# The Role of Financial Information in Supply Chains: Evidence from Electronic Business Registers in Europe

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***Abstract:*** We explore the importance of financial information of counterparty firms in supply chain relations. Exploiting the implementation of electronic business registers in European countries that significantly increased the accessibility to private firms' financial information, we find that financial information is relevant to supply chain partners in an asymmetric way: customer-related financial information tends to have a larger impact on suppliers' decisions than supplier-related financial information has on customers' decisions. This asymmetry is observed with respect to the effect of the information on the likelihood to contract a private partner as well as with respect to the effect of the information on the likelihood of terminating supply chain relations. We also find that the timing of the shock to the access to financial information is important to the direction of the effect on the stability of supply chain relations. A shock to information that occurs before supply chain relations have started contributes to the stability of the relation, whereas a shock to information after relations have started tends to destabilize relations. Overall, our results highlight the differential importance of financial information to suppliers and customers and the importance of timing of information accessibility in the supply chain.

# 1. INTRODUCTION

Customer-supplier relationships are widely recognized as an important part of supply-chain management. Sarkis and Talluri (2002) argue: "One of the critical challenges faced by purchasing managers is the selection of strategic partners that will furnish their firms with the necessary products, components, and materials in a timely and effective manner to help maintain a competitive advantage". Extant research documents that the influence of customer-supplier relationships transcends the provision of products and services, affecting firms' capital structure (Kale and Shahrur 2007), liquidity management (Cohen and Li 2014; Cohen and Li 2017; Costello 2020), internal control systems (Bauer et al. 2018), and financial-reporting policies (Hui, Klasa, and Yeung 2012). The symbiotic nature of customer-supplier relations can also be inferred from academic research documenting the effect of value-relevant information about one party (customer or supplier) on the stock return of the counterparty (Olsen and Dietrich 1985; Raman and Sharur 2008; Hertzel, Li, Officer, and Rodgers 2008; Cohen and Frazzini 2008; Pandit, Wasley, and Zach 2011).

As is the case in almost every multiparty business relationship, the parties have differing information about each other's capabilities and financial position. As such, academic research has long established the importance of information, and lack thereof, to many aspects of supply chain relations (Petersen and Rajan 1997; Smith 1987). Empirical studies suggest that information asymmetries between parties to procurement contracts affect contract duration and covenant restrictions, and that contracts are designed to mitigate information asymmetries between the customer and the supplier (Costello, 2013). Further, Chen, Levy, Martin, and Shalev (2021) provide evidence that information gained through private channels improves matching between customers and suppliers and that removing information channels from an existing customer-supplier relationship shortens the term of the relationship.

Whereas the above studies and others highlight the importance of information in the supply chain, they leave unanswered the question about the specific role financial information plays in these relationships. Smith (1987) defines different types of information asymmetries along the supply chain

and posits that suppliers have operational information advantages (e.g., about product quality and the security of supply), while customers primarily have a financial information advantage concerning their ability to meet trade credit obligations. To date, no empirical evidence has been provided to support or refute these theoretical arguments. Our study attempts to fill this void. In particular, we are interested in whether financial information is important in the supply chain and, if it is, whether it is equally important to both parties or more important to one of the two—the supplier or the customer.

We are also interested in whether the timing the information becomes available—before the supply chain relation has started or during the relation after it had started—is important to how the information affects the relations. The question of timing is important because while prior literature suggests that the availability of information before the start of the relationship improves the matching between a customer and a supplier and prolongs relations (e.g., Chen et al. 2021), it is not clear whether and how improved access to financial information should affect existing customer-supplier relations. Many scholars argue (e.g., Peterson and Rajan, 1997), and Chen et al. (2017) provide empirical evidence suggesting that during a supply chain relation, parties to the relation gain private information about the counterparty through direct interactions. Consequently, improved access to counterparty financial information through public channels may not have an impact at all. Contrary to the above argument and evidence, Giannetti, Burkart, and Ellingsen (2011) conclude that incumbent suppliers have no persistent informational advantage over other potential suppliers. This suggests that improved access to financial information on the counterparty could reveal valuable information to firms in existing supply chain relationships. To the extent that improved access to financial information that occurs after relations have started is important, it is unclear exactly how it should affect the relations. One possibility is that the information may further the parties' ability to cope with roadblocks in the relationship and thus increase the longevity of the relationship. For example, decreased uncertainty through better information access could facilitate relationship-specific investments, thereby improving the commitment between the supply chain partners (Hui et

al. 2012; Kale and Shahrur 2007). Another possibility is that newly publicly accessible information may update the parties' priors with regard to their satisfaction with the incumbent relationship, and thus precipitate relation termination.

To explore the impact of financial information on supply chains, we leverage a regulatory initiative within the European Union that mandated the implementation of national electronic business registers. These registers were designed to enhance public access to financial information pertaining to private firms. Historically, European business registers were primarily paper-based and run by regional offices or courts. While public firms' information was always largely accessible due to capital market requirements, the structure of business registers severely limited the dissemination and accessibility of private companies' financial information. Directive 2003/58/EC (European Parliament, 2003) required member states to implement institutional repositories for the electronic storage and dissemination of companies' financial statements, which would make financial information of firms electronically accessible. The implementation of electronic business registers significantly lowered the barriers and frictions restricting access to the financial information of private firms (Minnis and Shroff, 2017) and eased the collection and processing costs with respect to private firms' financial information (Breuer and Breuer, 2022). The implementation of electronic business registers across our sample of European countries was a protracted process that spanned multiple years.

Our investigation is based on a cross-country sample of private and public firms for which we can identify supply chain relationships from 2004 to 2020. Because firms' financial information environments and supply chain strategies are highly endogenous, we aim at establishing causality by exploiting the staggered implementation of electronic business registers across 19 European countries. Our identification strategy, therefore, relies on country-level treatment effects that asymmetrically affect the information environments of private companies (treated) and public firms (control) whose financial information was readily accessible to outsiders even before electronic business registers were introduced.

Our analysis commences by investigating the impact of the implementation of electronic business registers on the extent of contracting with private counterparties. We find that for the average supplier, the percentage share of private *customers* within a particular country increases significantly after the implementation of the electronic business registers in the country where the private customer is located. When we perform the same analysis, conditioning on the implementation of electronic business registers in *suppliers'* country—instead of customers' country—we find that electronic business registers did not change the average customer's share of private suppliers. These findings suggest an asymmetric importance of counterparty financial to supply chain partners.

We corroborate the evidence on the importance of customer financial information to suppliers by partitioning the sample based on the scope and the reliability of the private customer financial information relayed through the electronic business registers. We expect more extensive financial reports and externally verified financial statements to be more useful for stakeholder firms. For the scope of information, we exploit regulatory heterogeneity that exists within European countries. Specifically, while financial reporting regulation requires firms to prepare and file financial statements, the scope of information provided is subject to size thresholds. Firms below the threshold receive exemptions and can publish reduced-scope condensed reports, leading to variations across country-industry-year combinations regarding the obligation to submit full financial statements (Breuer 2021). Building on this insight, we rank country-industry-years by the proportion of firms required to report full financial statements, and estimate our baseline regression separately for the top and bottom half of this distribution. We find that results on the propensity of contracting with private customers, post electronic business registers, in country-industry-years in which the scope of financial information provided is above the median level still hold, but results turn insignificant when the scope of information is below the median level. For the reliability of the financial information, we exploit variation in the fraction of firms required to submit audited financial statements— an audit mandate —across country-industry-years in our sample (Breuer, 2021). An audit mandate enhances the reliability of reported financial information. We partition the sample to high and low fraction of firms

in a country-industry-years that are subject to an audit mandate, and estimate our baseline regression separately for the top and bottom half of this distribution. We find that results continue to hold in the subsample of country-industry-years above the median fraction of firms with audit mandate but turn insignificant in the subsample below the median.

Furthermore, if the electronic business registers improved the information environment to such an extent that they facilitate a more informed selection of supply chain partners, we expect suppliers to select customers with a relatively better credit quality in the post period. In line with this expectation, we find that suppliers contract with less leveraged customers and with customers with higher cash holdings following the implementation of electronic business registers.

In the next set of analyses, we investigate the importance of counterparty financial information for supply chains by analyzing the effect of electronic business registers on the stability of supply chain relations. We perform the analysis by focusing on counterparty turnover at the party affected by the electronic business register implementation. We define turnover in four different ways: the proportion of new counterparties, the proportion of counterparties terminated, the proportion of switches—where a switch is defined as a counterparty terminated and a new counterparty contracted—and the proportion of same-industry switches. Same-industry switches is the most restrictive of our measures as it requires that the counterparty terminated and the new counterparty belong to the same industry. Using differences-in-differences analyses, we provide evidence that when the shock is experienced in the customer country, supplier turnover decreases in private customers compared to public ones. However, when we condition the shock on suppliers' countries, we do not observe a significant difference in customers turnover between private suppliers and public ones.

We corroborate the evidence on the importance of customer financial information for the stability of supply chain relationships by partitioning the sample based on the scope and the reliability of the private customer financial information in a similar fashion to the first set of cross-sectional analyses. We find that results on supplier turnover continue to hold in the subsample of country-

industry-year observations characterized by an above-median fraction of firms with comprehensive and reliable financial information disseminated through electronic business registers. However, these results lose significance within the subset falling below the median. Taken together, the results of the first and the second set of analyses provide compelling evidence for an asymmetric importance of financial information in the supply chain—customer information is important to suppliers' decisions more than suppliers' information is important to customers' decisions.

In the next set of tests, we zero-in on the timing of the shock to the accessibility to the financial information relative to the start of the supply-chain relation. Our primary focus is on assessing the impact of financial information that arrives after the initiation of relationships and the establishment of contractual terms and on whether this impact differs the impact of information that arrives before the relationships began. To perform this analysis, we pool all ongoing customer-supplier relations that are in place at the time of the electronic business register implementation in the focal firm's country. We then employ Cox proportional hazard models to assess the likelihood of these relationships being terminated in response to the regulatory changes. Our findings reveal a notable contrast. While overall electronic business registers lead to a reduction in annual supplier turnover for private customers, the introduction of the electronic business register triggers earlier termination of supply chain relationships involving treated private customers that were already established at the time of the regulatory changes. In economic terms, this translates to an estimated increase in the hazard rate for treated private customers by approximately 60%, compared to relationships involving public customers. Importantly, this pattern holds consistently across various specifications we consider. In line with the two previous analysis, when we condition the shock to suppliers' countries we find that the shock to the accessibility to supplier financial information does not differently impact differently the longevity of relationships of private and public suppliers.

