Coping with a disrupted world: towards a fragmentation of international trade?

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Abstract

This paper analyses the impact of the COVID-19 pandemic and following geopolitical tensions on importing firms, focusing on firms' strategies to increase the resilience of supply chains. Based on monthly transaction-level data for the universe of French exporters over the period of January 2020-December 2022, we find that firms diversified their sourcing countries when the supply bottleneck hit, particularly when their main sourcing country was not an EU member. At the same time, the results suggest that importing firms did not rebalance their import portfolio toward EU countries. This suggests that firms favour diversification as a strategy to increase supply chain resilience rather than lower exposure towards less reliable sourcing countries.

1. Introduction

Over the past few years, a sequence of adverse shocks has highlighted weaknesses and risks related to participation in global supply chains, triggering a debate - both in policy and academic circles - on costs vs. benefits of global economic integration. The COVID-19 pandemic showed the complexity and vulnerability of the modern interconnected world, and the fragility of global value chains as lockdowns and restrictions disrupted the flow of goods and services. Together with the lingering effects of the pandemic, escalating geopolitical tensions put an additional strain on supply chains and highlighted the national security implications of concentrated sourcing of critical inputs. As a result, the risk of geoeconomic fragmentation – namely, the creation of economic blocs along geopolitical lines – intensified, with the potential to impact trade dynamics significantly.

Trade fragmentation can manifest in many ways. On the one hand, it can be seen in the increasing tendency for countries to pursue strategic investments in key industries, infrastructure, and technologies, to control or influence critical sectors and to enhance their economic and geopolitical power. On the other hand, it can result from adopting trade restrictions, financial measures, or other economic sanctions to exert pressure on rival countries or achieve specific political objectives. The trade war between the United States and China since 2018-2019 is a prime example, with both nations imposing tariffs on each other's goods and adopting policies designed to enhance leadership in key industries. The EU is also not immune to these developments. Indeed, in 2021, the number of new restrictions on trade and foreign direct investment affecting EU countries (mainly in the form of financial aid to domestic producers) almost doubled between 2019 and 2021. Moreover, while the EU has imposed fewer restrictions, it has also increased trade limitations on other countries, particularly since Russia's invasion of Ukraine (Baba et al., 2023). Being more outward-oriented than the US and China, the potential EU exposure to fragmentation risks and the related implications for cross-border trade may be relatively more significant.

Supply chain distress and fragmentation risks can change the cost-benefit analysis of firms and are, therefore, likely to affect their sourcing and production-location decisions. To foster supply chain resilience, businesses can adopt different – non-mutually exclusive - strategies. One option is for firms to adjust their sourcing strategies: diversify suppliers, i.e. spread manufacturing and sourcing activities across multiple countries; rebalance the country

exposure, i.e. reduce their import share or, in a more extreme case, switch to new sourcing countries. The reconfiguration may result in a concentration of imports from geographically or geopolitically closer countries (near-shoring and friend-shoring, respectively). Alternatively, firms could relocate production. In the same way as sourcing, production can be moved to geographically or geopolitically closer countries, closer to their main sales markets, or even in home markets (re-shoring).[1] Finally, firms may decide to adjust business processes by moving from a "just in time" to a "just in case" model and holding larger inventories.[2] The three types of outlined de-risking strategies can differ significantly in terms of both costs and time for implementation (Crowe and Rawdanowicz, 2023). Furthermore, they can have very different implications for global and euro area trade depending on whether they would mainly point towards a process of re-globalisation (possibly resulting in the development of more localised or regionally focused supply networks) or lead to de-globalisation. In turn, domestic and foreign production and investment can be significantly affected, and pricing dynamics may be altered. Therefore, obtaining early insights into the ongoing developments is crucial for anticipating potential implications.

This paper tests two strategies to deal with fragmentation risks in euro area countries: diversification and rebalancing. More precisely, we assess whether a process of reconfiguration of global value chains is ongoing using firm-level data for France, whether this takes the form of increased diversification or/and rebalancing toward the European Union (EU). The period under analysis starts in 2019, allowing us to capture the COVID-19 pandemic and Russia's invasion of Ukraine.

We find that firms adopted a diversification strategy following the pandemic. In addition, they increased their number of sourcing countries more when their main sourcing country in 2019 was outside the European Union. The difference becomes significant when the supply bottlenecks intensify at the beginning of 2021. There was no further diversification following Russia's invasion of Ukraine. Furthermore, there is no evidence of reshuffling their imports closer to home, in the European Union. The market shares of sourcing countries did not change significantly whether the country was a member of the EU. This means that the firms only

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[1] With trade data, it is not possible to track re-shoring since we do not have intra-country flows.

[2] These strategies differ significantly in terms of both costs and time for their implementation. Crowe, D. and Rawdanowicz, L. (2023), "Risks and opportunities of reshaping global value chains", OECD Economics Department Working Papers, No. 1762, OECD Publishing, Paris.

adjusted at the extensive margin and not at the intensive margin following the disruptions in supply chains and rising geopolitical tensions.

The paper is structured as follows: Section 2 provides an overview of the reference literature. Section 3 presents the dataset. Section 4 discusses the methodology and the results of the analysis of the diversification strategy. Section 5 presents the results of the rebalancing strategy. Section 6 concludes.

