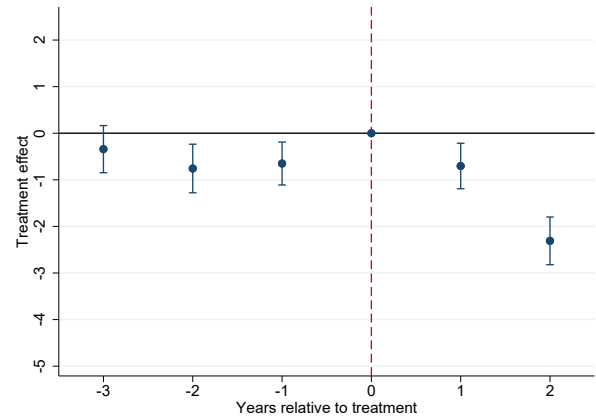
(a) Mean product-country value (EUR)



(b) Median product-country value (EUR)



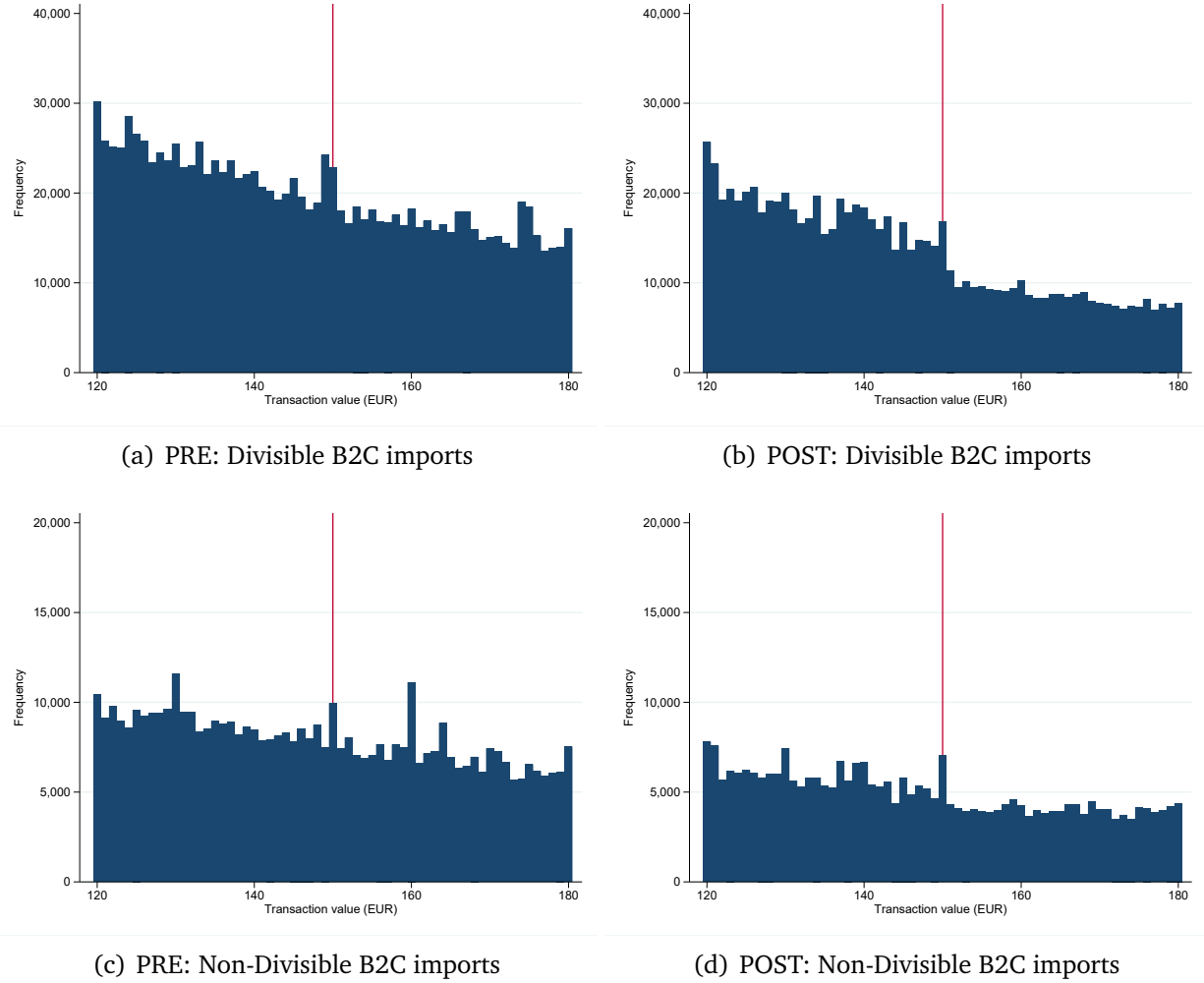
(c) Mean product-country weight (kg)



(d) Median product-country weight (kg)

Notes: This figure presents event-study estimates of the effect of the IOSS introduction on reported transaction values and transaction weights for B2C imports relative to B2B imports, obtained by replacing the *Post* indicator with separate year indicators. Panels (a) and (b) report coefficients for mean and median transaction values, respectively. Panels (c) and (d) report the corresponding coefficients for mean and median transaction weights. All dependent variables are aggregated at the product-country-year level and the sample is restricted to transactions valued between EUR 120 and EUR 180. Observations above the 75th percentile of the weight distribution are excluded separately for B2C and B2B transactions. All specifications include product-country and year fixed effects. Coefficients are plotted relative to the year of the reform (2021), marked by the dashed vertical line. Standard errors are clustered at the product level and the shaded bands denote 95% confidence intervals.

Figure 9: IOSS – Distribution of B2C Import Transaction Values for Divisible and Non-Divisible Products



Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold for B2C imports, separately by product divisibility and for the pre- and post-reform periods. Panels (a) and (b) show the distribution for divisible products in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for non-divisible products. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The vertical line marks the EUR 150 IOSS eligibility threshold.

Online Appendix

The next pages include the following appendices:

- **OSS** (Appendix A):

Appendix A.1: Variable Definitions

Appendix A.2: Data, Sample, and Descriptives

Appendix A.3: Additional Results

- **IOSS** (Appendix B)

Appendix B.1: Variable Definitions

Appendix B.2: Data, Sample, and Descriptives

Appendix B.3: Additional Results

A OSS

A.1 Variable Definitions

Table A.1: Variable Definitions

Variable	Definition
<i>B2C</i>	Indicator variable equal to one if firm i is classified as a B2C firm, and zero otherwise.
<i>Post</i>	Indicator variable equal to one for year-month t beginning with July 2021, and zero otherwise.
<i>Count</i>	Number of cross-border transactions recorded by firm i in year-month t .
<i>Sales</i>	Sales volume in EUR from cross-border transactions by firm i in year-month t .
<i>Goods</i>	Number of distinct product codes traded cross-border by firm i in year-month t .
<i>Countries</i>	Number of distinct EU destination countries served by firm i in year-month t .
<i>Pre mean no. employees</i>	Average number of employees of firm i per year, measured from January 2018 to June 2021 prior to the reform and held constant throughout the sample period.
<i>Pre mean total sales</i>	Average total firm sales in EUR of firm i per year, measured from January 2018 to June 2021 prior to the reform and held constant throughout the sample period.
<i>Pre mean count (DE-EU)</i>	Average number of cross-border B2C transactions recorded by firm i in year-month t , measured from January 2018 to June 2021 prior to the reform and held constant throughout the sample period.
<i>Pre mean EU-sales</i>	Average sales volume in EUR from cross-border B2C transactions by firm i in year-month t , measured from January 2018 to June 2021 prior to the reform and held constant throughout the sample period.
<i>Price</i>	Mean reported transaction value in EUR at the firm-product-year-month level.
<i>Weight</i>	Mean reported transaction weight in kilograms at the firm-product-year-month level.