To corroborate this set of results, we perform cross-sectional analyses, identifying situations in which the impact of the shock of the electronic business registers is likely to be stronger. As with previous cross-sectional analyses, we focus on information shocks affecting customers as only they

are significant in the baseline analysis. We concentrate on three situations. First, we consider circumstances where the supplier's pre-existing information about the customer is likely to be more constrained. Motivated by variations in the availability of soft information (Liberti and Petersen 2019), we employ the geographical distance between customer and supplier headquarters, alongside differences in their industry membership, as indicators of limited prior knowledge. Second, we assess scenarios where newly accessible information is likely more alarming to the supplier. We capture these instances focusing on indicators of customer financial distress. Third, we investigate circumstances where customers are relatively less important to suppliers and are easier to drop. Throughout the analyses, we observe that the hazard of supply chain relations being terminated is higher when financial information pertains to novel or critical details about the private customer and when the customer is less important to the supplier. In general, the evidence suggests that increased accessibility to customers' financial information tends to destabilize existing supply chain relationships.

In light of these findings, we conduct a final test to illustrate the temporal dynamics of how financial information accessibility affects supply chain contracting. To achieve this, we categorize sample years based on the number of years elapsed since the introduction of the electronic business register in the customer's country. We then perform an event-time analysis to assess how supplier turnover evolves over time. Our findings demonstrate a gradual decrease in supplier turnover, consistent with a progressive decline in the number of supply chain relationships initiated before the introduction of electronic business registers and a concurrent rise in the proportion of more stable relationships initiated following the implementation of electronic business registers. The analysis affirms prior findings on the effect of the timing of the shock to accessibility to information—stabilizing relationships when information is accessible before their formation and destabilizing them when accessible post-formation.

Our study contributes to the literature on the importance of information to supply chain relations in several key ways. First, it highlights the asymmetric role of financial information within

supply chain relationships. We demonstrate that the stability of these relationships is more significantly influenced by improved access to customers' financial information compared to suppliers' financial information. Notably, existing literature on the role of information in the supply chain (e.g., Costello 2013; Chen et al. 2021) has not made a clear distinction between various types of information and their relative significance to supply chain partners. In this regard, our study provides evidence that while financial information disclosed in private firms' financial statements can assist suppliers in assessing customer credit risk, the same financial reports are less likely to provide information on supplier operational risk and, therefore, inform customer procurement choices. Second, our study emphasizes the asymmetric impact of financial information concerning the timing of its accessibility. The evidence we provide also informs the debate about whether parties in supply chain relationships gain private information that renders public financial information less relevant (Peterson and Rajan 1997 and Chen et al. 2017, in contrast to Giannetti, Burkart, and Ellingsen 2011). Our findings suggest that, despite private information sources, better access to mandated public disclosure through regulated channels such as business registers affects supply chain contracting. In this way, we also contribute to the growing literature examining the economic consequences of improving access to regulated financial information. Where prior studies have focused on aggregate market outcomes (Breuer and Breuer 2022) or capital market effects (Sran, Truijn, and Vollon 2020; McClure, Shi, and Watts 2022), we focus on firm-level effects through supply chain relationships.

The rest of our study continues as follows. In Section 2, we provide background and develop our testable hypotheses, in Section 3 we describe the data, in Section 4 we describe the research design and empirical results, and in Section 5 we provide a conclusion.

## 2. BACKGROUND AND HYPOTHESIS DEVELOPMENT

### 2.1 Information in Supply Chains

The significance of customer-supplier relationships in supply-chain management is widely acknowledged (Sarkis and Talluri 2002). Purchasing managers face a critical challenge in selecting strategic partners who can efficiently provide their organizations with the necessary products, components, and materials, thereby contributing to their competitive advantage. Moreover, supply-chain relationships extend beyond the mere provision of goods and services. They have implications for various aspects of firm operations, including capital structure (Kale and Shahrur 2007) and liquidity management (Cohen and Li 2014; Cohen and Li 2017; Costello 2020). A recent study by Darendeli, Fiechter, Hitz, and Lehmann (2022) provides evidence that also CSR information of the supplier matters for supply chain contracting

In recent years, there has been a notable shift towards integrated supply chains, with many firms outsourcing larger portions of their operations (Yang et al. 2012; McCarthy et al. 2013; Boyarchenko and Costello 2015). This trend has elevated the significance of information about supply chain counterparts. Given the pivotal role of information in supply chain relations, numerous studies investigated the effect of information, or the lack thereof, on customer-supplier relations. Costello (2013) offers insights into how the design of contracts in customer-supplier transactions is used to mitigate information asymmetries between the involved parties. This research reveals that contract duration tends to decrease as the customer's monitoring cost of the supplier rises. In cases involving the exchange of relation-specific assets, shorter contract durations are complemented by financial covenants, with more stringent covenants imposed when monitoring costs are higher. Further, Chen et al. (2021) provide evidence that whereas information asymmetries are an important friction in the matching process between customers and suppliers, personal connections can mitigate those information gaps, leading to improved efficiency in supplier selection.

The above studies discuss information asymmetries in general terms and do not distinguish between types of information, in particular financial information, and their relative importance to supply chain parties. Customers and suppliers, however, face different sources of information risk in the supply chain. Customer information risk relates to suppliers' information advantage regarding critical

elements of delivery, such as product quality, delivery timeliness, and potential fluctuations in the costs of supplier inputs that might impact overall delivery expenses. In contrast, suppliers' information risk primarily revolves around customers' information advantage concerning their ability to meet financial obligations (Smith 1987). While it may appear intuitive that financial information could assist suppliers in assessing the customer's creditworthiness and reducing the supplier's information risk, it remains unclear how valuable financial information is to customers in mitigating their information risk. Hui, Klasa, and Yeung (2012) offer indirect insight into this question by demonstrating that a party with bargaining power in a supply chain relation tends to impose more conservative accounting practices on the counterparty. While this evidence may suggest the importance of financial information in supply chains, it could also imply that parties use conservative accounting practices as a strategy to promote cautious business conduct and preempt potential conflicts within the supply chain, rather than indicating that the information itself is directly useful for their business decisions within the relationship. As a result, the impact of the financial information of supply chain parties on the relationship remains largely unexplored.

A regulation that required European countries to establish electronic registers to facilitate access to corporate financial information allows us to investigate the questions above directly.

## 2.2 Electronic Business Registers

European reporting requirements for private firms are more extensive compared to those in the US, with most European private firms obligated to submit financial reports to business registers in their home country. Historically, these business registers relied on paper-based systems, often managed by regional offices or courts, severely limiting access to firms' filings. However, beginning in the early 2000s, the European Union launched a concerted effort to modernize these inefficient business register structures, with the goal of ensuring timelier access and broader dissemination of company information. Directive 2003/58/EC mandated member states to implement electronic business

registers by 2007, encompassing the electronic storage and dissemination of company information (European Parliament 2003). Nevertheless, the timing of actual implementation exhibited heterogeneity, with some member states already having electronic business registers in operation prior to the directive, while others missed the deadline or joined the EU after 2007.

While Directive 2003/58/EC aimed to level the playing field in terms of electronic access to company information within the EU, it is important to acknowledge that the implementation, even when completed, varies among countries. Member states, for instance, retain the flexibility to impose certain restrictions on access to electronic business registers. These restrictions can manifest in various forms, including the implementation of registration requirements, the imposition of fees, and the provision of registered documents via email rather than immediate web-based access. Additionally, some member states may limit access to the electronic business register by providing it solely in a local language, without offering an English language option. Nevertheless, the implementation of electronic business registers significantly reduced barriers to accessing private firms' financial information (e.g., Kaya and Pronobis 2016; Kaya and Seebeck 2019).

It is also important to note that private firms' reporting scope and frequency in electronic business registers are narrower compared to public firms. First, most public firms report on a quarterly basis, while private firms are only required to file annual reports. Second, even though reporting regulation in European countries mandates private and public firms to disclose financial statements, public firms typically provide more extensive information, particularly in the Management Discussion and Analysis (MD&A) section and the notes to the financial statements. Furthermore, within private firms, the requirement to provide a full financial statement starts at a certain size threshold, with firms falling below this threshold subject to reduced reporting requirements (Breuer and Breuer, 2022).

**2.3 Hypotheses Development**

Given the improvement in access to financial information on private firms brought about by the implementation of electronic business registers, we hypothesize that if financial information holds significance for supply chain partners, the implementation had a more pronounced impact on private firms than on public ones. Consequently, we formulate our hypotheses to predict changes in private supply chain parties in comparison to their public counterparts.

We formulate three hypotheses, one pertains to the impact of the information, one pertains to the asymmetry in impact of customer information and supplier information, and one pertains to the timing of the shock to the accessibility to the financial information. Starting with the impact of the financial information, our first hypothesis predicts that the improvement in the ease of access to private counterparty financial information affects decisions in the supply chain. We focus on two decisions: the selection of a counterparty and the decision to terminate relations. We predict that the shock to the accessibility to private counterparty financial information increases the likelihood of contracting with a private counterparty in supply chain relations and increases the longevity of these relations. Therefore, our two-part first testable hypothesis is as follows:

> H1a: *The extent of contracting with private counterparties as customers or suppliers increases post-electronic business register implementation.*
>
> H1b: *Counterparty turnover of an affected private customer/supplier decreases post electronic business register implementation compared to counterparty turnover in public customer/supplier.*

The second hypothesis we formulate concerns the importance of customers' financial information to suppliers relative to the importance of suppliers' financial information to customers. Smith (1987) argues that the sources of supply chain risks are different for suppliers and customers, with customers' information risk revolving around suppliers' delivery and suppliers' information risk tied to customers' default risk. More specifically, customers encounter various risk factors primarily associated with suppliers' operations. These risks encompass elements such as product quality, anticipated product costs, the likelihood of on-time delivery, potential disruptions in the supply chain

due to events like plant failures or labor strikes, and the supplier's ability to adjust its production capacity in response to shifts in demand for its products.[1] In all these areas, suppliers possess an informational advantage.[2] In contrast, the primary sources of suppliers' information risk are predominantly with respect to customers' ability to pay for products and services.[3]

Considering the scope of financial data available through electronic business registers for many private firms, it is plausible that this type of financial information holds greater importance for suppliers in assessing their customers' default risk compared to its significance for customers assessing their suppliers' delivery risks. Consequently, we expect a shock to the supplier's financial information will have a smaller impact on its customers' decisions than a similar shock to the customer's financial information environment would have on its suppliers' decisions. Thus, our second testable hypothesis is as follows:

> H2: *The effect of customer financial information on suppliers' decisions is stronger than*
>
> *the effect of suppliers' financial information is on customers' decisions.*

Our third and final testable hypothesis centers on the timing of the shock to financial information accessibility in relation to the initiation of supply chain relationships. In particular, we are interested in whether increased accessibility to financial information, after supply chain relations and contract terms are established, either enhances relationship stability—prolonging their duration—or destabilizes them, precipitating termination.