2. Literature Review

Several model-based analyses have been developed to estimate the possible trade and welfare implications of a fragmentation of the world into blocks (Goes and Bekkers, 2022; Felbermayr et al., 2023). With a focus on the EU, Attinasi et al. (2023) quantify the economic costs of hypothetical fragmentation scenarios using the multi-country, multi-sector model of Baquaee and Fahri (2023). They find that a decoupling of the global economy into a Western and an Eastern bloc (broadly mirroring advanced and developing countries, respectively) would reduce EU output and trade as well as raise prices, while welfare losses are generally more muted. Campos et al. (2023) estimate that a world fragmenting into three trade blocs (Western, Eastern and Neutral) would have important effects on trade between them, reducing trade flows by 22–57% in the most extreme scenarios (identified in the withdrawal of the Eastern bloc from WTO). Despite being lower compared to trade, welfare losses would still be sizeable and largest in the Eastern bloc. At the same time, the empirical literature detecting fragmentation in the data is relatively limited. Indeed, despite dominating newspaper headlines, trade reconfiguration is hardly visible in standard aggregate trade figures (Di Sano et al., 2023), which is not surprising since the implied structural changes take time to materialise fully. However, ad-hoc surveys and empirical analyses based on granular (product or firm-level) data suggest that firms' sourcing strategies are gradually changing. According to the EBRD (2022), over three-quarters of surveyed firms have adopted at least one measure to enhance the robustness of their supply chains, the most prevalent being increasing input stocks and diversifying the supplier base.[3] Asked about potential changes to their sourcing strategy, the EIB (2023) investment survey suggests that half of the interviewed firms (both from the EU and the US) have changed or are planning to change their sourcing strategy by increasing the

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[3] Increasing inventories of components and finished products appear as the primary response to disruptions also in Mc Kinsey (2022), although an increasing share of respondents plan to diversify their supply base and develop regionalized supply networks.

number of countries they import from and their stock of inventories. The tendency towards higher diversification of input sourcing is also confirmed by a recent ECB survey of leading firms operating in the euro area, favouring geographically and geopolitically closer countries (Attinasi et al., 2023).

Empirical studies on fragmentation have mainly used product-level data and focused on the US economy in relation to the trade restrictions introduced during the Trump administration. Based on 10-digit import data (tariff-line level) for the US between 2017 and 2022, Freund et al. (2023) find significant reshaping of US global supply chains due to tariffs imposed on Chinese imports since 2018, with evidence of near-shoring exclusive to border nations. Furthermore, firms increased their imports from large developing countries which are deeply engaged in Chinese supply chains, particularly for strategic goods; at the same time, no strong evidence of reshoring or diversification is found. Countries such as Vietnam, Thailand, Korea, and Mexico emerged as major export winners in global markets in part providing substitutes for products subject to the US-China tariffs (Feigelbaum et al., 2023), with a possible increase of unit import prices from these alternative source countries (Alfaro and Chor, 2023). Alfaro and Chor (2023) also find that the positioning within the GVC of imports to the US has shifted more upstream, suggesting a partial reshoring of production stages. Based on customs and balance-sheet data, Borin et al. (2023) identify foreign-dependent products for the Italian economy and provide a risk-based assessment of potential supply disruptions from high-risk countries, showing that geoeconomic fragmentation is heterogeneous both in the degree of substitution across products and across firms. By using a representative sample of manufacturing firms between 2017 and 2022, De Lucio et al. (2023) find that since the start of the COVID-19 pandemic, Spanish firms increased the stock of inventories while no evidence is found of a significant shift towards multi-sourcing. Diversification is found to be pursued only by firms relying on one supplier and limited to inputs assessed at high risk of disruptions.

3. Dataset

Our analysis is based on transaction-level customs data for the universe of importers in France. Specifically, the database provides information on each firm's import and export flow values

by product (at the HS6 level)[4] and by partner country, at a monthly frequency between 2019 and 2022. We restrict our study to firms that exported continuously in the year before the COVID-19 crisis (i.e., between January and December 2019). Indeed, in order to study the change of strategy in sourcing countries, we need to observe a strategy in the first place: 2019 is our reference year to establish the pre-shock firm habits for the source of their imported inputs. Furthermore, due to the noisiness of the data, we restrict our analysis to the main HS6 product of each firm in 2019 and track how its sourcing countries evolved over time.[5] This dramatically simplifies the analysis, reduces the dimensionality of the database and avoids pre-trend problems occurring when keeping all products.

4. Diversification strategy

This section estimates the effect of the COVID-19 pandemic and the rise of geopolitical tension on the diversification strategies of the euro area countries in terms of sourcing countries for their imported inputs. For this, we employ an event-study design tracking the number of sourcing countries for each importing French firm's main imported HS6 product. The treatment group is made up of firms whose main imported input came mainly from a non-EU country in 2019; the control group is made up of the remaining firms whose main imported input came mainly from an EU country over the same period. The first lockdown in the euro area started on average in March 2020. However, some French firms' business partners may have already been affected by the COVID-19 before that date since some Chinese provinces were in lockdown in January 2020. Therefore, our treatment starts in January 2020 and continues to December 2022, the end of our time horizon. The pre-treatment phase is from January to December 2019. The specification is as follows:

$$number\ country\ suppliers_{ipt} = \sum_{k=-2}^{7} \beta_k\ time\ dummy_{kt} \times non-EU\ dummy_{ip} + FE_i + FE_{pt} + \varepsilon_{it}\ (1)$$

where *number country suppliers*$_{ipt}$ is the number of sourcing countries for the main imported product p of firm i at time t, *non-EU dummy*$_{ip}$ is a dummy variable that takes the value 1 if the product p of firm i had a non-EU country as largest sourcing country in 2019, it is interacted