A.2 Data, Sample, and Descriptives

Data Description. The OSS analysis combines two confidential administrative datasets provided by the German Research Data Center (Forschungsdatenzentrum, FDZ) of the Federal Statistical Office and the Statistical Offices of the Federal States. The first is the German foreign trade statistics (Außenhandelsstatistik, AHS), which record the cross-border trade of German firms at the transaction level. This dataset contains the transaction value, the transaction weight, the eight-digit Combined Nomenclature product code, the destination country, the month and year of the transaction, and the reporting firm. The second is the VAT return panel (Umsatzsteuer-Panel, USt-Panel), which contains annual firm-level information on taxable sales, the five-digit industry classification, and the number of employees. The datasets are documented under the DOIs 10.21242/51911.2024.00.05.1.1.0 (AHS) and 10.21242/73311.2023.00.01.1.1.0 (USt-Panel). Both cover the years 2018 to 2023.

Neither dataset is publicly available. Researchers can obtain access by applying to the FDZ. The application form asks for a description of the research project, including the research design, and of the data required. We applied through the University of Mannheim as our research unit in October 2023 and were granted access in early 2024. We are able to access a 5% sample of the data on-site at a guest researcher workstation at the Leibniz Centre for European Economic Research (ZEW) in Mannheim, which we use to test our code and to familiarize ourselves with the data. In addition, we received an anonymized data structure file with random values, which allows us to prepare our code remotely. We then send the code to FDZ staff, who run it on the full database. The FDZ checks all output for disclosure risk before release. Researchers who wish to replicate our analysis need to apply for access to the same datasets at the FDZ.

The FDZ provides the two datasets separately, and we merge them in our code. We link the foreign trade statistics to the VAT return data using a firm identifier (`urs_we_id_z`). The linked data for 2018 to 2023 contain approximately 594.86 million firm-transaction observations for 1.68 million firms. Appendix Table A.2 reports the sample selection steps that lead to the two samples used in our analyses, and Appendix A.1 defines all variables. We perform all data manipulations in Stata, including the merge, the sample restrictions, the aggregation, the construction of all variables, and the estimation of all tables and figures.

Table A.2: OSS – Sample Selection

Selection step	Obs	Firms
Panel A: Main OSS sample		
Merged foreign transaction and VAT return data 2018–2023	594,857,060	1,687,498
Less transactions with missing industry code	(165,683,664)	(172,959)
Less import transactions	(158,890,992)	(1,018,092)
Less extra-EU transactions	(98,266,882)	(42,548)
Less transactions to Great Britain (Brexit)	(1,519,474)	(95)
Less transactions subject to excise duties	(1,388,292)	(59)
Less firms subject to MOSS	(5,518,776)	(28,397)
Less singleton firms	(77,344)	(77,344)
OSS sample (firm year-month panel)	8,628,679	348,004
Panel B: Treatment intensity sample		
Merged foreign transaction and VAT return data 2018–2023	594,857,060	1,687,498
Less transactions with missing industry code	(165,683,664)	(172,959)
Less import transactions	(158,890,992)	(1,018,092)
Less transactions to Great Britain (Brexit)	(9,049,532)	(1,070)
Less transactions subject to excise duties	(2,232,504)	(597)
Less firms subject to MOSS	(7,726,309)	(30,852)
Less firms classified as B2B	(248,802,007)	(308,056)
Less non-missing control variables	(915,486)	(91,030)
Less singleton firms	(9,461)	(9,461)
OSS treatment intensity sample (firm year-month panel)	1,547,105	55,381

Notes: This table reports the construction of the samples used for the OSS analysis. Panel A reports the sample selection for the main sample including B2C and B2B firms selling within the EU. Panel B reports the sample selection for the treatment intensity sample which contains only B2C firms selling to consumers in the EU as well as in third countries.

Table A.3: OSS – B2C Classification

Code	Industry	Code	Industry
45202	Car wash facility.	71111	Architectural offices for building construction.
45320	Retail sale of motor vehicle parts and accessories.	47190	Other retail sale of various types of goods.
47110	Retail sale of food, luxury foods, and beverages.	47210	Retail sale of fruit, vegetables, and potatoes.
47220	Retail sale of meat and meat products.	47230	Retail sale of fish, seafood, and fish products.
47240	Retail sale of baked goods and confectionery.	47250	Retail sale of beverages.
47260	Retail sale of tobacco products.	47290	Other retail sale of food and beverages.
47301	Retail sale of motor fuels on behalf of third parties (agency gas stations).	47302	Retail sale of motor fuels under own name (independent gas stations).
47410	Retail sale of data processing equipment, peripheral devices, software.	47420	Retail sale of telecommunications equipment.
47430	Retail sale of consumer electronics equipment.	47510	Retail sale of textiles.
47521	Retail sale of metal and plastic goods n.e.c..	47523	Retail sale of paints, building materials, and DIY supplies.
47530	Retail sale of curtains, carpets, floor coverings, and wallpaper.	47540	Retail sale of electrical household appliances.
47591	Retail sale of home furniture.	47592	Retail sale of ceramic products and glassware.
47593	Retail sale of musical instruments and music supplies.	47599	Retail sale of household goods n.e.c..
47610	Retail sale of books.	47621	Retail sale of magazines and newspapers.
47622	Retail sale of stationery, paper goods, school and office supplies.	47630	Retail sale of recorded audio and video media.
47641	Retail sale of bicycles, bicycle parts, and accessories.	47642	Retail sale of sports and camping goods (excluding camping furniture).
47650	Retail sale of toys.	47710	Retail sale of clothing.
47721	Retail sale of shoes.	47722	Retail sale of leather goods and luggage.
47730	Pharmacies.	47740	Retail sale of medical and orthopedic goods.
47750	Retail sale of cosmetic products and personal care products.	47761	Retail sale of flowers, plants, seeds, and fertilizers.
47762	Retail sale of zoological supplies and live animals.	47770	Retail sale of watches and jewelry.
47781	Opticians.	47782	Retail sale of photographic and optical goods (excluding opticians).
47783	Retail sale of art, pictures, decorative arts, stamps, coins, and gift items.	47789	Other retail sale n.e.c. (in sales rooms).
47791	Retail sale of antiques and antique carpets.	47792	Antique shops.
47799	Retail sale of other second-hand goods.	47810	Retail sale of food, beverages, tobacco products at stalls and markets.
47820	Retail sale of textiles, clothing, and footwear at stalls and markets.	47890	Retail sale of other goods at stalls and markets.
47910	Mail order and internet retail.	47991	Retail sale of fuel from warehouses.
47999	Other retail sale n.e.c. (not in sales rooms).	49100	Long-distance passenger transport by rail.
49310	Local passenger transport by land (excluding taxis).	49320	Operation of taxis.
49391	Long-distance passenger transport by bus.	49392	Occasional passenger transport by bus.
49399	Passenger transport by land, n.e.c..	49410	Freight transport by road.
49420	Removal services.	50100	Sea and coastal passenger water transport.
50300	Passenger transport by inland waterway.	51100	Passenger transport by air.
52211	Operation of parking garages and parking lots.	52214	Operation of stations for passenger transport, including bus stations.
55101	Hotels (excluding bed and breakfast hotels).	55102	Bed and breakfast hotels.
55103	Inns.	55104	Guesthouses.
55201	Recreation and vacation homes.	55202	Vacation centres.
55203	Vacation homes and vacation apartments.	55204	Youth hostels and cabins.
55300	Campgrounds.	55901	Private accommodations.
55909	Other accommodation facilities n.e.c..	56101	Restaurants mit herkömmlicher Bedienung.
56102	Self-service restaurants.	56103	Snack bars and similar establishments.
56104	Cafés.	56105	Ice cream parlors.
56106	Pizzerias.	56107	Restaurants serving Asian food.
56108	Snack bars serving Asian food.	56109	Kebab snack bars.
56210	Event caterers.	56290	Provision of other catering services.
56301	Pubs.	56302	Discotheques and dance halls.
56303	Bars.	56304	Amusement venues.
56309	Other beverage-oriented catering establishments.	58110	Publishing of books.
58120	Publishing of directories and mailing lists.	58130	Publishing of newspapers.
58140	Publishing of magazines.	58190	Other publishing activities (excluding software).
58210	Publishing of computer games.	58290	Publishing of other software.
59110	Production of films, video films, and television programs.	59111	Social media players' advertising revenue on social networks.
59119	Production of films, video films, and television programs n.e.c..	59120	Post-production and other film technology.
59130	Film distribution and sales (excluding video stores).	59140	Cinemas.
59201	Sound studios and production of radio programs.	59202	Publishing of recorded sound carriers.
59203	Publishing of sheet music.	60100	Radio broadcasters.
60200	Television broadcasters.	61100	Wired telecommunications.
61200	Wireless telecommunications.	61300	Satellite telecommunications.
61901	Internet service providers.	61909	Other telecommunications n.e.c..
64110	Central banking.	64191	Credit banks, including branches of foreign banks.
64192	Credit institutions in the savings bank sector.	64193	Credit institutions in the cooperative sector.
64194	Mortgage banks.	64195	Credit institutions with special tasks.
64196	Building societies.	64201	Venture capital funds.
64202	Private equity funds.	64203	Mezzanine funds.
64204	Investment companies.	64300	Trust and other funds and similar financial institutions.
64910	Financial leasing institutions.	64921	Special credit institutions (excluding pawnbroking).
64922	Pawnshops.	64991	Equity funds.
64992	Mixed funds.	64993	Real estate funds.
64994	Other investment funds.	64995	Special real estate funds.
64996	Other special funds.	64999	Other financial institutions n.e.c..
65110	Life insurance companies.	65121	Health insurance.
65122	Property and casualty insurance.	65200	Reinsurance.
65300	Pension funds and pension schemes.	66110	Securities and commodities exchanges.