We do not have an ex-ante prediction regarding the effect of the shock. First, it is unclear whether the shock to information accessibility should impact supply chain relations at all. Some studies (e.g., Peterson and Rajan, 1997; Chen et al., 2017) suggest that parties gain private information through

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[1] For example, Beckman Coulter, a medical device manufacturer, lost its supplier, Dovatron, after Flextronics acquired Dovatron in 2000. After the acquisition, Flextronics restructured Dovatron to focus on higher-volume products and decided it would no longer serve Beckman Coulter (Yang et al. 2012).

[2] Though arguably much less significant than information risk about suppliers' operations, customer information risk can also relate to supplier's finances. Suppliers have better information regarding their risk of running into financial distress and bankruptcy, factors that could potentially result in a permanent cessation of the supply relationship.

[3] Suppliers also face information risk related to customers' operations, though this risk is less dominant than the information risk regarding customer finances.

direct interactions over time, potentially rendering the new readily accessible financial information worthless, while others (Giannetti et al., 2011) suggest that improved access to financial information on the counterparty may provide new information to parties involved in existing supply chain relations. Second, if the shock does affect the relations, the direction of the effect is unclear ex-ante. While some evidence suggests that providing additional information may strengthen the relationship between partners (Chen et al., 2021), it is also plausible that any shock to the information environment, whether positive or negative, could weaken the relationship. For example, information casting doubt on a customer's ability to pay could lead to demands for more payment security and eventual relationship termination. Furthermore, improved financial information may result in counterparty dissatisfaction if it reveals that initial perceptions of counterparty profitability, which may have factored into pricing decisions, were underestimated. This could prompt renegotiations and potentially lead to the dissolution of the relationship. Therefore, our third testable hypothesis is formalized in the null form:

H3: *The electronic business register introduction had no effect on the longevity of supply chain relations that were already ongoing at the time of implementation.*

## 3. DATA AND DESCRIPTIVE STATISTICS

We start our sample construction with customer-supplier relations reported in the FactSet Revere Supply Chain Relationship database. FactSet Revere provides supply chain data for over 175,000 entities globally, with information dating back to 2003. The database reports customer-supplier relations for private and publicly listed companies. Though FactSet Revere does not cover all supply chain relations, it stands as the most comprehensive dataset available for supply chain research, and is widely employed in academic studies (e.g., Dai et al., 2021; Darendeli et al., 2022).

In order to explore the impact of financial information accessibility on both parties involved in supply chain relationships, we construct two distinct samples. First, we gather data to scrutinize the

propensity to engage with private partners in countries where a business register is implemented. In this context, our data collection encompasses observations at both the supplier-customer country-year and customer-supplier country-year levels (Table 1, Panel A). To construct the samples for this analysis, we identify relationships with either the customer or the supplier from one of the countries that introduced an electronic business register after 2003, which aligns with the period covered in FactSet Revere. This approach yields a total of 414,894 relationships. We then identify a total of 116,299 supplier-customer country-year observations (involving 9,776 unique suppliers) and 108,203 customer-supplier country-year observations (involving 14,765 unique customers) for which financial data is available.[4] On average, a supplier in our sample is engaged with customers from 5.79 countries, while a customer is engaged with suppliers from 5.61 countries. In Panel B of Table 1, we present the geographical distribution of customer country and supplier country combinations considered for this analysis, with a notable presence from Great Britain, Germany, and France. Firm-level and country-level information for the same suppliers and customers is reported in Panels C and D of the same Table. Notably, we observe that approximately 10% of a supplier's customers are private (*Percentage Private Customers*), and 4% of a customer's suppliers are private (*Percentage Private Suppliers*).

To delve into our second research question concerning the stability of supply chain relationships, we shift our attention to observations measured at the customer-year and supplier-year levels. Our approach begins by excluding focal customers and focal suppliers not situated in any of the sample countries impacted by the introduction of electronic business registers.[5] The resulting datasets comprise 70,854 customer-year observations and 41,732 supplier-year observations (Table 2, Panel A). After removing firms that underwent changes in their stock listing status and requiring financial

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[4] We use financial information from FactSet Fundamentals if available (mostly public firms). For private firms we retrieve data from Orbis.

[5] Throughout the remainder of the paper, we employ the term *focal* customer to refer to the analysis examining the impact of business register implementation on the stability of upstream supply chain relationships between a customer and its suppliers. Conversely, we use the term *focal* supplier to denote the analysis investigating how the stability of downstream supply chain relationships between a supplier and its customers is influenced by the business register implementation.

data availability to compute conventional control variables, our final samples respectively comprise 20,629 customer-year observations and 6,914 supplier-year observations. Panels B to D of Table 2 provide descriptive statistics for our sample's focal customers and suppliers. Notably, public firms—both as customers and suppliers—tend to initiate new business relationships (*New Suppliers*; *New Customers*) and terminate existing ones (*Terminated Suppliers*; *Terminated Customers*) more frequently than private firms. Additionally, public firms exhibit a higher propensity to switch business partners (*Annual Supplier Turnover*; *Annual Customer Turnover*).

## 4. RESEARCH DESIGN AND RESULTS

### 4.1 Counterparty Selection

### 4.1.1 The Likelihood of a Private Counterparty Selection

To analyze the effect of the electronic business registers on the likelihood that a private company is selected as a party to supply chain relations, we estimate the following regression model:

$$Percentage\ Private_{i,c,t} = \boldsymbol{Post_{c,t}} + \sum Firm\ Level\ Controls_{i,t} +$$

$$\sum Country\ Level\ Controls_t \ + \sum Fixed\ Effects + \varepsilon_{i,t} \quad (1)$$

Where *Percentage Private* is the percentage of private customers (suppliers) that a supplier *i* (customer *i*) contracts with in a country *c* out of its total customers (suppliers) in that country. *Post*, the variable of interest, is equal to one for the years following the implementation of the electronic business register in country *c*, and zero otherwise.[6] We incorporate the baseline supplier (customer) financial control variables (*Size*, *Leverage*, *ROA*), along with country-level control variables (*GDP growth*, *Unemployment*, and *Inflation*) for both the supplier and the customer country. Additionally,

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[6] Specifically, we require a two-year lag between the legal entry into force of an electronic business register and the start of the post-business register period. This empirical choice is due to (*i*) the regular time-lag between the end of a fiscal year and the filing of financial reports and (*ii*) survey evidence from competent authorities suggesting that electronic business registers only started disseminating financial information in the year after their legal establishment in most countries. For instance, Greece legally introduced its electronic business register in 2011. Survey evidence suggests that the Greek business register started operating in 2012. Therefore, we assign Greek firms to the post-period starting from 2013. Our evidence is robust, although marginally weaker, to an alternative specification which assigns observations to the post-period starting from the year after the legal establishment of business registers (e.g., 2012 in the Greek case).

we include year, supplier (customer), and customer-country (supplier-country) fixed effects. Detailed variable definitions can be found in Appendix A.

Results are reported in Table 3. In Column 1, we present results for a shock to the customer's country. In this specification, we capture the change in the percentage of private customers in a country that each supplier in our sample serves following the implementation of the electronic business registers. Consistent with expectations, we observe a significant increase in the percentage of private customers in a country to whom suppliers offer products and services following the implementation of electronic business registers. Specifically, we note a 5.7 percentage point rise in the proportion of private customers among the entire customer base in the respective country. In Column 2, we report results for a shock to the accessibility of financial information in the suppliers' country. When the shock is in the suppliers' country, we do not discern any significant variation in the percentage of private suppliers that customers engage with subsequent to the introduction of electronic business registers. These results suggest that suppliers are more likely to contract with private customers, but customers are not more likely to contract with private suppliers following the implementation of the electronic business registers. This outcome provides initial evidence of the asymmetric importance of financial information for parties to a supply chain, where customer financial information is more important to suppliers' decisions than suppliers' financial information is to customers' decisions.

### 4.1.2   Scope and Reliability of Financial Information

In this section, we corroborate evidence on the importance of customer financial information to supplier decisions by testing whether results vary with the scope and reliability of customer financial information. We expect more extensive financial reports and externally verified financial statements to be more useful for stakeholder firms. To assess the extent of available financial information, we rely on variations in the scope of reporting requirements due to size-based exemptions. Breuer (2021) measures the share of firms in a given country, industry, and year that are required to publicly disclose

a full set of financial statements. We leverage this metric to capture variation across country-industry-year in the scope of financial information available. To measure variation in reliability, we rely on disparities in the fraction of firms required to submit audited financial statements. Breuer (2021) also quantifies the proportion of firms in a given country, industry, and year that are subject to the audit mandate. This measure enables us to capture variation across country-industry-years in the reliability of financial information available. We partition the sample into two distinct subgroups for each of the aforementioned measurements. One subgroup encompasses country-industry-years exceeding the median value of the measure, while the other encompasses those falling below the median. We apply regression model (1) to each subsample focusing on the shocks to the customers' countries, for which we found the effect of the electronic business register implementation to be statistically significant.

Results are reported in Table 4. Columns 1 and 2 report results for the scope of information and Columns 3 and 4 report results for the reliability of information. Both analyses provide consistent results, with significant coefficients for the subsamples with large scope and high reliability of information, and insignificant coefficients for the subsamples of country-industry-years below the median scope and reliability of information. These results corroborate evidence of the previous analyses and suggest that both the amount of information private customers disclose and its reliability figure in determining its usefulness for decision making purposes. This finding also highlights the fact that electronic business registers may have no effect on supply chain contracting if disclosure requirements are not extensive enough.