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[4] The HS6 level of classification gives very detailed characteristics of the product (e.g. code 040110 "Dairy produce; milk and cream, not concentrated, not containing added sugar or other sweetening matter, of a fat content not exceeding 1% (by weight)").
[5] The main product of each firm is defined as the most imported product in value over the whole year 2019.

with a dummy for each month between January 2019 and December 2022 (excluding December 2019). FE_i and FE_{pt} are respectively firm and product-time fixed effects. The results of Equation 1 are presented in Figure 1 and Appendix Table A1 column 1.

Figure 1. Event study, effect of pandemic and geopolitical tensions on diversification
(Coefficients and 95% confidence intervals)
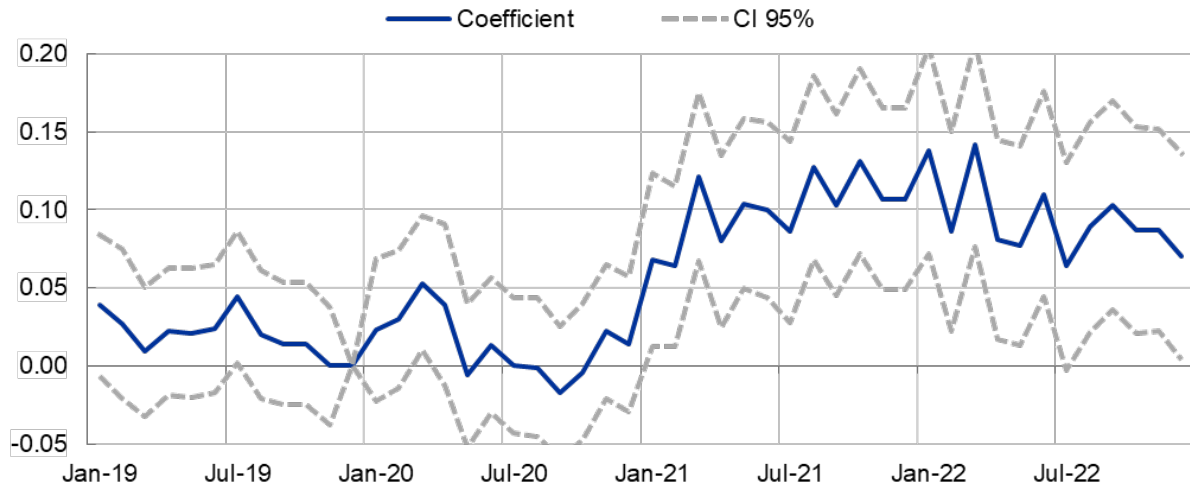
Note: Only continuous importers in the 12 months immediately before the crisis are retained. *Non-EU dummy*$_{ip}$ equals 1 if the firm's main sourcing country for its main HS6 product in 2019 was outside the EU. The reference point is December 2019. Appendix Table A1 column 1 presents the corresponding results).

Figure 1 shows an increase in the number of sourcing countries for firms mainly importing from outside the EU compared to the ones importing from the EU, the difference being significant from January 2021. The shift in the pattern is, however, starting in September 2020. Lebastard et al. (2023) show that September 2020 is the first month in which the supply bottlenecks have an effect on firms' activities. It is, therefore, not a surprise that this is when the firms have started to search for more providers to cope with the higher difficulty of importing inputs. However, the difference between the two groups is modest: about 0.1 sourcing country. Nevertheless, it was relatively stable in 2021 and 2022 and did not react to Russia's invasion of Ukraine. This suggests that the diversification strategy responds to a supply problem rather than an increasing risk of disruptions linked to geopolitical tensions. Table A1 column 2 shows that the results are robust to including a different set of fixed effects.

We then perform a series of robustness checks in Table A2. In column 1, we categorise the firms into importing mainly for the EU or outside the EU based on their imports from 2017 to 2019 instead of only 2019. In column 2, we only keep firms involved in the global value chain

(GVC), i.e. firms that imported and exported in 2019. In column 3 we drop the energy flows.[6] In column 4, we only keep strategic products.[7] In column 5, we keep intermediate goods.[8] Finally, column 6 only keeps firms with only one sourcing country in 2019. The results are stable and the coefficients are broadly the same, with the exception of strategic goods. Indeed, in column 4, there is no significant difference between the treatment and control groups when restricting the analysis to strategic goods. This is probably due to the nature of the strategic goods: they are, by their classification, imported from a limited number of countries in 2019. This is usually due to their scarcity, either because they are rare earth elements, or require very sophisticated technologies. This makes diversification of their sourcing countries difficult in the short term.

Finally, we perform a linear probability model (LPM) in Table A3. In column 1, we look at the probability of increasing the number of sourcing countries; in column 2 we look at the probability of increasing the number of countries by only one and in column 3 by more than one. It appears that the firms have a higher probability of increasing their number of sourcing countries by more than one.