Code	Industry	Code	Industry
66120	Securities and commodities trading.	66190	Other activities related to financial services.
66191	Payment institutions.	66199	Other activities related to financial services.
66210	Risk and damage assessment.	66220	Activities of insurance agents and brokers.
66290	Other activities related to insurance services and pension funds.	66300	Fund management activities.
68100	Purchase and sale of own land, buildings, and apartments.	68200	Rental and leasing of own or leased land, buildings, and apartments.
68203	REIT (Real Estate Investment Trust).	68310	Brokerage of land, buildings, and apartments for third parties.
68320	Management of land, buildings, and apartments for third parties.	69101	Law firms with notary offices.
69102	Law firms without notary offices.	69103	Notary offices.
69104	Patent attorney offices.	69109	Provision of other legal services n.e.c..
69203	Tax agents, tax consultants, and tax consulting firms.	69204	Accounting (excluding data processing services).

Notes: This table lists the five-digit industry codes and corresponding industry descriptions used to classify firms as B2C in our baseline specification. Firms in all remaining industry codes are assigned to the control group and classified as B2B.

Table A.4: OSS – MOSS classification

Code	Industry
26200	Manufacture of data processing equipment and peripheral devices.
26300	Manufacture of telecommunications equipment and devices.
46510	Wholesale of data processing equipment, peripheral devices, and software.
46520	Wholesale of electronic components and telecommunications equipment..
47410	Retail sale of data processing equipment, peripheral devices, and software.
47420	Retail sale of telecommunications equipment.
58210	Publishing of computer games.
58290	Publishing of other software.
59110	Production of films, video films, and television programs.
59111	Social media players that generate advertising revenue on social networks.
59119	Production of films, video films, and television programs n.e.c..
59201	Sound studios and production of radio programs.
60100	Radio broadcasters.
60200	Television broadcasters.
61100	Wired telecommunications.
61200	Wireless telecommunications.
61300	Satellite telecommunications.
61901	Internet service providers.
61909	Other telecommunications n.e.c..
62011	Development and programming of Internet presentations.
62019	Other software development.
62020	Provision of consulting services in the field of information technology.
62030	Operation of data processing facilities for third parties.
62090	Provision of other information technology services.
63110	Data processing, hosting and related activities.
63120	Web portals.
63910	Correspondence and news agencies.
63990	Provision of other information services n.e.c..
82200	Call centres.
90014	Self-employed stage, film, radio, and television artists, as well as other performing artists.
95110	Repair of data processing equipment and peripheral devices.
95120	Repair of telecommunications equipment.

Notes: This table lists the five-digit industry codes and corresponding industry descriptions used to identify firms eligible for the Mini-One-Stop-Shop (MOSS) regime.

Table A.5: OSS – Top B2C Intra-EU Destination Countries

B2C firms					
Panel A: Country	<i>Firms number</i>	<i>Count number</i>	<i>Volume value (EUR)</i>	<i>Mean value (EUR)</i>	<i>Median value (EUR)</i>
Austria	6,016	2,127,813	11,091,441,664	5,212.60	218.00
Netherlands	5,326	1,186,884	7,805,392,896	6,576.37	230.00
France	4,495	1,129,626	7,656,053,760	6,777.51	212.00
Poland	4,358	829,006	16,980,992,000	20,483.56	328.00
Italy	4,326	780,689	5,680,328,192	7,276.04	196.00
Czechia	3,893	754,261	4,286,220,800	5,682.68	225.00
Belgium	3,967	693,166	2,965,968,384	4,278.87	173.00
Spain	3,303	529,268	3,030,808,832	5,726.42	178.00
B2C firms					
Panel B: Type of good	<i>Firms number</i>	<i>Count number</i>	<i>Volume value (EUR)</i>	<i>Mean value (EUR)</i>	<i>Median value (EUR)</i>
85 Electrical machinery	1,798	1,294,393	8,522,830,848	6,584.42	193.00
84 Machinery & Mech. Appliances	1,722	872,629	7,952,932,864	9,113.76	306.00
61 Clothing (knitted or croch.)	832	861,466	5,772,258,304	6,700.51	237.00
62 Clothing (not knitted or croch.)	762	802,918	6,365,382,144	7,927.81	301.00
39 Plastics	1,853	691,069	1,835,319,296	2,655.77	105.00
82 Base Metal Products	825	479,761	700,117,824	1,459.31	97.00
73 Iron or Steel	1,379	475,054	994,636,736	2,093.73	97.00
94 Furniture	1,082	466,071	2,648,230,656	5,682.03	360.00

Notes: This table reports the eight most frequent destination countries and product categories for cross-border B2C sales by German firms in the pre-reform period from January 2018 to June 2021, ranked by the total number of transactions in each panel. Panel A reports the eight most frequent destination countries, ranked in descending order by transaction count. Panel B reports the eight most frequently exported product categories, identified using the eight-digit Combined Nomenclature (CN) product classification and aggregated to the two-digit level for presentation. In both panels, the data are sourced from the German foreign trade statistics and are restricted to intra-EU B2C exports by firms classified as B2C based on the five-digit industry classification. Full product group descriptions are provided in Appendix Table A.6.

Table A.6: OSS: Frequently Exported Goods to Final Customers in the EU
with Full Product Group Name

Code	Product group
39	Plastics and articles thereof.
61	Articles of apparel and clothing accessories, knitted or crocheted.
62	Articles of apparel and clothing accessories, not knitted or crocheted.
73	Articles of iron or steel.
82	Tools, implements, cutlery, spoons and forks, of base metal; parts thereof of base metal.
84	Nuclear reactors, boilers, machinery and mechanical appliances; parts thereof.
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles.
94	Furniture; bedding, mattresses, mattress supports, cushions and similar stuffed furnishings; lamps and lighting fittings, not elsewhere specified or included; illuminated signs, illuminated nameplates and the like; prefabricated buildings.