### 4.1.3 Characteristics of Selected Counterparties

To further corroborate the evidence that customer financial information affects supplier decisions, we test whether the customers that suppliers contract with exhibit a change in fundamental factors that are relevant to customers' ability to pay. If the electronic business registers improved the information environment to such an extent that they facilitate a more informed selection of supply chain partners, we expect suppliers to select customers with a relatively better credit quality in the

post period. We approximate credit quality using customers' leverage and liquidity and estimate a regression in the same fashion as model (1), replacing the dependent variable with customer cash holdings and customer leverage. We measure customers' cash holdings as the average cash and cash equivalents scaled by total assets of a supplier's customers in a country-year. We measure customer's leverage as the average total liabilities scaled by total assets of a supplier's customers in a country-year. In addition, we interact the *Post* variable with the percentage of private customers in the respective country-year to get closer to estimating the effect of selecting private customer firms with better credit quality. Hence, this interaction effect is our variable of interest in this set of regressions. Results are reported in Table 5. Column 1 reports results for customer cash holdings and Column 2 reports results for leverage. In line with our expectations, we find that average cash holdings of customers increase, driven by country-years with higher private customer shares. Conversely, average leverage decreases, again driven by country-years with more private customers.

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## 4.2 The Longevity of Supply-Chain Relations

### 4.2.1 Baseline Differences-in-Differences

To test the second part of the first hypothesis (H1b) that counterparty turnover is likely to decrease following the electronic business register implementation, we estimate the following differences-in-differences model:

$$Counterpartie\ Turnover_{i,t} = \boldsymbol{Private_i} \times \boldsymbol{Post_{c,t}} + Private_i + Post_{c,t} +$$

$$\sum Firm\ Level\ Controls_{i,t} + \sum Country\ Level\ Controls_{c,t} + \sum Fixed\ Effects + \varepsilon_{i,t} \quad (2)$$

where the dependent variable, *Counterparties Turnover* is measured alternatively as: (*i*) The number of new suppliers (customers) contracted by a focal customer (supplier) *i* in year *t* scaled by the total number of suppliers (customers) the customer (supplier) *i* has in year *t-1* (*New*); (*ii*) The number of suppliers (customers) terminated by a focal customer (supplier) *i* in year *t* scaled by the total number of suppliers (customers) the customer (supplier) *i* has in year *t-1* (*Terminated*); (*iii*) The number of

suppliers (customers) terminated by a focal customer (supplier) $i$ in year $t$ that were replaced by new suppliers (customers) in the same year scaled by the total number of suppliers (customers) the customer (supplier) $i$ has in year $t\text{-}1$ (*Switches*) and (*iv*) The number of suppliers (customers) terminated by a focal customer (supplier) $i$ in year $t$ that were replaced by new suppliers (customers) from the same 2-digit SIC in the same year scaled by the total number of suppliers (customers) the customer (supplier) $i$ has in year $t\text{-}1$ (*Clean Switches*). The fourth measure, *Clean Swithces*, can be seen as the cleanest measure of counterparty turnover as it captures situations in which the break up in relations is not due to the supplier's products and services no longer being required by the customer or due to a shift in the supplier's offerings, resulting in the customer's requirements no longer aligning with the new supplier's offerings.

The primary variable of interest is the interaction *Private* × *Post*. *Private* is an indicator variable that takes the value of one if the focal customer (supplier) $i$ is not a publicly listed firm, and zero otherwise. *Post* is an indicator variable that takes the value of one if year $t$ after the electronic business registers were implemented in the customer's (supplier's) home country, and zero otherwise. Therefore, *Private* × *Post* identifies private firms in the years when their financial information became more easily accessible to external stakeholders, including customers and suppliers, through electronic business registers.

We consider three sets of control variables in the regressions. First, we include focal customer (supplier) firm-level control variables. Specifically, we control for a focal firm's *Size*, *Leverage*, *ROA*, *Cash*, and *PPE*. Second, we include focal customer (supplier) country-level control variables. Specifically, we control for *GDP growth*, *Unemployment*, and *Inflation* levels. Finally, we account for characteristics of the supply chain by controlling for the number of suppliers a customer has (*Number of Suppliers*) and the percentage of suppliers for which the customer is a significant customer, with over 10% of a supplier's sales (*Large Customer*). These same variables are reciprocally defined for focal suppliers. In addition to these controls, we include various fixed effects,

such as year, country, industry, and firm (in the baseline model), as well as country×year and private×year fixed effects (in robustness tests).

Table 6 reports regression results. In Panel A, we report the outcomes of analyses where the introduction of the electronic business register occurs in the customer's country, reflecting the impact on the accessibility of financial information for private customers. In Panel B, we report similar results but focus on shocks to supplier countries. In each panel we report four columns, one for each measure of counterparty change. Column 1 reports results for *New*. Column 2 reports results for *Terminated*. Column 3 reports results for *Switches*. And Column 4 reports results for *Clean Switches*.

In Panel A, all specifications produce consistent results. The coefficients on $Private \times Post$ across all measures of counterparty turnover are negative and significant, suggesting that suppliers' turnover decreases at the focal private customer following the implementation of electronic business registers. This result provides evidence that customer-supplier relations become more stable for private customers compared to public ones after the shock to accessibility of private customers' financial information. In Panel B, we report results for a shock to the accessibility of supplier financial information. The coefficients $Private \times Post$ are not statistically significant across all measures of counterparty turnover, suggesting no difference between private and public suppliers with respect to the effect of the electronic business registers. Taken together, results in this section provide evidence in support of H1b—counterparty financial information is important to supplier decisions and prolong relations—and H2—customer financial information is more important to supplier than supplier financial information is to customer.

### 4.2.2 Scope and Reliability of the information

To further corroborate results, we run cross-sectional analyses in the same fashion as the analysis on counterparty selection, testing the regression for high and low scope and reliability of information. Similar to the analysis on counterparty selection, we conduct the analysis only for shocks to customer

information where results in the baseline analyses are significant. For brevity, we conduct the analysis only on the most restrictive measure of counterparty turnover, *Clean Switches*. Results are reported in Table 7. Columns 1 and 2 report results for the scope of information and Columns 3 and 4 report results for the reliability of information. Both analyses provide consistent results with coefficients significant for the subsamples with large scope and high reliability of information, and insignificant coefficients for the subsamples of country-industry-years below the median scope and reliability of information. These results further corroborate the evidence that the amount of information private firms disclose and its reliability figure in determining its usefulness for decision making purposes in supply chains.

## 4.3 Effect of the Regulation on Existing Supply Chain Relations

### 4.3.1 Baseline Hazard Model

In order to test H3, investigating the effect of the shock on supply chain relations that had already been formed when the electronic business registers were implemented, we construct a subsample of customer-supplier relationships that were already ongoing during that period. We utilize survival analysis techniques to explore the impact of the shock on the duration of this subsample of customer-supplier relationships. Specifically, we aim to determine whether the electronic business register implementation either accelerated or delayed the termination of these relationships, in comparison to relationships involving two untreated parties.[7]

We select a subset of customer-supplier relationships that began before the year when the electronic business register in the country became effective and ended on or after that date. For our

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[7] The most widely used model to capture time to the occurrence of an event is the Cox proportional hazards model (Cleves, Gould, Gutierrez, and Marchenko, 2010), in which the dependent variable represents the risk of event occurrence for each subject at a given time, assuming the event has not occurred prior to that time (Cox, 1972). In a Cox proportional hazard model, coefficients are therefore interpreted relative to the baseline hazard. A coefficient greater than one indicates that the corresponding variable increases the hazard rate and hence makes the event occurrence more likely. The opposite holds for a coefficient smaller than one.

survival analysis, these relationships are deemed at risk from the year the information shock occurred, with the failure event defined as the termination of a specific customer-supplier relationship.[8] We then estimate the following Cox model:

$$h\big(t\big|x_1(t), x_2(t), \ldots, x_k(t)\big) = h_0(t)\exp\big(\beta_1 x_1(t) + \beta_2 x_2(t) + \cdots + \beta_k x_k(t)\big) \quad (3)$$

As covariates in our analysis, we incorporate the primary variable of interest, namely the *Private* indicator. In addition, we include financial control variables such as *Size*, *Leverage*, and *ROA* for both the focal supplier and the focal customer. To account for country-level effects, we introduce control variables, specifically *GDP* growth, *Unemployment*, and *Inflation*, for both the focal supplier's and focal customer's countries.[9] Furthermore, we control for the duration of the relationship prior to the electronic business register introduction, which we refer to as *Pre-BR Duration*. This control variable aligns with related research (e.g., Chen et al., 2021).

Results are reported in Table 8.[10] Column 1 reports results for a specification that includes no fixed effects. In column 2, we consider 3-year pre-event averages for the control variables. Column 3 reports results for a specification that includes customer (supplier)-country fixed effects. The specification in column 4 includes customer (supplier)-industry fixed effects, and in column 5 we include both country and industry fixed effects. Across all specifications, the coefficient on the variable of interest *Private* in Panel A is larger than one and significant, suggesting that the shock to

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[8] As we perform this test on a sample characterized by relationships that began before and ended after the electronic business register took effect, none of the relationships in this sample terminate during the pre-period. Consequently, we do not incorporate the *Post* variable in this analysis. Consequently, a focal firm is assigned to the treatment sample if it is private.

[9] These control variables are derived from the values in the last year before the introduction of the electronic business register. As a robustness check, we present one specification that uses the mean value of the covariates from the three years preceding the business register event instead of the last value

[10] We conduct several robustness and sensitivity analyses regarding the role of private customer information accessibility in relation to the termination of ongoing relationships when business registers are implemented. Specifically, we replicate our analysis, including cross-sectional tests, using dynamic specification including time-varying covariates and logit estimation instead of a hazard model approach (Bauer et al., 2018). The results are consistent with our baseline findings. Secondly, we perform a falsification test by re-estimating the hazard model using a sample of relationships that began and ended prior to the implementation of electronic business registers. This approach aims to address concerns that systematic differences might influence relationships involving public versus private focal firms. The results of this test do not reveal a significant difference in the hazard rate of relationship termination in the pre-business register period between public and private focal firm, supporting our interpretation that the improved access to private customer financial information is the driving factor behind the observed results. We report these results in the Online Appendix.

the access to private customers' financial information destabilized the relations and thus precipitated their termination. The magnitude of the effect is an increase of approximately 60% in the hazard of relationship termination for relationships involving (treated) private customers compared to those involving public customers.

Consistent with our earlier findings and with H2, the coefficients on the *Private* variable remain close to the baseline hazard rate of 1 and statistically insignificant when we conduct the analysis using the supplier-country business register introduction as a shock to financial information accessibility (Panel B of Table 8). This finding provides further support to H2—customer financial information is more important to the supplier than supplier financial information is to the customer.