5. Rebalancing strategy

This section estimates the pandemic's effect on French firms' de-risking strategies in terms of reducing the exposure (import market shares) to higher-risk countries. This time, the event study compares the import level from EU and non-EU countries. The setting and the treatment group are the same as in Equation 1. The specification is as follows:

$imports\ market\ shares_{ijt} = \sum_{k=-2}^{7} \beta_k\ time\ dummy_{kt} \times non - EU_j + FE_{ij} + FE_t + \varepsilon_{ijt}$ (2)

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[6] We drop chapter 27 of the HD classification.

[7] Strategic goods are defined as in the European Commission (2021) list. The European Commission identified strategic dependencies related to specific imported inputs "in the most sensitive ecosystems where the EU can be considered highly dependent on imports from third countries" based on three indicators: concentration, measured by the Herfindahl-Hirschman Index, and the market share of the extra-EU supplying countries; demand importance, calculated as the share of extra-EU imports in total EU imports; substitutability, calculated as the ratio of extra-EU imports to total EU exports.

[8] The definition of intermediate goods is based on Broad Economic Categories (fifth revision) classification.

where the dependent variable is the import market shares from the main sourcing country j for the main imported product p of the firm i at time t. *non-EU dummy$_j$* is a dummy variable that takes the value 1 if the country j is outside the EU. FE_{ij} and FE_t are respectively firm-country fixed and time fixed effects. The results of Equation 2 are presented in Figure 2 and Appendix Table A4 column 1.

Figure 2. Event study, effect of pandemic and geopolitical tensions on rebalancing
(Coefficients and 95% confidence intervals)
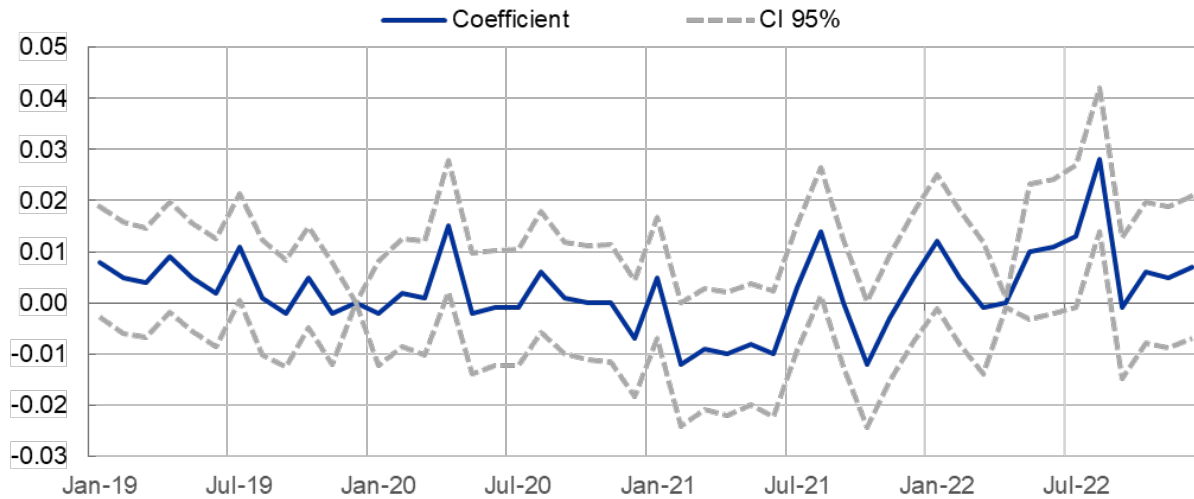
Note: Only continuous importers in the 12 months immediately before the crisis are retained. *Non-EU dummy$_{ip}$* equals 1 if the firm's main sourcing country for its main HS6 product in 2019 was outside the EU. The reference point is December 2019. The United Kingdom is dropped from the database to avoid Brexit to drive the results. Appendix Table A4 column 1 presents the corresponding results).

Figure 2 shows no signs of rebalancing. The firms whose main sourcing country is outside the EU did not modify their import portfolio to reduce the share of the country. This is a surprising result, especially in the context of lower reliability of big sourcing countries outside the EU: China due to its zero-covid policy and Russia due to the international sanctions. Regarding Russia, aggregate data show a reduction by half of the euro area imports (Ioannou et al., 2023), but it is mostly big French firms that were importing from there. The firm fixed effects, therefore, capture this factor. Table A4 column 2 shows that the results are robust to including a different set of fixed effects.

We then perform a series of robustness checks in Table A5. In columns 1 to 5 we perform the same robustness checks as in Table A2. In column 6, we use the volume of imports instead of values. Imports in volume tend to be less reliable data than imports in value; their use requires additional cleaning. We only kept the firms which reported the same unit for the same HS6

product during the whole period studied. The results are stable and the coefficients are broadly the same.

6. Conclusion

Using an event study, this paper investigates the effect of supply chain disruptions and geopolitical tensions on the importers 'strategy to increase their supply reliance. We exploit monthly disaggregated data for the universe of French importing firms and provide evidence that firms diversified their sourcing countries more intensively when their main supplier was outside the European Union. No significance between EU and non-EU members could be observed at the intensive margin. This suggests that firms favour diversification as a strategy to increase supply chain resilience rather than lower exposure towards less reliable sourcing countries. Future research could focus on multinational firms to understand if they follow a strategy similar to the one observed in this analysis.