Notes: This table provides the full product group descriptions for the exported goods from German B2C firms to EU final customers reported in the main analysis. Product descriptions are based on the TARIC nomenclature and were accessed via the EU TARIC database at https://ec.europa.eu/taxation_customs/dds2/taric/taric_consultation.jsp?Lang=en (accessed April 2026).

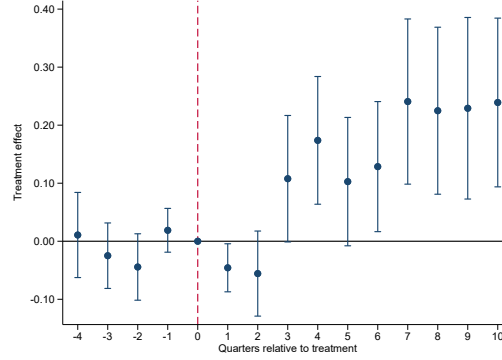
Table A.7: OSS – Descriptive Statistics (Treatment Intensity)

Panel A:		Intra EU B2C firms				
	<i>Mean</i>	<i>SD</i>	<i>P1</i>	<i>P50</i>	<i>P99</i>	<i>Obs</i>
<i>Dependent variables:</i>						
Count	19.60	409.65	0.00	1.00	269	1,139,954
Sales (EUR)	103,800.48	2,742,257.79	0.00	2,077.00	1,061,509	1,139,954
Goods	1.64	3.92	0.00	1.00	20	1,139,954
Countries	1.75	3.36	0.00	1.00	20	1,139,954
<i>Control variables:</i>						
Pre mean no. employees	43.17	660.02	0.00	1.50	565	1,135,639
Pre mean total sales (mio. EUR)	13.655	238.852	0.026	0.659	127.491	1,135,639
Pre mean count (DE-EU)	16.93	297.29	1.00	1.00	231	1,139,954
Pre mean EU-sales (mio. EUR)	0.093	2.364	0.000	0.003	0.896	1,139,954
<i>No. of firms</i>						43,593
Panel B:		Third country B2C firms				
	<i>Mean</i>	<i>SD</i>	<i>P1</i>	<i>P50</i>	<i>P99</i>	<i>Obs</i>
<i>Dependent variables:</i>						
Count	8.25	80.54	0.00	1.00	108	407,151
Sales (EUR)	70,572.86	765,295.02	0.00	5,470.00	1,123,891	407,151
Goods	2.06	3.96	0.00	1.00	18	407,151
Countries	1.31	2.20	0.00	1.00	9	407,151
<i>Control variables:</i>						
Pre mean no. employees	64.20	725.47	0.00	3.41	796	402,051
Pre mean total sales (mio. EUR)	10.069	160.688	0.038	1.167	106.384	402,051
Pre mean count (DE-EU)	8.58	61.18	1.00	2.67	96	407,151
Pre mean EU-sales (mio. EUR)	0.069	0.414	0.001	0.013	0.945	407,151
<i>No. of firms</i>						11,788

Notes: This table reports descriptive statistics for the alternative treatment intensity sample, covering the period January 2018 to December 2023. The data combine the German foreign trade statistics with VAT return data and are aggregated at the firm-month level, such that each observation represents a firm's total cross-border activity in a given month. The sample is restricted to B2C firms, with treated firms primarily exporting to EU member states and control firms primarily exporting to non-EU countries. Panel A reports statistics for treated firms and Panel B for control B2C firms. Variable definitions are provided in Appendix Table A.1.

A.3 Additional Results

Figure A.1: OSS – Dynamic Effect of Simplified Reporting on Business Activity (Treatment Intensity)



Notes: This figure presents event-study estimates of the effect of the OSS introduction on cross-border transaction count using the alternative treatment intensity sample, obtained by replacing the *Post* indicator in Equation 1 with separate year-quarter indicators. To display the full post-reform period, the monthly firm-level panel is aggregated to the firm-quarter level. The treatment group consists of firms primarily exporting to EU member states and the control group of firms primarily exporting to non-EU countries. The specification includes firm and year quarter fixed effects and pre-reform cross-border trade controls interacted with a linear time trend. Coefficients are plotted relative to the quarter immediately preceding the reform (Q2 2021), marked by the dashed vertical line. Standard errors are clustered at the firm level and the blue bands denote 95% confidence intervals.

Table A.8: OSS: Transaction Counts by Prior Geographic Scope and Firm Size

	<i>Pre-reform countries</i>		<i>Firm size</i>		
	<i>Single</i> (1)	<i>Multiple</i> (2)	<i>Small</i> (3)	<i>Medium</i> (4)	<i>Large</i> (5)
B2C x Post	0.442*** (0.104)	0.277*** (0.073)	0.245*** (0.036)	0.280*** (0.077)	0.333** (0.130)
<i>Firm FE</i>	X	X	X	X	X
<i>Year-month FE</i>	X	X	X	X	X
<i>Trade controls</i>	X	X	X	X	X
<i>Pseudo R2</i>	0.45	0.94	0.84	0.91	0.95
<i>Observations</i>	4,513,956	2,749,974	6,692,272	982,376	278,805

Notes: This table presents DiD estimates of the effect of the OSS on the number of cross-border transactions across subsamples, estimated using PPML at the firm-month level. Columns (1) and (2) split the sample by whether a firm served a single or multiple destination countries before the reform. Columns (3) to (5) split the sample by firm size, defined as small (<50 employees), medium (50–250 employees), and large (>250 employees). The treatment group consists of B2C firms and the control group of B2B firms. The post-reform period covers July 2021 to December 2023 and the pre-reform period January 2018 to June 2021. All specifications include firm fixed effects, year-month fixed effects, and pre-reform cross-border trade controls interacted with a linear time trend. Standard errors are clustered at the firm level. ***, **, and * denote statistical significance at the 1%, 5%, and 10% levels.

B IOSS

B.1 Variable Definitions

Table B.1: Variable Definitions

Variable	Definition
<i>B2C</i>	Indicator variable equal to one if transaction s is classified as a B2C import, and zero otherwise.
<i>Post</i>	Indicator variable equal to one if transaction s occurs in the post-reform period (2022 to 2023), and zero otherwise.
<i>Count</i>	Number of import transactions aggregated at the product-country-year level.
<i>Sales</i>	Total reported value in EUR of import transactions aggregated at the product-country-year level.
<i>Below threshold</i>	Indicator variable equal to one if the reported transaction value of import s is at or below the EUR 150 IOSS eligibility threshold, and zero otherwise.
<i>Transaction value</i>	Reported net value of import transaction s in EUR.
<i>Transaction weight</i>	Reported weight of import transaction s in kilograms.

B.2 Data, Sample, and Descriptives

Data Description. The IOSS analysis uses transaction-level customs data on imports into Germany from non-EU countries, provided by the German customs authority (Generalzolldirektion). The data are sourced from the ATLAS import registration system and from ATLAS Impost, a registration system introduced alongside the VAT e-commerce package to handle transactions valued up to EUR 150. The dataset covers all imports from non-EU countries into Germany with declared transaction values up to EUR 1,500 for the years 2018 to 2023. It contains the declared transaction value, the transaction weight, the year, the product code from the German Electronic Customs Tariff (Elektronischer Zollltariff), the country of origin, and the transaction type (B2C or B2B). The product code has eleven digits in ATLAS and six digits in ATLAS Impost. The transaction type is recorded only for the post-reform period. The data do not contain firm identifiers and record transactions at an annual frequency.