### 4.3.2 Cross-Sectional Analyses

To corroborate the evidence that shock to access to financial information precipitate the termination of supply chain relation that existed before the shock, we conduct cross-sectional analyses based on the identification of situations in which access to information is likely to have a larger impact. We focus on information shocks related to customer financial information due to the lack of a significant baseline finding for supplier-level shocks. Our tests zero in on three key partitioning factors: (*i*) The ex-ante information gap between the customer and the supplier. A larger information gap is likely to increase the impact of the information disseminated by electronic business registers. (*ii*) The underlying fundamentals of customers disclosed through the electronic business registers. The impact of the electronic business registers is likely to increase when customer's fundamentals are more concerning with respect to its ability to pay. And (*iii*) The importance of the customer to the supplier. If the customer is less critical to the supplier, it is more likely that the supplier will terminate the relationship after the information shock. For each of these factors, we identify two empirical proxies that we use in the cross-sectional tests.

To capture ex-ante information gaps, we include splitting variables that measure the geographical distance between the customer and the supplier, as well as whether they belong to the same industry. To capture concerning customer fundamentals, we include an indicator variable that

takes the value of one for customers who have reported a loss in any of the three most recent financial years. We also use the level of leverage. Losses and high leverage can serve as potential red flags for suppliers when assessing a customer's ability to meet financial obligations. To gauge the relative importance of parties in the relationship, we consider the size of the supplier in comparison to the customer. Additionally, we evaluate the concentration of the supply chain networks by measuring the number of customers of a supplier scaled by the number of suppliers of a customer (Bakos and Brynjolfsson, 1993; Cen and Dasgupta, 2021). The importance of the customer to the supplier plausibly decreases in these proxies. We include fixed effects for the customer's country and industry in all regressions.

The interaction between these splitting variables and the *Private* indicator is of primary interest in our regressions. Table 9 reports the results. Columns 1 and 2 examine the information gap, with Column 1 reporting results for geographical distance and Column 2 reporting results for industry membership. Columns 3 and 4 report results on customer fundamentals, where Column 3 investigates customers' financial losses, and Column 4 investigates customers' leverage. Finally, Columns 5 and 6 report results for the relative importance of the customer to the supplier. Column 5 reports results for the size-based measure, and Column 6 reports results for the concentration measure. In all specifications, the coefficients on the interaction variable are significant and align with our expectations. These findings indicate that the destabilizing effect of the information shock on ongoing relationships is notably pronounced when there is a high ex-ante information gap between supply chain partners when customers exhibit economic vulnerability, and when suppliers have the capacity to sever ties with a customer. Overall, these results underscore that a shock to access to customer information tends to disrupt ongoing relationships.

**4.4 Suppliers' Turnover at the Customer: Event Time Analysis and Robustness**

**4.4.1  Event Time Analysis**

The results in this study suggest a differential effect of customer financial information on the stability of supply chain relations depending on the timing of the shock to the accessibility to the financial information. While we document an overall *stabilizing* effect, we show a *destabilizing* effect on relationships that are already ongoing when the information shock occurs. To better contextualize and understand these divergent findings, we perform an event time analysis to trace the effect of the electronic business register implementation over time. To that end, we leverage the progressive increase in our sample of the proportion of supply chain relationships initiated after the implementation of electronic business registers, compared to those that commenced before this implementation.[11] In essence, we aim to unveil any temporal patterns regarding the impact of electronic business registers on the annual turnover of suppliers of private customers.

To that end, we partition the electronic business register indicator variable (*Post*), and re-estimate the coefficient of interest (*Private × Post*) for each period using our tightest differences-in-differences specification. This approach enables us to estimate the coefficient of interest for each year relative to the period just before the electronic business register becomes effective.

We plot the regression coefficients of interest in event time in Figure 1. Our analysis reveals no discernible pre-electronic business register trends in our measure of supply chain stability when comparing private customers to public ones prior to the implementation of electronic business registers. The leading coefficients are nearly zero and lack statistical significance. Importantly, we observe a notable pattern in the years after the implementation of the electronic business register. We find that supplier turnover at private customers—as measuered by the *Clean Switches* variable—gradually diminishes over time. This trend is clearly evident in our analysis, with the magnitudes of yearly regression coefficients steadily increasing in absolute value as time progresses. We interpret these event time results as follows. Following the implementation of the electronic business register, there is a gradual increase in the proportion of supply chain relations initiated after the information

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[11] As each year passes following the implementation of the business register, the number of relationships that began before the implementation in the sample year decreases as some relationships come to an end. At the same time, the number of relationships that started after the implementation increases as new relationships are formed every year.

shock each subsequent year. With improved access to financial information and a more comprehensive understanding of potential partners, firms are better equipped to make informed decisions when selecting their supply chain partners. This, in turn, leads to a reduction in supplier turnover at the customer level. This interpretation aligns with the gradual pattern observed in the plot, as the steady increase in the proportion of relationships formed post-electronic business register corresponds to a decline in supplier turnover at the customer level.

### 4.4.2    Additional Robustness Tests

We rerun the baseline difference-in-difference regression (Table 6), including more stringent fixed effects structures. First, we include country×year fixed effects. This addition enables us to account for time-invariant factors at the country level and time-varying factors within each year. Second, we further saturate the model with private×year fixed effects to control for group-specific trends in switching that might differ between the groups of public and private customer firms. These specifications address the concern regarding classic two-way fixed effects specifications in staggered difference-in-differences (DID) designs, where earlier treated units inadvertently serve as controls for later treated units (e.g., Baker, Larcker, and Wang 2022). To elaborate, including country×year fixed effects facilitates a cleaner comparison between private and public focal firms within the same country-year, avoiding the use of observations from potentially already treated countries as controls. This test is particularly significant in light of the dynamic treatment effect pattern identified in our event time analysis.

## 5.    CONCLUSIONS

In this study, we leverage regulatory changes in 19 European countries that enhanced access to private firms' financial information. By capitalizing on these country-specific shocks to financial information

accessibility, we uncover several critical insights regarding the significance of financial information in customer-supplier relations.

First, our findings reveal the importance of financial information in supply chain relationships. However, we observe a notable imbalance, with customers' financial information holding greater importance to suppliers compared to the significance of suppliers' financial information for customers. This emphasizes the asymmetric role of financial information in shaping supply chain dynamics.

Furthermore, our study highlights the importance of the timing when financial information is disseminated into supply chain relations. While our baseline findings suggest a stabilizing effect, characterized by lower turnover in supply chain partners following improved accessibility to customer financial information, we also uncover a destabilizing impact when a shock to access to financial information is introduced into relationships already in progress. This finding underscores the delicate balance between information transparency and its potential disruptive power concerning established supply chains.

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## Appendix A

### Variables Description

| Variables | Description |
|---|---|
| **Primary Variables** | |
| Supplier Switches | Number of a customer's suppliers that terminate a business relationship and are replaced with suppliers from the same 2-digit SIC industry in year *t*, scaled by the total number of suppliers the customer had in year *t-1*. |
| Customer Switches | Number of a supplier's customers that terminate a business relationship and are replaced with customers from the same 2-digit SIC industry in year *t*, scaled by the total number of customers the supplier had in year *t-1*. |
| Post | An indicator variable that takes the value of 1 in the years after the implementation of an electronic business register in a firm's home country, and 0 otherwise. |
| Private | An indicator variable that takes the value of 1 if a customer (supplier) is unlisted, and 0 otherwise. |
| **Firm Level Controls** | |
| Size | The natural logarithm of a firms' total assets at year-end. |
| Leverage | The financial leverage of a firm at year-end, computed as Total Liabilities scaled by Total Assets. |
| ROA | A firm's profitability computed as Net Income scaled by Total Assets. |
| Cash | The Cash holdings of a firm at year-end scalded by Total Assets. |
| PPE | The tangible assets of a firm at year-end computed Tangible Assets scaled by Total Assets. |
| Number of Customers (Suppliers) | The total number of customers (suppliers) with whom a supplier (customer) maintains a supply chain relationship in a given year. |
| Large Customer (Supplier) | An indicator variable that takes the value of 1 if, in a supplier-customer relationship, the customer accounts for at least 10% of the supplier's total revenues, and 0 otherwise. |
| Pre-BR Duration | The duration of a supply chain relationship, in years, before the implementation of the electronic business register. |
| **Country Level Controls** | |
| Country GDP | GDP growth of the focal firm's home country in year *t* |
| Country Unemployment | Unemployment rate of the focal firm's home country in year *t* |
| Country Inflation | Inflation rate of the focal firm's home country in year *t* |
| **Partitioning Variables** | |
| Distance | The distance in kilometers between the headquarter of a customer and the headquarter of a supplier. |
| Industry | An indicator variable that takes the value of one if a customer and a supplier are in different 2-digit SIC industries, and 0 otherwise. |

| | |
|---|---|
| Loss | An indicator variable that takes the value of one if a firm generated a loss over the three most recent fiscal periods, and 0 otherwise. |
| Relative Size | Size of a supplier (as measured by its Total Assets) scaled by the size of a customer. |
| Relative N | Number of customers of a supplier scaled by the number of suppliers of a customer. |
| Reporting Threshold | Fraction of firms in the country-industry-year combination required to disclose a full set of financial statements (from Breuer, 2021). |
| Audit Threshold | Fraction of firm subject to an audit mandate in a given country-industry-year combination (from Breuer, 2021). |
| Industry Concentration | Number of firms operating in the same country-industry-year of a customer. |
| GAAP Similarity | Similarity between a customer firm's local GAAP and IFRS. (IAS, 2001) |

## Appendix B

### Electronic Business Register Events

| Country | Year |
|---|---|
| Belgium | 2008 |
| Bulgaria | 2008 |
| Cyprus | 2015 |
| Czech Republic | 2007 |
| Germany | 2007 |
| Finland | 2011 |
| Greece | 2011 |
| Croatia | 2008 |
| Hungary | 2009 |
| Lithuania | 2006 |
| Luxemburg | 2007 |
| Netherlands | 2006 |
| Norway | 2007 |
| Poland | 2018 |
| Portugal | 2007 |
| Romania | 2010 |
| Serbia | 2010 |
| Slovakia | 2014 |
| United Kingdom | 2007 |

## TABLE 1

**Propensity to Contract with Private Partners. Sample Selection and Sample Distribution**

### Panel A: Sample Selection

This Panel presents the selection of observations used in our baseline analysis. Our focus is on the propensity to contract with private firms. We conduct this analysis at two levels: *i*) the supplier-customer country-year level, where we investigate the implications of electronic business registers implemented in the customer's country; *ii*) the customer-supplier country-year level, where we explore the impact of electronic business registers implemented in the supplier's country.