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Appendix

Table A1. Event study, effect of pandemic and geopolitical tensions on diversification

Number sourcing countries	(1)	(2)
nonEU x y2019m1	0.0398*	0.0202
	(0.0231)	(0.0183)
nonEU x y2019m2	0.0275	0.0140
	(0.0244)	(0.0186)
nonEU x y2019m3	0.00940	-0.00357
	(0.0210)	(0.0171)
nonEU x y2019m4	0.0226	0.0130
	(0.0209)	(0.0172)
nonEU x y2019m5	0.0210	0.00898
	(0.0211)	(0.0171)
nonEU x y2019m6	0.0246	0.00221
	(0.0210)	(0.0171)
nonEU x y2019m7	0.0441**	0.0359**
	(0.0215)	(0.0176)
nonEU x y2019m8	0.0207	0.00162
	(0.0209)	(0.0169)
nonEU x y2019m9	0.0145	0.000655
	(0.0200)	(0.0161)
nonEU x y2019m10	0.0144	0.00604
	(0.0200)	(0.0161)
nonEU x y2019m11	0.000773	0.00132
	(0.0193)	(0.0157)
nonEU x y2020m1	0.0233	0.0110
	(0.0234)	(0.0178)
nonEU x y2020m2	0.0300	-0.0185
	(0.0224)	(0.0175)
nonEU x y2020m3	0.0539**	-0.000915
	(0.0218)	(0.0178)
nonEU x y2020m4	0.0393	-0.0703***
	(0.0265)	(0.0220)
nonEU x y2020m5	-0.00612	-0.101***
	(0.0234)	(0.0190)
nonEU x y2020m6	0.0133	-0.0292
	(0.0221)	(0.0182)
nonEU x y2020m7	-0.000880	-0.0326*
	(0.0221)	(0.0179)
nonEU x y2020m8	-0.00162	-0.0429**
	(0.0226)	(0.0182)
nonEU x y2020m9	-0.0172	-0.0505***
	(0.0215)	(0.0176)
nonEU x y2020m10	-0.00443	0.0338*
	(0.0222)	(0.0181)
nonEU x y2020m11	0.0220	-0.0199
	(0.0219)	(0.0181)
nonEU x y2020m12	0.0146	-0.00147
	(0.0221)	(0.0180)

nonEU x y2021m1	0.0683**	0.0134
	(0.0284)	(0.0224)
nonEU x y2021m2	0.0645**	0.0110
	(0.0262)	(0.0211)
nonEU x y2021m3	0.121***	0.0609***
	(0.0276)	(0.0223)
nonEU x y2021m4	0.0808***	0.0195
	(0.0281)	(0.0227)
nonEU x y2021m5	0.104***	0.0439*
	(0.0279)	(0.0224)
nonEU x y2021m6	0.100***	0.0578**
	(0.0287)	(0.0229)
nonEU x y2021m7	0.0862***	0.0408*
	(0.0297)	(0.0232)
nonEU x y2021m8	0.127***	0.0630***
	(0.0302)	(0.0236)
nonEU x y2021m9	0.103***	0.0407*
	(0.0297)	(0.0235)
nonEU x y2021m10	0.131***	0.0707***
	(0.0302)	(0.0240)
nonEU x y2021m11	0.107***	0.0722***
	(0.0297)	(0.0236)
nonEU x y2021m12	0.107***	0.0779***
	(0.0297)	(0.0236)
nonEU x y2022m1	0.138***	0.0970***
	(0.0338)	(0.0268)
nonEU x y2022m2	0.0868***	0.0335
	(0.0326)	(0.0263)
nonEU x y2022m3	0.142***	0.0992***
	(0.0334)	(0.0272)
nonEU x y2022m4	0.0816**	0.0281
	(0.0326)	(0.0265)
nonEU x y2022m5	0.0776**	0.0250
	(0.0327)	(0.0262)
nonEU x y2022m6	0.110***	0.0833***
	(0.0335)	(0.0268)
nonEU x y2022m7	0.0646*	0.0355
	(0.0340)	(0.0276)
nonEU x y2022m8	0.0897***	0.0736***
	(0.0344)	(0.0277)
nonEU x y2022m9	0.103***	0.0760***
	(0.0342)	(0.0271)
nonEU x y2022m10	0.0871***	0.0548**
	(0.0337)	(0.0265)
nonEU x y2022m11	0.0871***	0.0574**
	(0.0331)	(0.0265)
nonEU x y2022m12	0.0703**	0.0540**
	(0.0337)	(0.0273)
Constant	2.428***	2.417***
	(0.00402)	(0.00330)
Observations	1,065,895	1,105,753
R-squared	0.869	0.857
Firm FE	YES	YES

	Time FE	NO	YES
	Product-time FE	YES	NO

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Only continuous importers in the 12 months immediately before the crisis are retained. *Non-EU dummy*$_{ip}$ equals 1 if the firm's main sourcing country for its main HS6 product in 2019 was outside the EU. The reference point is December 2019.