The dataset is not publicly available. To our knowledge, we are the first researchers to work with it. We obtained access through the Network for Empirical Tax Research of the German Federal Ministry of Finance (Netzwerk für Empirische Steuerforschung, NeSt), which initiated the contact with the German customs authority and supervised the process. We met with all parties involved to specify our exact data needs. The process started in November 2023, and we received access to the data in July 2024. We access the full dataset in a secure data environment of the University of Mannheim. Researchers who wish to replicate our analysis need to apply for access to the same dataset via the Network for Empirical Tax Research of the German Federal Ministry of Finance.

The raw data contain approximately 264.32 million transactions. Appendix Table B.2 reports the sample selection steps, and Appendix B.1 defines all variables. We perform all data manipulations in Stata, including the sample construction, the construction of all variables, and the estimation of all tables and figures. The only manual steps are the classification of product codes into divisible and non-divisible goods and the broader set of product codes underlying the lenient B2C classification. We apply both classifications in our code.

Table B.2: IOSS – Sample Selection

Selection step	Obs
Raw customs transaction data 2018–2023 (ATLAS and ATLAS Impost)	264,320,357
Less transactions with EU origin or EU dispatch country	17,211,794
Less non-commercial and special transactions (private, gifts, special arrangements)	20,429,998
Less transactions originating from Great Britain (Brexit)	62,389,228
Less transactions below the de minimis threshold of EUR 30	93,257,865
Less transactions recorded during the transitional year 2021	11,807,645
Less transactions subject to excise duties	1,057,153
Less transactions with missing or invalid country or product codes	1,658
IOSS transaction year sample (EUR 30 - 1,500)	58,165,673
IOSS transaction year sample (EUR 120 - 180)	5,944,786
IOSS product-country year sample (EUR 30 - 150)	178,135
IOSS product-country year sample (EUR 120 - 180)	104,402

Notes: This table reports the construction of the IOSS sample.

Table B.3: IOSS – Top B2C Import Countries

Panel A: B2C Transactions between EUR 30 and EUR 150					
Country	<i>Count number (Tsd.)</i>	<i>Share %</i>	<i>Volume value (Mio. EUR)</i>	<i>Mean value (EUR)</i>	<i>Median value (EUR)</i>
United States	8,190.25	30.48	529.20	64.61	54
China	6,090.21	22.66	353.51	58.05	49
Switzerland	2,868.03	10.67	191.47	66.76	56
Turkey	2,671.43	9.94	150.15	56.21	46
Vietnam	1,394.34	5.19	78.21	56.09	54
Hong Kong	927.12	3.45	74.49	80.35	79
Japan	845.39	3.15	60.64	71.73	63
India	463.20	1.72	31.53	68.08	59
Panel B: B2C Transactions above EUR 150					
Country	<i>Count number (Tsd.)</i>	<i>Share %</i>	<i>Volume value (Mio. EUR)</i>	<i>Mean value (EUR)</i>	<i>Median value (EUR)</i>
United States	2,814.84	26.15	1,177.86	423.41	289
China	2,186.30	20.31	1,215.06	558.12	438
Switzerland	1,706.67	15.85	849.02	498.10	362
Hong Kong	685.35	6.37	330.00	481.91	343
Turkey	599.75	5.57	319.74	534.97	401
Japan	519.87	4.83	229.24	461.56	327
India	279.43	2.60	142.06	548.44	402
Taiwan	200.57	1.86	119.59	606.21	498

Notes: This table reports the eight most frequent non-EU source countries for imports to final customers in Germany in the pre-reform period 2018 to 2020, ranked by the total number of transactions in each panel. Panel A covers B2C transactions valued between EUR 30 and EUR 150, Panel B covers B2C transactions valued between EUR 150 and EUR 1,500.

Table B.4: IOSS – Top B2C Import Products

Panel A: Transactions between EUR 30 and EUR 150						
Type of good		<i>Count</i> <i>number (Tsd.)</i>	<i>Share</i> <i>%</i>	<i>Volume</i> <i>value (Mio. EUR)</i>	<i>Mean</i> <i>value (EUR)</i>	<i>Median</i> <i>value (EUR)</i>
61	Clothing (knitted)	6,598.22	24.70	387.00	58.65	49
62	Clothing (not knitted)	4,520.63	16.92	260.45	57.61	48
64	Footwear	2,953.15	11.05	180.16	61.01	54
85	Electrical machinery	1,219.04	4.56	86.41	70.88	62
39	Plastics	1,156.76	4.33	81.00	70.02	61
95	Toys, games, sports	1,142.60	4.28	79.01	69.15	60
49	Books and newspapers	942.31	3.53	62.16	65.96	56
71	Jewellery	867.62	3.25	58.51	67.44	59
Panel B: Transactions above EUR 150						
Type of good		<i>Count</i> <i>number (Tsd.)</i>	<i>Share</i> <i>%</i>	<i>Volume</i> <i>value (Mio. EUR)</i>	<i>Mean</i> <i>value (EUR)</i>	<i>Median</i> <i>value (EUR)</i>
61	Clothing (knitted)	1,125.68	10.46	462.91	413.97	275
39	Plastics	999.18	9.28	545.48	548.44	428
85	Electrical machinery	939.81	8.73	473.67	505.14	380
62	Clothing (not knitted)	795.63	7.39	341.52	431.65	295
87	Vehicles	616.24	5.72	326.46	530.43	395
95	Toys, games, sports	529.34	4.92	222.96	423.86	292
42	Leather goods	436.95	4.06	195.35	448.90	304
64	Footwear	413.22	3.84	137.88	334.99	235

Notes: This table reports the eight most frequently imported product categories from non-EU countries to final customers in Germany in the pre-reform period 2018 to 2020, ranked by the total number of transactions in each panel. Panel A covers B2C transactions valued between EUR 30 and EUR 150, Panel B covers B2C transactions valued between EUR 150 and EUR 1,500. Full product group descriptions are provided in Appendix Table B.5.

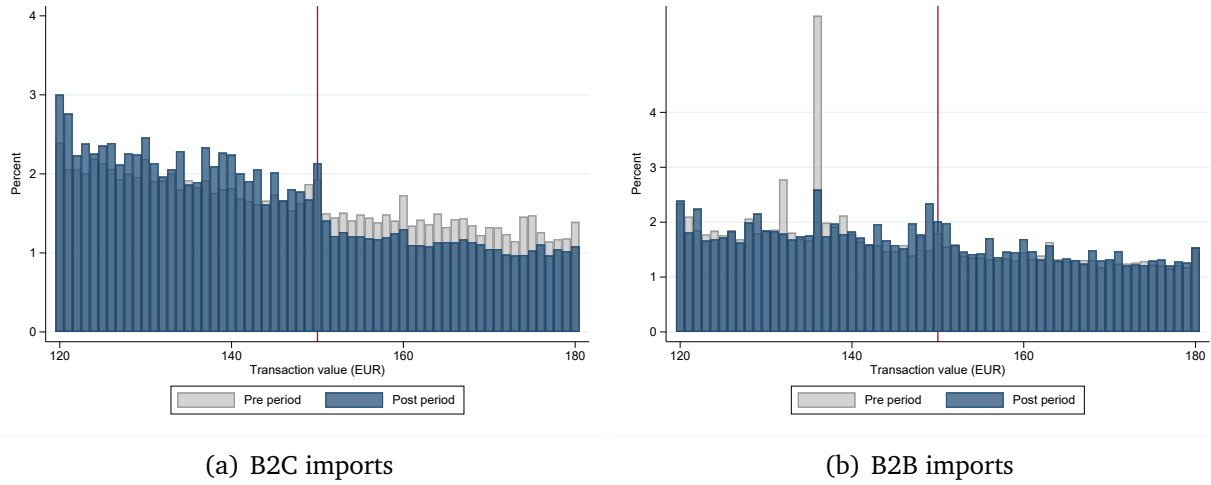
Table B.5: IOSS – Frequently imported goods with full product group name

Code	Product group name
39	Plastics and articles thereof.
42	Articles of leather; saddlery and harness; travel goods, handbags and similar containers, articles of animal gut.
49	Printed books, newspapers, pictures and other products of the printing industry; manuscripts, typescripts and plans.
61	Articles of apparel and clothing accessories, knitted or crocheted.
62	Articles of apparel and clothing accessories, not knitted or crocheted.
64	Footwear, gaiters and the like; parts of such articles.
71	Natural or cultured pearls, precious or semi-precious stones, precious metals, metals clad with precious metal, and articles thereof; imitation jewellery; coin.
85	Electrical machinery and equipment and parts thereof; sound recorders and reproducers, television image and sound recorders and reproducers, and parts and accessories of such articles.
87	Vehicles other than railway or tramway rolling stock, and parts and accessories thereof. instruments and apparatus; parts and accessories thereof.
95	Toys, games and sports requisites; parts and accessories thereof.