|  |  | **Individual Customers** | **Individual Suppliers** |
|---|---|---|---|
| Supplier-customer-year observations encompassing customers or suppliers from countries with a business register event after 2003 | 414,894 | 41,690 | 24,816 |
| Supplier-customer-year observations with non-missing financial information and country level controls | 202,961 | 14,765 | 9,776 |
| **Propensity to Contract with Private Customers** |  |  |  |
| Supplier-customer country-year observations | 116,299 |  | 9,776 |
| *Mean number of customer countries per supplier* | *5.79* |  |  |
| **Propensity to Contract with Private Suppliers** |  |  |  |
| Customer-supplier country-year observations | 108,203 | 14,765 |  |
| *Mean number of supplier countries per customer* | *5.61* |  |  |

### Panel B: Geographic Distribution

This Panel displays the distribution of customer country and supplier country combinations among the top 5 countries where a business register is implemented. In our analysis of the propensity to contract with private customers, observations are observed at the supplier-customer country-year level, and we provide information on the customer country where the electronic business register is implemented. In the analysis of the propensity to contract with private suppliers, observations are observed at the customer-supplier country-year level, and we provide details on the supplier country where the electronic business register is implemented.

| | **Propensity to Contract with Private Customers** | | | **Propensity to Contract with Private Suppliers** | | |
|---|---|---|---|---|---|---|
| | **Customer Country-Year** | | | **Supplier Country-Year** | | |
| Rank | Country | Freq. | Percent | Country | Freq. | Percent |
| 1 | Great Britain | 18,432 | 15.85 | Great Britain | 17,141 | 15.84 |
| 2 | Germany | 16,027 | 13.78 | Germany | 13,762 | 12.72 |
| 3 | France | 11,531 | 9.91 | France | 10,086 | 9.32 |
| 4 | Netherlands | 8,614 | 7.41 | Sweden | 6,050 | 5.59 |
| 5 | Sweden | 5,116 | 4.4 | Netherlands | 5,488 | 5.07 |

## Panel C: Supplier-Customer Country-Year Summary Statistics

This Panel presents summary statistics for the supplier-customer country-year observations comprising the baseline sample used for analyzing the propensity to engage with private customers.

| Variable | N | Mean | SD | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| Supplier Size | 116,299 | 7.37 | 2.47 | 5.61 | 7.27 | 9.08 |
| Supplier Leverage | 116,299 | 0.58 | 0.24 | 0.42 | 0.58 | 0.72 |
| Supplier ROA | 116,299 | 0.01 | 0.14 | 0.00 | 0.03 | 0.07 |
| Supplier GDP Growth | 116,299 | 2.35 | 1.89 | 1.55 | 2.16 | 2.99 |
| Supplier Unemployment | 116,299 | 6.21 | 3.34 | 4.12 | 5.27 | 7.43 |
| Supplier Inflation | 116,299 | 1.74 | 1.27 | 0.98 | 1.73 | 2.29 |
| Customer GDP Growth | 116,299 | 2.16 | 1.85 | 1.37 | 2.07 | 2.81 |
| Customer Unemployment | 116,299 | 6.40 | 3.43 | 4.00 | 5.30 | 7.80 |
| Customer Inflation | 116,299 | 1.68 | 1.38 | 0.86 | 1.58 | 2.27 |
| Number of Customers | 116,299 | 1.73 | 2.12 | 1.00 | 1.00 | 2.00 |

## Panel D: Customer-Supplier Country-Year Summary Statistics

This Panel presents summary statistics for the customer-supplier country-year observations comprising the baseline sample used for analyzing the propensity to engage with private suppliers.

| Variable | N | Mean | SD | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| Customer Size | 108,203 | 8.20 | 2.86 | 6.24 | 8.47 | 10.31 |
| Customer Leverage | 108,203 | 0.62 | 0.24 | 0.48 | 0.63 | 0.78 |
| Customer ROA | 108,203 | 0.03 | 0.11 | 0.01 | 0.03 | 0.07 |
| Customer GDP Gr | 108,203 | 2.27 | 1.85 | 1.55 | 2.15 | 2.87 |
| Customer Unemployment | 108,203 | 5.99 | 3.26 | 3.90 | 4.92 | 7.19 |
| Customer Inflation | 108,203 | 1.78 | 1.41 | 0.98 | 1.73 | 2.29 |
| Supplier GDP Gr | 108,203 | 2.19 | 1.88 | 1.38 | 2.09 | 2.82 |
| Supplier Unemployment | 108,203 | 6.51 | 3.57 | 4.12 | 5.37 | 7.89 |
| Supplier Inflation | 108,203 | 1.61 | 1.24 | 0.86 | 1.58 | 2.17 |
| Number of Suppliers | 108,203 | 1.84 | 3.21 | 1.00 | 1.00 | 2.00 |

## Panel E: Contracting with Private Partners

This Panel presents the dynamics of contracting with private partners. In the upper section of the table, our focus is on the propensity to engage private customers, and we provide information on the average number of customers, average number of private customers, and the average percentage of private customers that a supplier has within a customer country-year. In the lower section of the table, our attention shifts to the propensity to contract with private suppliers, and we report the average number of suppliers, average number of private suppliers, and the average percentage of private suppliers that a customer engages with within a supplier country-year.

| | Pre-Electronic Business Register | Post-Electronic Business Register |
|---|---|---|
| **Propensity to Contract with Private Customers** | | |
| **Supplier-Customer Country-Year** | | |
| Average Number of Customers | 1.34 | 1.62 |
| Average Number of Private Customers | 0.13 | 0.27 |
| Average Percentage Private Customers | 0.10 | 0.13 |
| | | |
| **Propensity to Contract with Private Suppliers** | | |
| **Customer-Supplier Country-Year** | | |
| Average Number of Suppliers | 1.44 | 1.80 |
| Average Number of Private Suppliers | 0.08 | 0.09 |
| Average Percentage Private Suppliers | 0.06 | 0.05 |

## TABLE 2
## Stability of Relationships. Sample Selection and Sample Distribution

### Panel A: Sample Selection

This Panel presents the selection of observations used in our analysis focusing on the stability of supply chain relationships. We conduct this analysis at two levels: *i*) the customer-year level, investigating the stability of focal customer relationships with their suppliers.; and *ii*) the supplier-year level, investigating the stability of focal supplier relationships with their customers.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | **Stability of Focal Customer Relationships with Suppliers** | | **Stability of Focal Supplier Relationships with Customers** | |
| | Customer-Year Observations | Individual Customers | Supplier-Year Observations | Individual Suppliers |
| Firms from countries with a business register event after 2003 | 70,854 | 20,780 | 41,732 | 11,192 |
| Firms with no listing status change over the sample period | 65,665 | 20,039 | 37,547 | 10,560 |
| Available financial variables | 20,598 | 7,828 | 6,819 | 1,715 |

### Panel B: Focal Customer Summary Statistics. Relationship Stability Variables

This panel provides summary statistics for the sample of observations utilized in the analysis of the stability of focal customer relationships with their suppliers.

| | **All** | | | **Public** | | | **Private** | | |
|---|---|---|---|---|---|---|---|---|---|
| | N | Mean | SD | N | Mean | SD | N | Mean | SD |
| New Suppliers | 20,598 | 0.32 | 0.60 | 8,782 | 0.44 | 0.69 | 11,816 | 0.23 | 0.50 |
| Terminated Suppliers | 20,598 | 0.11 | 0.23 | 8,782 | 0.15 | 0.24 | 11,816 | 0.08 | 0.21 |
| Supplier Switches | 20,598 | 0.06 | 0.18 | 8,782 | 0.09 | 0.19 | 11,816 | 0.04 | 0.17 |
| Annual Supplier Turnover | 20,598 | 0.02 | 0.09 | 8,782 | 0.03 | 0.11 | 11,816 | 0.01 | 0.08 |

### Panel B: Focal Customer Summary Statistics. Independent Variables.

This panel provides summary statistics for the sample of observations utilized in the analysis of the stability of focal customer relationships with their suppliers.

| Variable | N | Mean | SD | p25 | p50 | p75 |
|---|---|---|---|---|---|---|
| Customer Size | 20,598 | 5.50 | 2.90 | 3.49 | 5.39 | 7.42 |
| Customer Leverage | 20,598 | 0.60 | 0.34 | 0.39 | 0.61 | 0.81 |
| Customer ROA | 20,598 | 0.02 | 0.16 | 0.00 | 0.03 | 0.07 |
| Customer Cash | 20,598 | 0.14 | 0.17 | 0.03 | 0.08 | 0.18 |
| Customer PPE | 20,598 | 0.33 | 0.29 | 0.07 | 0.26 | 0.53 |
| Country GDP Gr | 20,598 | 0.01 | 0.03 | 0.01 | 0.02 | 0.02 |
| Country Unemployment | 20,598 | 0.06 | 0.03 | 0.04 | 0.05 | 0.06 |
| Country Inflation | 20,598 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 |
| Number of Suppliers | 20,598 | 1.25 | 0.90 | 0.69 | 0.69 | 1.39 |
| Large Customer | 20,598 | 0.07 | 0.25 | 0.00 | 0.00 | 0.00 |

## Panel B: Focal Supplier Summary Statistics. Relationship Stability Variables

This panel provides summary statistics for the sample of observations utilized in the analysis of the stability of focal supplier relationships with their customers.

| | All | | | Public | | | Private | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | N | Mean | SD | N | Mean | SD | N | Mean | SD |
| New Customers | 6,819 | 0.51 | 1.37 | 6,021 | 0.54 | 1.44 | 798 | 0.23 | 0.59 |
| Terminated Customers | 6,819 | 0.15 | 0.24 | 6,021 | 0.16 | 0.25 | 798 | 0.06 | 0.18 |
| Customer Switches | 6,819 | 0.07 | 0.18 | 6,021 | 0.08 | 0.18 | 798 | 0.03 | 0.14 |
| Annual Customer Turnover | 6,819 | 0.02 | 0.09 | 6,021 | 0.02 | 0.09 | 798 | 0.01 | 0.08 |

## Panel B: Focal Supplier Summary Statistics. Independent Variables.

This panel provides summary statistics for the sample of observations utilized in the analysis of the stability of focal supplier relationships with their customers.