Table A2. Event study, effect of pandemic and geopolitical tensions on diversification – robustness checks

Number sourcing countries	(1) 3 years	(2) Keep GVC firms	(3) Drop energy	(4) Keep strategic goods	(5) Keep intermediate goods	(6) One country in 2019
nonEU x y2019m1	0.0394*	0.0508*	0.0372*	0.0310	0.0375	-0.00769
	(0.0211)	(0.0277)	(0.0206)	(0.152)	(0.0287)	(0.0147)
nonEU x y2019m2	0.0164	0.0481	0.0157	0.247*	0.0101	-0.0212
	(0.0220)	(0.0293)	(0.0214)	(0.128)	(0.0286)	(0.0139)
nonEU x y2019m3	0.0126	0.0243	0.00317	0.118	0.0155	-0.0186
	(0.0193)	(0.0248)	(0.0188)	(0.149)	(0.0281)	(0.0154)
nonEU x y2019m4	0.0161	0.0287	0.0272	0.258*	0.0420	-0.00500
	(0.0193)	(0.0246)	(0.0186)	(0.131)	(0.0274)	(0.0150)
nonEU x y2019m5	0.0133	0.0295	0.0201	0.0485	0.0195	-0.00823
	(0.0191)	(0.0247)	(0.0188)	(0.139)	(0.0272)	(0.0153)
nonEU x y2019m6	0.0208	0.0251	0.0200	0.0986	0.0332	0.0139
	(0.0192)	(0.0245)	(0.0185)	(0.149)	(0.0266)	(0.0147)
nonEU x y2019m7	0.0457**	0.0631**	0.0436**	-0.0487	0.0648**	0.0170
	(0.0194)	(0.0249)	(0.0187)	(0.134)	(0.0271)	(0.0144)
nonEU x y2019m8	0.0410**	0.0551**	0.0290	0.110	0.0539**	0.0125
	(0.0186)	(0.0240)	(0.0180)	(0.136)	(0.0262)	(0.0129)
nonEU x y2019m9	0.00912	0.0141	0.00812	0.172	0.00227	0.0143
	(0.0177)	(0.0229)	(0.0172)	(0.125)	(0.0261)	(0.0137)
nonEU x y2019m10	0.0166	0.00904	0.00150	0.0597	0.00140	0.00507
	(0.0176)	(0.0228)	(0.0172)	(0.124)	(0.0247)	(0.0140)
nonEU x y2019m11	-0.00382	0.00197	-0.00835	0.0445	-0.0113	-0.0200
	(0.0171)	(0.0222)	(0.0167)	(0.106)	(0.0252)	(0.0124)
nonEU x y2020m1	0.0262	0.0266	0.00439	-0.0107	-0.00167	-0.00129
	(0.0204)	(0.0279)	(0.0199)	(0.120)	(0.0268)	(0.0135)
nonEU x y2020m2	0.0241	0.0458*	0.0255	0.0226	0.0412	0.0102
	(0.0198)	(0.0260)	(0.0192)	(0.125)	(0.0269)	(0.0138)
nonEU x y2020m3	0.0680***	0.0563**	0.0473**	0.110	0.0658**	-0.00585
	(0.0195)	(0.0250)	(0.0190)	(0.142)	(0.0277)	(0.0138)
nonEU x y2020m4	0.0557**	0.0753**	0.0516**	0.239	0.0942***	0.0249*
	(0.0237)	(0.0300)	(0.0233)	(0.155)	(0.0305)	(0.0134)
nonEU x y2020m5	0.00203	0.0344	0.00555	0.154	0.0402	-0.00141

	(0.0210)	(0.0268)	(0.0207)	(0.148)	(0.0290)	(0.0136)
nonEU x y2020m6	0.0178	0.00839	0.0104	0.105	-0.0161	0.000653
	(0.0200)	(0.0256)	(0.0194)	(0.136)	(0.0279)	(0.0141)
nonEU x y2020m7	0.00415	0.0181	-0.000155	0.0386	-0.0143	-0.0189
	(0.0198)	(0.0254)	(0.0194)	(0.129)	(0.0284)	(0.0140)
nonEU x y2020m8	0.0381*	0.0116	0.00543	0.0733	0.0577**	-0.00318
	(0.0205)	(0.0263)	(0.0200)	(0.151)	(0.0291)	(0.0138)
nonEU x y2020m9	-0.00421	0.00140	-0.00177	0.0515	-0.00127	-0.00936
	(0.0194)	(0.0246)	(0.0189)	(0.128)	(0.0282)	(0.0149)
nonEU x y2020m10	0.000797	0.0118	0.00505	0.0201	0.0101	0.00214
	(0.0204)	(0.0257)	(0.0196)	(0.126)	(0.0286)	(0.0148)
nonEU x y2020m11	0.0241	-0.00816	0.0136	0.211	-0.0291	0.0146
	(0.0200)	(0.0250)	(0.0193)	(0.142)	(0.0284)	(0.0143)
nonEU x y2020m12	0.00927	0.00186	0.0181	0.315**	0.0154	-0.00908
	(0.0201)	(0.0255)	(0.0195)	(0.130)	(0.0291)	(0.0138)
nonEU x y2021m1	0.0662***	0.0663**	0.0588**	0.228*	0.0828**	0.0581***
	(0.0252)	(0.0326)	(0.0248)	(0.130)	(0.0352)	(0.0178)
nonEU x y2021m2	0.0708***	0.0678**	0.0623***	0.260*	0.0613*	0.0340**
	(0.0236)	(0.0301)	(0.0231)	(0.138)	(0.0340)	(0.0174)
nonEU x y2021m3	0.114***	0.119***	0.104***	0.295*	0.132***	0.0794***
	(0.0248)	(0.0308)	(0.0239)	(0.162)	(0.0360)	(0.0201)
nonEU x y2021m4	0.0625**	0.0737**	0.0731***	0.186	0.105***	0.0833***
	(0.0251)	(0.0317)	(0.0244)	(0.170)	(0.0375)	(0.0235)
nonEU x y2021m5	0.118***	0.113***	0.0874***	0.284*	0.114***	0.0860***
	(0.0250)	(0.0312)	(0.0242)	(0.149)	(0.0375)	(0.0242)
nonEU x y2021m6	0.0920***	0.102***	0.0878***	0.304*	0.118***	0.0871***
	(0.0257)	(0.0323)	(0.0251)	(0.184)	(0.0398)	(0.0247)
nonEU x y2021m7	0.0845***	0.0938***	0.0708***	0.335**	0.0894**	0.0646***
	(0.0263)	(0.0330)	(0.0258)	(0.158)	(0.0394)	(0.0243)
nonEU x y2021m8	0.123***	0.114***	0.107***	0.145	0.170***	0.0911***
	(0.0268)	(0.0336)	(0.0263)	(0.156)	(0.0399)	(0.0240)
nonEU x y2021m9	0.0882***	0.0702**	0.0645**	0.166	0.0996**	0.0749***
	(0.0264)	(0.0330)	(0.0257)	(0.169)	(0.0398)	(0.0249)
nonEU x y2021m10	0.120***	0.122***	0.0902***	0.139	0.121***	0.0783***
	(0.0267)	(0.0338)	(0.0262)	(0.167)	(0.0412)	(0.0250)
nonEU x y2021m11	0.0879***	0.0981***	0.0832***	-0.0366	0.0880**	0.0607**
	(0.0262)	(0.0333)	(0.0259)	(0.172)	(0.0405)	(0.0242)
nonEU x y2021m12	0.0921***	0.0759**	0.0670***	0.215	0.133***	0.0502**
	(0.0259)	(0.0325)	(0.0253)	(0.178)	(0.0396)	(0.0227)
Constant	2.331***	2.638***	2.307***	2.106***	2.444***	1.222***
	(0.00349)	(0.00534)	(0.00345)	(0.0462)	(0.00459)	(0.00260)
Observations	916,645	592,694	935,429	11,994	472,032	453,405
R-squared	0.875	0.882	0.875	0.819	0.892	0.543
Firm FE	YES	YES	YES	YES	YES	YES
Product-time FE	YES	YES	YES	YES	YES	YES