Notes: This table provides the full product group descriptions for the most frequently imported goods from non-EU countries to final customers in Germany reported in Appendix Table B.4. Product descriptions are based on the TARIC nomenclature and were accessed via the EU TARIC database at https://ec.europa.eu/taxation_customs/dds2/taric/taric_consultation.jsp?Lang=en (accessed April 2026).

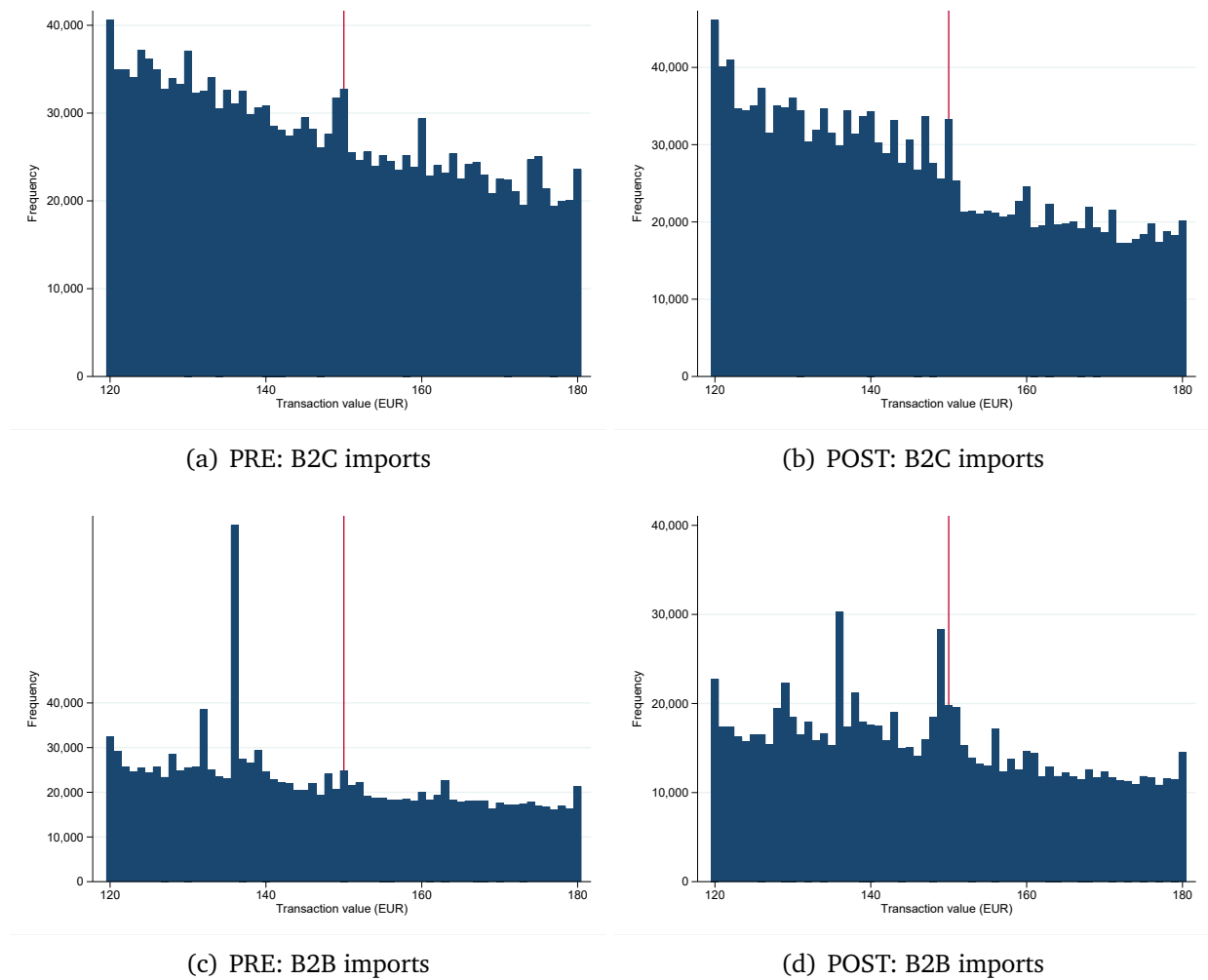
B.3 Additional Results

Figure B.1: IOSS – Distribution of B2C and B2B Transaction Values around the Threshold in Percent



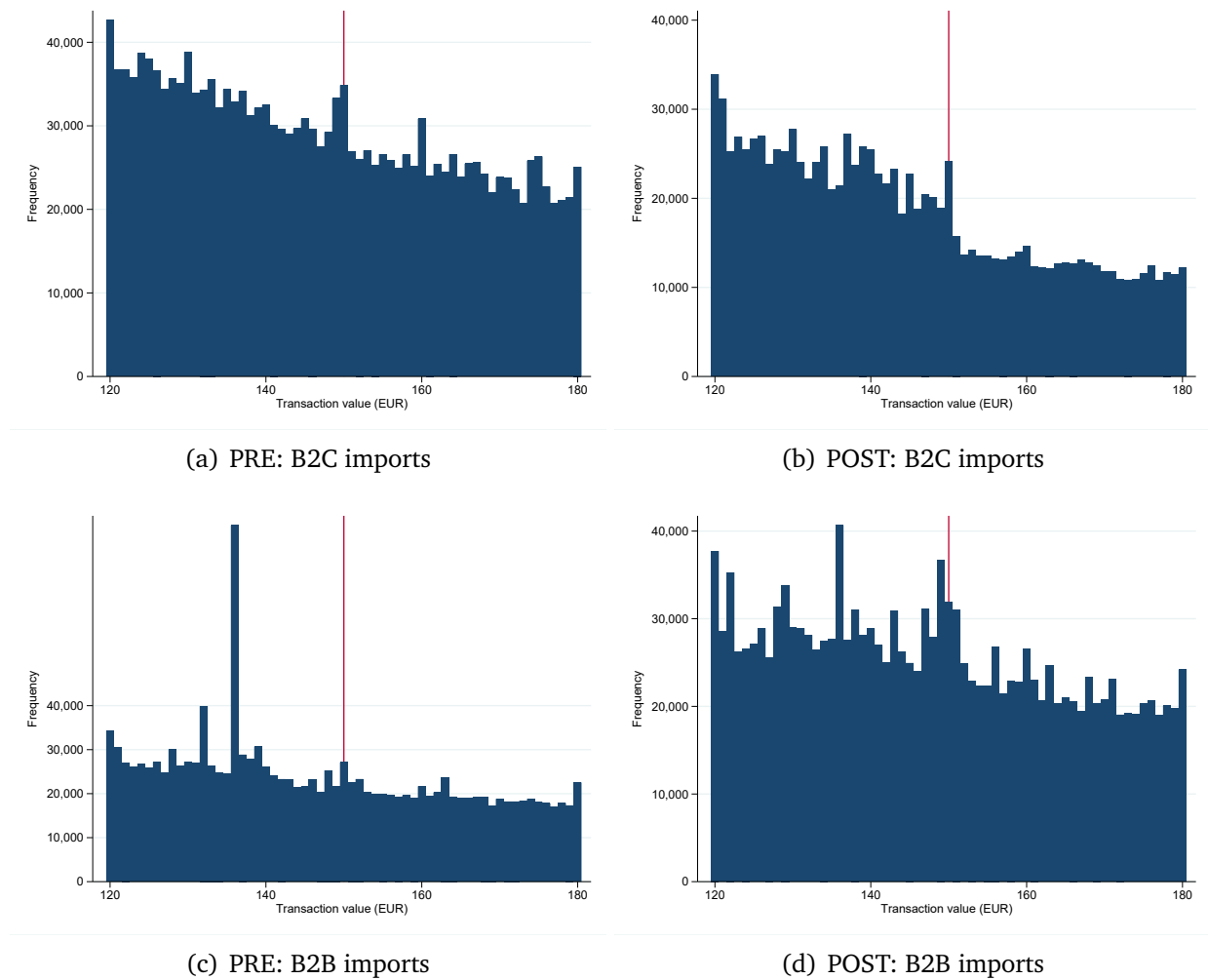
Notes: This figure shows histograms of the percent of transaction values for B2C and B2B imports before and after the introduction of the IOSS. Panel (a) displays the distribution of B2C imports in the pre-reform period (2018–2020) and post-reform period (2022–2023), respectively. Panel (b) show the corresponding distributions for B2B imports. The distribution is restricted to transactions valued between EUR 120 and EUR 180, with the IOSS eligibility threshold marked at EUR 150.