| Variable | N | Mean | SD | p25 | p50 | p75 |
| --- | --- | --- | --- | --- | --- | --- |
| Supplier Size | 6,819 | 6.77 | 2.33 | 5.20 | 6.71 | 8.33 |
| Supplier Leverage | 6,819 | 0.29 | 0.94 | 0.35 | 0.55 | 0.72 |
| Supplier ROA | 6,819 | 0.03 | 0.21 | 0.00 | 0.04 | 0.08 |
| Supplier Cash | 6,819 | 0.20 | 0.30 | 0.05 | 0.10 | 0.22 |
| Supplier PPE | 6,819 | 0.50 | 0.82 | 0.06 | 0.22 | 0.55 |
| Country GDP Gr | 6,819 | 0.02 | 0.02 | 0.01 | 0.02 | 0.02 |
| Country Unemployment | 6,819 | 0.06 | 0.04 | 0.04 | 0.05 | 0.06 |
| Country Inflation | 6,819 | 0.02 | 0.01 | 0.01 | 0.02 | 0.02 |
| Number of Customers | 6,819 | 2.35 | 1.10 | 1.39 | 2.40 | 3.18 |
| Large Supplier | 6,819 | 0.12 | 0.32 | 0.00 | 0.00 | 0.00 |

**TABLE 3**
**Propensity to Contract with Private Partners**

This table presents the baseline analysis concerning the propensity to contract with private partners. In Column 1, observations are taken at the supplier-customer country-year level, with the dependent variable representing the proportion of private customers a supplier has in a given country-year. The main independent variable identifies the time after the implementation of the electronic business register in the customers' country. In Column 2, observations are taken at the customer-supplier country-year level, with the dependent variable capturing the proportion of private suppliers a customer has in a given country-year. The main independent variable identifies the time after the implementation of the electronic business register in the suppliers' country. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) | (2) |
|---|---|---|
| | **Propensity to Contract with Private Customers** | **Propensity to Contract with Private Suppliers** |
| | Private Customer Percentage | Private Supplier Percentage |
| Post (*BR in Customer Country*) | 0.057*** | |
| | (7.209) | |
| Post (*BR in Supplier Country*) | | 0.005 |
| | | (0.733) |
| Supplier Firm Controls | Yes | No |
| Customer Firm Controls | No | Yes |
| Supplier Country Controls | No | Yes |
| Customer Country Controls | Yes | No |
| Supplier FE | Yes | No |
| Customer FE | No | Yes |
| Supplier Country × Year FE | Yes | Yes |
| Customer Country × Year FE | No | Yes |
| Supplier Country FE | No | Yes |
| Customer Country FE | Yes | No |
| Observations | 116,299 | 108,203 |
| R-squared | 0.433 | 0.416 |

**TABLE 4**

**Propensity to Contract with Private Customers. Cross-Sectional Analysis**

This table presents cross-sectional analysis concerning the propensity to contract with private customers. Observations are taken at the supplier-customer country-year level, with the dependent variable representing the proportion of private customers a supplier has in a given country-year. The main independent variable identifies the time after the implementation of the electronic business register in the customers' country. In Columns 1 and 2, the analysis is conducted on two sub-samples, segmented based on the proportion of firms subject to full financial statement reporting requirements in a customer country-year. In Columns 3 and 4, the analysis is performed on two sub-samples, segmented based on the proportion of firms subject to audit requirements in a customer country-year. We include in these regressions only observations for which data on the scope of full reporting and auditing are available. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Scope of Full Reporting Requirement | | Scope of Auditing Requirement | |
| | Private Customer Percentage | | | |
| Post (*BR in Customer Country*) | 0.058*** | -0.014 | 0.048*** | -0.046 |
| | -5.264 | (-0.736) | -5.047 | (-1.436) |
| Supplier Firm Controls | Yes | Yes | Yes | Yes |
| Customer Country Controls | Yes | Yes | Yes | Yes |
| Supplier FE | Yes | Yes | Yes | Yes |
| Supplier Country × Year FE | Yes | Yes | Yes | Yes |
| Customer Country FE | Yes | Yes | Yes | Yes |
| | High Scope | Low Scope | High Scope | Low Scope |
| Sample | (Many Firms Reporting Full Statements) | (Few Firms Reporting Full Statements) | (Many Firms Subject to Audit) | (Few Firms Subject to Audit) |
| Observations | 22,364 | 22,144 | 22,598 | 21,790 |
| R-squared | 0.562 | 0.579 | 0.547 | 0.589 |

**Table 5**
**Propensity to Contract with Private Customers. Quality of Customers**

This table presents an analysis that investigates the characteristics of private customers with whom suppliers engage, before and after the implementation of an electronic business register in the customers' country. Observations are taken at the supplier-customer country-year level. In Column 1, the dependent variable measures the average liquidity of the customers that a supplier has in a given country-year. In Column 2, the dependent variable measures the average leverage of these customers. The variable *Post* identifies the time after the implementation of the electronic business register in the customers' country. The variable *Private Customer Percentage* captures the proportion of private customers in a given country-year. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) Average Cash Holdings of Customers | (2) Average Leverage of Customers |
|---|---|---|
| **Post (*BR in Customer Country*) × Private Customer Percentage** | **0.032*** | **-0.058*** |
| | **(4.852)** | **(-4.291)** |
| Post (BR in Customer Country) | -0.002 | -0.005 |
| | (-0.456) | (-0.945) |
| Private Customer Percentage | -0.005 | 0.020 |
| | (-0.857) | (1.502) |
| | | |
| Supplier Firm Controls | Yes | Yes |
| Customer Country Controls | Yes | Yes |
| | | |
| Supplier FE | Yes | Yes |
| Supplier Country × Year FE | Yes | Yes |
| Customer Country FE | Yes | Yes |
| | | |
| Observations | 112,126 | 112,126 |
| R-squared | 0.347 | 0.360 |

**TABLE 6**

**Panel A**
**Stability of Relationships between Focal Customers and Suppliers**

This table reports the analysis concerning the stability of relationships between a focal customer and its suppliers. Observations are taken at the customer-year level. The variable in Column 1 captures the scaled number of new relationships with suppliers initiated by a customer in a given year. The variable in Column 2 captures the scaled number of relationships with suppliers terminated by a customer in a given year. The variable in Column 3 captures the number of *Supplier Switches* and the variable in Column 4 capture the *Annual Supplier Turnover*, i.e. our proxy for within-industry supplier switches. *Post* is an indicator variable that takes value of one after the implementation of the electronic business register in the customer home country. *Private* is an indicator variable that identifies unlisted customers. Standard errors are clustered by customer. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) New Suppliers | (2) Terminated Suppliers | (3) Supplier Switches | (4) Annual Supplier Turnover |
|---|---|---|---|---|
| **Post (*BR in Customer Country*) × Private** | **-0.077*** | **-0.038*** | **-0.022*** | **-0.013**** |
| | **(-1.778)** | **(-3.409)** | **(-2.698)** | **(-2.511)** |
| Private | -0.044 | -0.001 | 0.010 | 0.014*** |
| | (-1.064) | (-0.113) | (1.187) | (2.585) |
| | | | | |
| Customer Controls | Yes | Yes | Yes | Yes |
| Customer Industry FE | Yes | Yes | Yes | Yes |
| Customer Country × Year FE | Yes | Yes | Yes | Yes |
| | | | | |
| Observations | 20,598 | 20,598 | 20,598 | 20,598 |
| R-squared | 0.090 | 0.082 | 0.082 | 0.092 |

**Panel B**
**Stability of Relationships between Focal Suppliers and Customers**

This table reports the analysis concerning the stability of relationships between a focal supplier and its customers. Observations are taken at the supplier-year level. The variable in Column 1 captures the scaled number of new relationships with customers initiated by a supplier in a given year. The variable in Column 2 captures the scaled number of relationships with customers terminated by a supplier in a given year. The variable in Column 3 captures the number of *Customer Switches* and the variable in Column 4 capture the *Annual Customer Turnover*, i.e. our proxy for within-industry customer switches. *Post* is an indicator variable that takes value of one after the implementation of the electronic business register in the supplier home country. *Private* is an indicator variable that identifies unlisted suppliers. Standard errors are clustered by supplier. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) New Customers | (2) Terminated Customers | (3) Customer Switches | (4) Annual Customer Turnover |
|---|---|---|---|---|
| **Post (*BR in Supplier Country*) × Private** | **-0.012** | **-0.049** | **-0.017** | **-0.005** |
| | **(-0.109)** | **(-1.329)** | **(-0.984)** | **(-0.525)** |
| Private | -0.041 | -0.027 | 0.004 | 0.005 |
| | (-0.392) | (-0.749) | (0.254) | (0.551) |
| | | | | |
| Supplier Controls | Yes | Yes | Yes | Yes |
| Supplier Industry FE | Yes | Yes | Yes | Yes |
| Supplier Country × Year FE | Yes | Yes | Yes | Yes |
| | | | | |
| Observations | 6,819 | 6,819 | 6,819 | 6,819 |
| R-squared | 0.119 | 0.152 | 0.130 | 0.111 |

## TABLE 7

**Stability of Relationships between Focal Customers and Suppliers. Cross-Sectional Analysis**

This table reports cross-sectional analysis concerning the stability of relationships between a focal customer and its suppliers. Observations are taken at the customer-year level. The dependent variable, *Annual Supplier Turnover*, i.e. is proxy for within-industry supplier switches. *Post* is an indicator variable that takes value of one after the implementation of the electronic business register in the customer home country. *Private* is an indicator variable that identifies unlisted customers. In Columns 1 and 2, the analysis is conducted on two sub-samples, segmented based on the proportion of firms subject to full financial statement reporting requirements in a customer country-year. In Columns 3 and 4, the analysis is performed on two sub-samples, segmented based on the proportion of firms subject to audit requirements in a customer country-year. Standard errors are clustered by customer. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| ì | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| | Scope of Full Reporting Requirement | | Scope of Auditing Requirement | |
| | Annual Supplier Turnover | | | |
| **Post (*BR in Customer Country*) × Private** | **-0.022*** | **-0.015** | **-0.026*** | **-0.015** |
| | **(-1.797)** | **(-1.607)** | **(-1.858)** | **(-1.519)** |
| Private | 0.027** | 0.011 | 0.030** | 0.012 |
| | (2.033) | (1.152) | (2.037) | (1.198) |
| Customer Controls | YES | YES | YES | YES |
| Customer Industry FE | YES | YES | YES | YES |
| Customer Country × Year FE | YES | YES | YES | YES |
| | High Scope | Low Scope | High Scope | Low Scope |
| | (Many Firms Reporting Full Statements) | (Few Firms Reporting Full Statements) | (Many Firms Subject to Audit) | (Few Firms Subject to Audit) |
| Observations | 4,007 | 3,885 | 3,963 | 3,885 |
| R-squared | 0.125 | 0.125 | 0.145 | 0.128 |