Table A3. Event study, effect of pandemic and geopolitical tensions on diversification – linear probability model

Dummy increasing number sourcing countries	(1) General	(2) Plus one	(3) Plus more
nonEU x y2019m1	0.00137	-0.00525	-0.00618
	(0.00686)	(0.00845)	(0.00936)
nonEU x y2019m2	-0.000993	-0.00840	-0.0124
	(0.00682)	(0.00843)	(0.00926)
nonEU x y2019m3	-0.00547	-0.00740	-0.0105
	(0.00696)	(0.00856)	(0.00952)
nonEU x y2019m4	0.00359	0.00114	-0.000250
	(0.00684)	(0.00838)	(0.00934)
nonEU x y2019m5	-0.00257	-0.0169**	-0.0153
	(0.00686)	(0.00834)	(0.00939)
nonEU x y2019m6	0.00501	0.00902	0.0112
	(0.00674)	(0.00849)	(0.00928)
nonEU x y2019m7	0.0153**	0.00972	0.0144
	(0.00677)	(0.00829)	(0.00921)
nonEU x y2019m8	0.00598	0.00655	0.00979
	(0.00621)	(0.00778)	(0.00863)
nonEU x y2019m9	0.00401	0.00729	0.00993
	(0.00661)	(0.00815)	(0.00905)
nonEU x y2019m10	-0.00799	0.00313	0.00150
	(0.00671)	(0.00804)	(0.00905)
nonEU x y2019m11	-0.00639	-0.00633	-0.0114
	(0.00646)	(0.00773)	(0.00856)
nonEU x y2020m1	-0.00227	0.00150	0.000370
	(0.00659)	(0.00825)	(0.00898)
nonEU x y2020m2	0.0103	0.00822	0.0119
	(0.00669)	(0.00821)	(0.00910)
nonEU x y2020m3	0.0168***	0.00723	0.00479
	(0.00641)	(0.00803)	(0.00884)
nonEU x y2020m4	0.00915	0.0132	0.0201**
	(0.00617)	(0.00882)	(0.00937)
nonEU x y2020m5	-0.00434	-0.0142*	-0.00952
	(0.00619)	(0.00816)	(0.00887)
nonEU x y2020m6	0.00304	0.00199	0.000984
	(0.00659)	(0.00821)	(0.00906)
nonEU x y2020m7	-0.00269	-0.00677	-0.0115