Figure B.2: IOSS – Distribution of B2C and B2B Transaction Values around the Threshold using a Strict Product-based B2C Classification



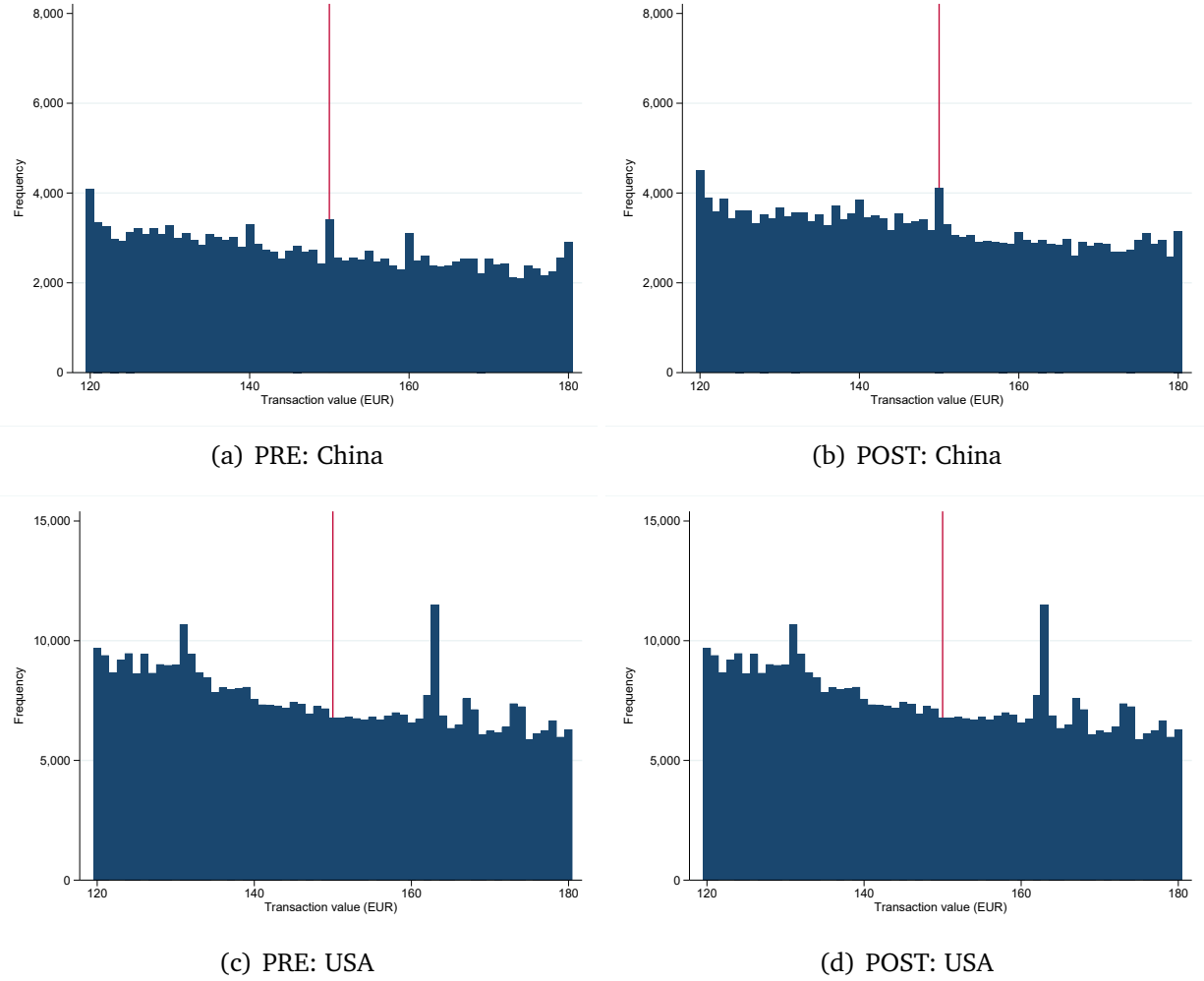
Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold, separately for B2C and B2B imports and for the pre- and post-reform using a strict-product based B2C classification, in which each transaction is assigned to the same B2C or B2B category in both the pre- and post-reform periods. Panels (a) and (b) display the distribution of B2C imports in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for B2B imports. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The vertical line marks the EUR 150 IOSS eligibility threshold.

Figure B.3: IOSS – Distribution of B2C and B2B Transaction Values around the Threshold using a Looser B2C Classification