# TABLE 8

## Panel A
### Stability of Ongoing Relationships between Focal Customers and Suppliers

This Table reports the estimation of a Cox proportional hazard model, where $h(T)$ represents the instantaneous risk of a supply-chain relationship ceasing at time $T$, given that the relationship has survived up to time $T$. Observations enter the regressions at the customer-supplier pair level. The sample consists of ongoing supply chain relationships around the time of business register implementations in the customer home country. *Private* is an indicator variable that identifies unlisted customers. Standard errors are clustered by customer-supplier relationship. We present five distinct specifications, each featuring varying fixed effects and the timing of control variable measurement. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

|  | (1) Static Cox | (2) Static Cox | (3) Static Cox | (4) Static Cox | (5) Static Cox |
|---|---|---|---|---|---|
| **Private** | 1.676*** | 1.601*** | 1.773*** | 2.200*** | 2.180*** |
|  | (4.450) | (4.130) | (5.140) | (6.268) | (5.897) |
| Customer & Supplier Controls | YES | YES | YES | YES | YES |
| Customer Level FE | None | None | Country | Industry | Country & Industry |
| Timing of Controls | Year Before BR Event | Average 3Yrs Before BR Event | Year Before BR Event | Year Before BR Event | Year Before BR Event |
| Observations | 971 | 971 | 971 | 971 | 971 |
| Pseudo R-squared | 0.0102 | 0.0109 | 0.0130 | 0.0172 | 0.0185 |

## Panel B:
### Stability of Ongoing Relationships between Focal Supplier and Customers

This Table reports the estimation of a Cox proportional hazard model, where $h(T)$ represents the instantaneous risk of a supply-chain relationship ceasing at time $T$, given that the relationship has survived up to time $T$. Observations enter the regressions at the customer-supplier pair level. The sample consists of ongoing supply chain relationships around the time of business register implementations in the supplier home country. *Private* is an indicator variable that identifies unlisted suppliers. Standard errors are clustered by customer-supplier relationship. We present five distinct specifications, each featuring varying fixed effects and the timing of control variable measurement. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

|  | (1) Static Cox | (2) Static Cox | (3) Static Cox | (4) Static Cox | (5) Static Cox |
|---|---|---|---|---|---|
| **Private** | 1.122 | 1.087 | 1.145 | 1.257 | 1.465 |
|  | (0.547) | (0.410) | (0.601) | (0.996) | (1.572) |
| Supplier & Customer Controls | YES | YES | YES | YES | YES |
| Supplier Level FE | None | None | Country | Industry | Country & Industry |
| Timing of Controls | Year Before BR Event | Average 3Yrs Before BR Event | Year Before BR Event | Year Before BR Event | Year Before BR Event |
| Observations | 563 | 565 | 563 | 563 | 563 |
| Pseudo R-squared | 0.0185 | 0.0183 | 0.0251 | 0.0488 | 0.0530 |

**TABLE 9**

**Stability of Ongoing Relationships between Focal Customers and Suppliers. Cross-Sectional Analyses**

This Table reports the estimation of a Cox proportional hazard model, where h(T) represents the instantaneous risk of a supply-chain relationship ceasing at time T, given that the relationship has survived up to time T. Observations enter the regressions at the customer-supplier pair level. The sample consists of ongoing supply chain relationships around the time of business register implementations in the customer home country. Private is an indicator variable that identifies unlisted customers. Standard errors are clustered by customer-supplier relationship. We investigate three cross-sectional factors: (*i*) the information gap between supply chain partners, (*ii*) the customer's fundamental characteristics, and (*iii*) the relative bargaining power of the supplier vs. the customer. The splitting variable used across the different columns are: (1) the geographical distance between the supplier and the customer; (2) an indicator variable that denotes relations in which the supplier and the customer operate across different industries; (3) an indicator variable that denotes customers generating a loss over the three most recent fiscal periods; (4) an indicator variable that denotes customers with high financial leverage in comparison to the sample median; (5) the size of the supplier relative to the size of the customer; (6) the number of customers of the supplier scaled by the number of suppliers of the customer. Standard errors are clustered by customer-supplier relationship. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | Information Gap | | Customer Fundamentals | | Bargaining Power | |
|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) |
| | Static Cox | Static Cox | Static Cox | Static Cox | Static Cox | Static Cox |
| | *Distance* | *Cross-Industry* | *Loss* | *Leverage* | *Size* | *N* |
| **Private (*Customer*) × Splitting Variable** | **1.952*** | **2.958*** | **2.444*** | **1.656*** | **1.919*** | **1.889*** |
| | **(4.035)** | **(7.411)** | **(3.024)** | **(2.656)** | **(3.655)** | **(3.904)** |
| Splitting Variable | 0.902 | 1.359*** | 0.949 | 0.916 | 0.878 | 0.921 |
| | (-1.454) | (4.590) | (-0.716) | (-1.032) | (-1.584) | (-1.230) |
| Private | 2.256*** | 2.095*** | 2.131*** | 2.632*** | 2.143*** | 2.316*** |
| | (5.314) | (2.714) | (5.599) | (6.376) | (4.042) | (4.815) |
| | | | | | | |
| Customer & Supplier Controls | Yes | Yes | Yes | Yes | Yes | Yes |
| Customer Level FE | Country & Industry | Country & Industry | Country & Industry | Country & Industry | Country & Industry | Country & Industry |
| | | | | | | |
| Observations | 967 | 971 | 971 | 971 | 971 | 971 |
| Pseudo R-squared | 0.0184 | 0.0195 | 0.0185 | 0.0187 | 0.0186 | 0.0186 |

## Figure 1

This Figure presents the point estimates of our variable of interest (*Post × Private*) with *Post* partitioned into event time periods. The benchmark is represented by the year *t-1*, which is the year before the implementation of an electronic business register in a particular customer country, and is omitted from the regression analysis. In the regression, we include firm-level controls, country×year fixed effects, private×year fixed effects, and customer fixed effects. Coefficients related to event time periods before -4 and after +7 are binned for the analysis. Observations enter the regressions at the customer-year level. Standard errors are clustered by customer.
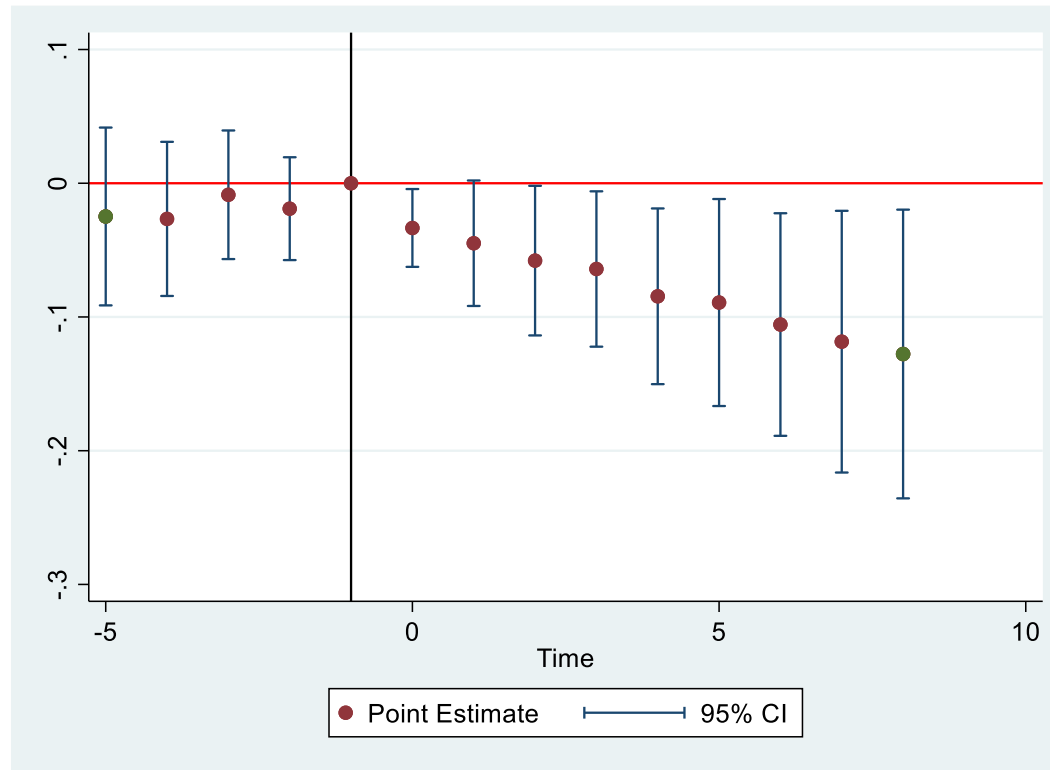
# Online Appendix A

## Propensity to Contract with Private Customers. Robustness Analysis

This table presents robustness tests examining the inclination to engage with private customers. Observations are taken at the supplier-customer country-year level. We employ an alternative dependent variable in Column 1, which quantifies the number of private customers in a given country. In Column 2, we narrow down our sample to exclusively include cross-border relations. In Column 3, we exclude customers from Great Britain, the country that accounts for the largest number of firms in our sample. In Column 4, we exclude both customers and suppliers from Great Britain. In Column 5, we cosider alternative clustering of standard errors at the customer country level. T-statistics are presented below the coefficients. ***, ** and * denote statistical significance at the 1%, 5% and 10% levels.

| | (1) Ln(Pr. Cust.) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| | | Private Customer Percentage | | | |
| **Post eBR (Customer Country)** | **0.078*** | **0.047*** | **0.067*** | **0.063*** | **0.057*** |
| | **(11.238)** | **(5.813)** | **(7.289)** | **(6.681)** | **(3.597)** |
| Supplier Firm Controls | Yes | Yes | Yes | Yes | Yes |
| Supplier Country Controls | Yes | Yes | Yes | Yes | Yes |
| Customer Country Controls | Yes | Yes | Yes | Yes | Yes |
| Supplier FE | Yes | Yes | Yes | Yes | Yes |
| Country x Year FE | Yes | Yes | Yes | Yes | Yes |
| Customer Country FE | Yes | Yes | Yes | Yes | Yes |
| Specification | Alternative Dependent Variable | Only Cross-country | w/o GB Customers | w/o GB Customers & Suppliers | Country-level Clustering |
| Observations | 116,299 | 110,245 | 97,658 | 84,595 | 116,299 |
| R-squared | 0.443 | 0.425 | 0.446 | 0.454 | 0.433 |