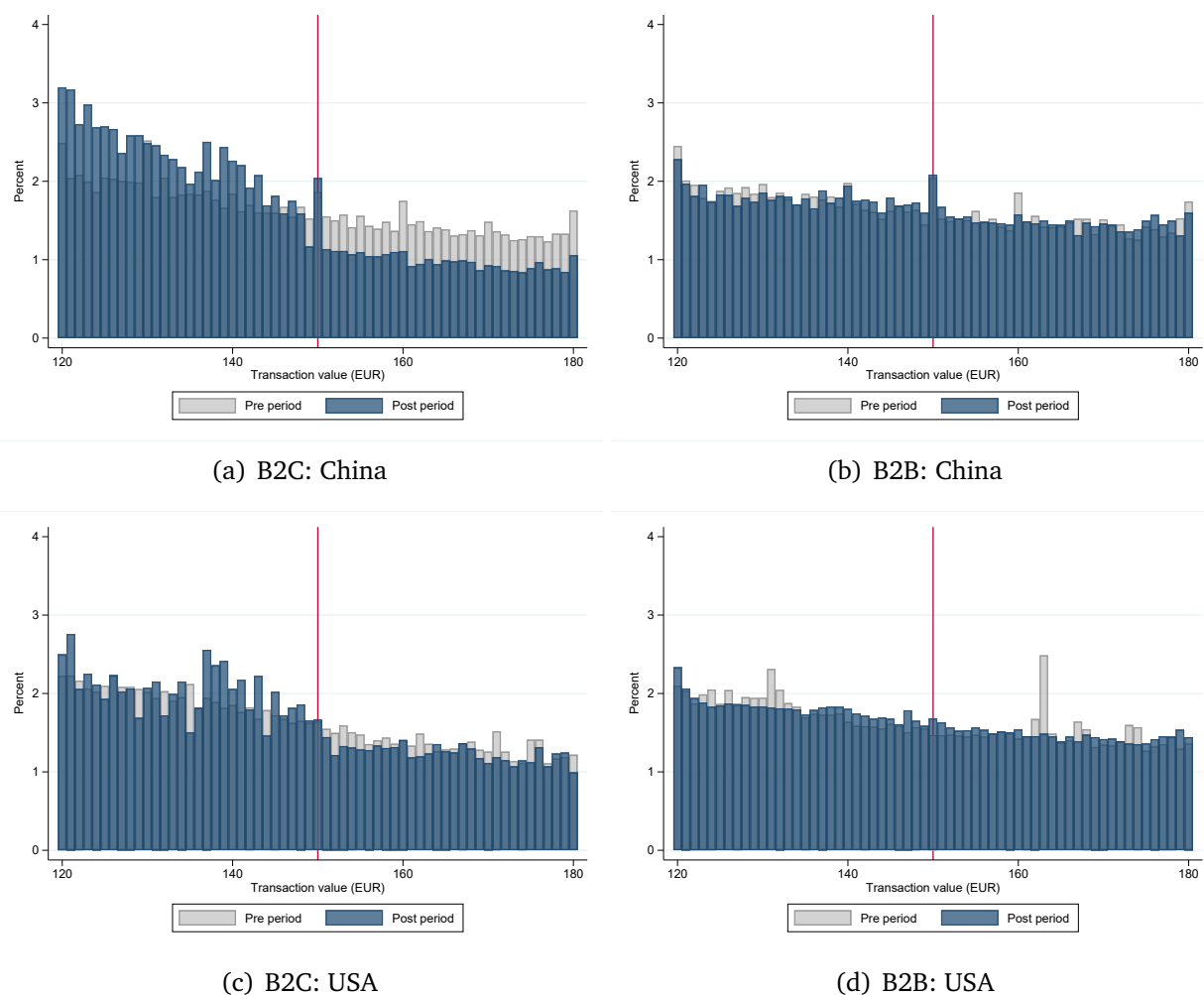
Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold, separately for B2C and B2B imports and for the pre- and post-reform using a looser B2C classification criterion. Panels (a) and (b) display the distribution of B2C imports in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for B2B imports. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The vertical line marks the EUR 150 IOSS eligibility threshold.

Figure B.4: IOSS – Distribution of B2B Transaction Values around the Threshold from China and USA



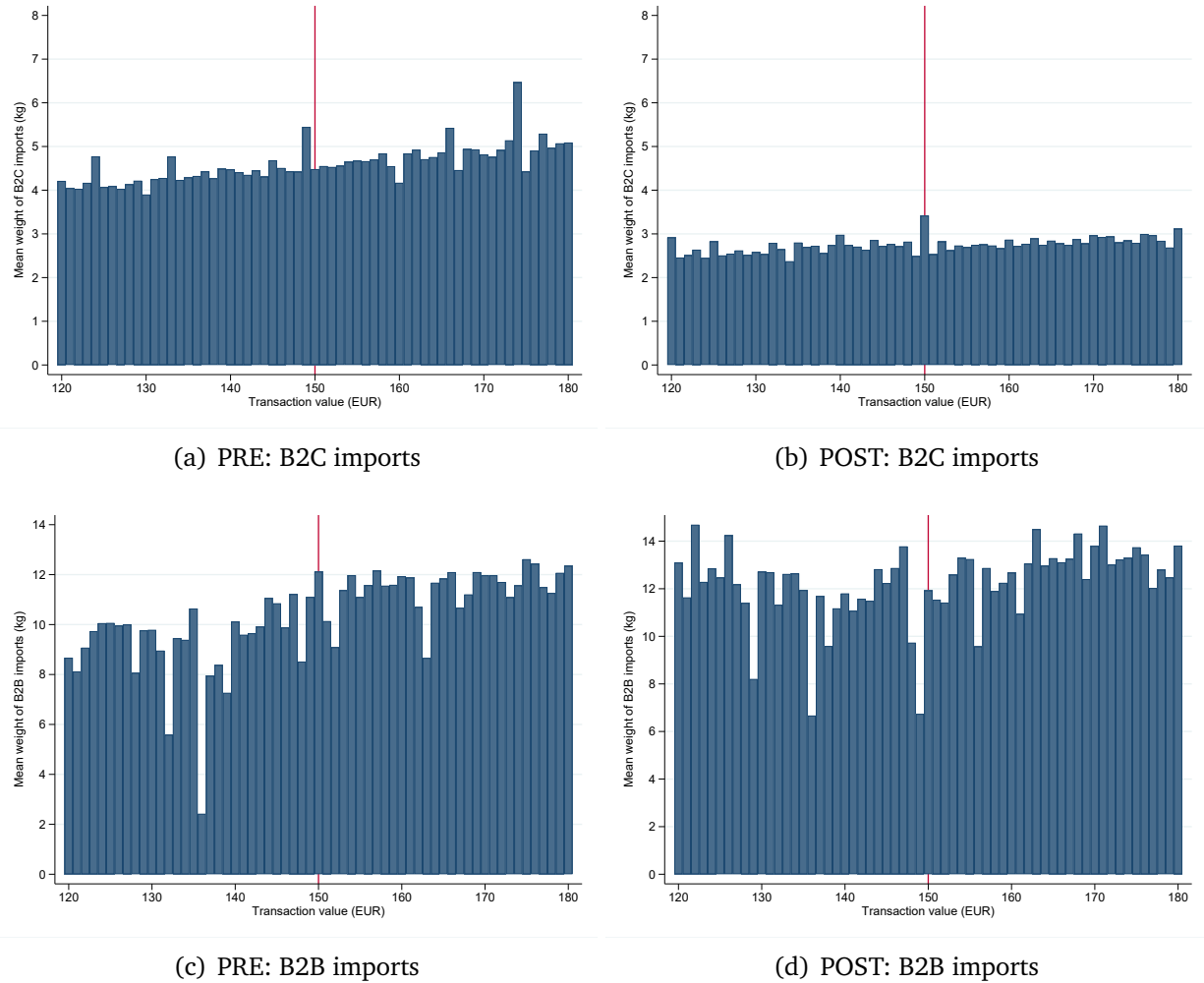
Notes: This figure displays histograms of transaction frequencies around the IOSS eligibility threshold for B2B imports from China and the United States, separately for the pre- and post-reform periods. Panels (a) and (b) show the distribution of B2B imports from China in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding distributions for B2B imports from the United States. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The vertical line marks the EUR 150 IOSS eligibility threshold. The corresponding B2C distributions for both countries are reported in Figure 7.

Figure B.5: IOSS – Distribution of B2C and B2B Transaction Values around the Threshold from China and USA in Percent



Notes: This figure displays histograms of relative transaction frequencies around the IOSS eligibility threshold for B2C and B2B imports from China and the United States for the pre- and post-reform periods. Panels (a) and (b) show the distributions for B2C and B2B imports from China. Panels (c) and (d) show the corresponding distributions for B2C and B2B imports from the United States. The distribution is restricted to transactions valued between EUR 120 and EUR 180, with each bin corresponding to a EUR 1 interval. The vertical line marks the EUR 150 IOSS eligibility threshold.

Figure B.6: IOSS – Distribution of Mean Weight of B2C and B2B Imports by Transaction Value



Notes: This figure plots mean transaction weights by declared transaction value for B2C and B2B imports, separately for the pre- and post-reform periods. Panels (a) and (b) show mean weights for B2C imports in the pre-reform period (2018 to 2020) and post-reform period (2022 to 2023), respectively. Panels (c) and (d) show the corresponding mean weights for B2B imports. The sample is restricted to transactions valued between EUR 120 and EUR 180, with each EUR 1 bin representing the average weight of all transactions declared at that value. Observations above the 75th percentile of the weight distribution are excluded separately for B2C and B2B transactions.