	(0.00661)	(0.00830)	(0.00912)
nonEU x y2020m8	0.00263	-0.000656	-0.000340
	(0.00634)	(0.00825)	(0.00901)
nonEU x y2020m9	0.00316	0.00927	0.00449
	(0.00686)	(0.00875)	(0.00948)
nonEU x y2020m10	-0.00239	-0.000887	0.000913
	(0.00687)	(0.00864)	(0.00948)
nonEU x y2020m11	0.00908	0.00994	0.0160*
	(0.00682)	(0.00850)	(0.00932)
nonEU x y2020m12	0.00235	0.00335	0.00157
	(0.00670)	(0.00862)	(0.00930)
nonEU x y2021m1	0.0208***	0.0191**	0.0311***
	(0.00676)	(0.00898)	(0.00984)
nonEU x y2021m2	0.0202***	0.00554	0.0153
	(0.00699)	(0.00923)	(0.0101)
nonEU x y2021m3	0.0345***	0.0297***	0.0407***
	(0.00722)	(0.00949)	(0.0104)
nonEU x y2021m4	0.0266***	0.0120	0.0300***
	(0.00711)	(0.00945)	(0.0104)
nonEU x y2021m5	0.0289***	0.0169*	0.0359***
	(0.00713)	(0.00952)	(0.0105)
nonEU x y2021m6	0.0248***	0.00719	0.0257**
	(0.00721)	(0.00941)	(0.0105)
nonEU x y2021m7	0.0198***	0.00349	0.0203*
	(0.00714)	(0.00934)	(0.0105)
nonEU x y2021m8	0.0302***	0.0252***	0.0414***
	(0.00686)	(0.00937)	(0.0103)
nonEU x y2021m9	0.0194***	0.0304***	0.0351***
	(0.00726)	(0.0100)	(0.0108)
nonEU x y2021m10	0.0232***	0.0152	0.0288***
	(0.00719)	(0.00959)	(0.0106)
nonEU x y2021m11	0.0196***	0.0208**	0.0253**
	(0.00717)	(0.00948)	(0.0106)
nonEU x y2021m12	0.00856	0.00360	0.0171
	(0.00708)	(0.00955)	(0.0106)
Constant	0.199***	0.129***	0.168***
	(0.000996)	(0.00106)	(0.00147)
Observations	939,285	453,405	453,405
R-squared	0.445	0.389	0.513
Firm FE	YES	YES	YES
Product-time FE	YES	YES	YES

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Only continuous importers in the 12 months immediately before the crisis are retained. *Non-EU dummy$_{ip}$* equals 1 if the firm's main sourcing country for its main HS6 product in 2019 was outside the EU. The reference point is December 2019.

Table A4. Event study, effect of pandemic and geopolitical tensions on rebalancing

Imports share	(1)	(2)
nonEU x y2019m1	0.00848	0.00327
	(0.00553)	(0.00442)
nonEU x y2019m2	0.00513	0.00118
	(0.00557)	(0.00454)
nonEU x y2019m3	0.00456	0.00117
	(0.00548)	(0.00439)
nonEU x y2019m4	0.00910*	0.00414
	(0.00549)	(0.00437)
nonEU x y2019m5	0.00562	0.00215
	(0.00539)	(0.00435)
nonEU x y2019m6	0.00279	0.00013
	(0.00534)	(0.00432)
nonEU x y2019m7	0.0113**	0.00670
	(0.00534)	(0.00425)
nonEU x y2019m8	0.00105*	0.00670
	(0.00573)	(0.00455)
nonEU x y2019m9	-0.00287	-0.000157
	(0.00535)	(0.00430)
nonEU x y2019m10	0.00523	0.00292
	(0.00507)	(0.00407)
nonEU x y2019m11	-0.00238	-0.00530
	(0.00507)	(0.00407)
nonEU x y2020m1	-0.00269	-0.00887**
	(0.00520)	(0.00422)
nonEU x y2020m2	0.00223	-0.00453
	(0.00533)	(0.00443)
nonEU x y2020m3	0.00119	-0.00395
	(0.00569)	(0.00462)
nonEU x y2020m4	0.0150**	0.00155
	(0.00661)	(0.00535)
nonEU x y2020m5	-0.00202	-0.0105**
	(0.00606)	(0.00490)
nonEU x y2020m6	-0.00139	-0.00670
	(0.00578)	(0.00469)
nonEU x y2020m7	-0.00120	-0.00470
	(0.00581)	(0.00470)
nonEU x y2020m8	0.00684	0.000428
	(0.00604)	(0.00489)
nonEU x y2020m9	0.00157	-0.00655
	(0.00560)	(0.00463)
nonEU x y2020m10	-0.000872	-0.00655
	(0.00570)	(0.00465)
nonEU x y2020m11	0.000456	-0.00695
	(0.00587)	(0.00475)
nonEU x y2020m12	-0.00762	-0.0113**
	(0.00578)	(0.00470)

nonEU x y2021m1	0.00562	-0.00107
	(0.00604)	(0.00485)
nonEU x y2021m2	-0.0123***	-0.0209***
	(0.00612)	(0.00504)
nonEU x y2021m3	-0.00978	-0.0139***
	(0.00602)	(0.00491)
nonEU x y2021m4	-0.0108*	-0.0161***
	(0.00616)	(0.00505)
nonEU x y2021m5	-0.00885	-0.0156***
	(0.00605)	(0.00501)
nonEU x y2021m6	-0.0104*	-0.0158***
	(0.00627)	(0.00509)
nonEU x y2021m7	0.00337	-0.00718
	(0.00630)	(0.00518)
nonEU x y2021m8	0.0140**	0.00613
	(0.00643)	(0.00526)
nonEU x y2021m9	-0.000250	-0.00846
	(0.00633)	(0.00518)
nonEU x y2021m10	-0.0124**	-0.0183***
	(0.00627)	(0.00512)
nonEU x y2021m11	-0.00348	-0.00802
	(0.00631)	(0.00512)
nonEU x y2021m12	0.00543	-0.00679
	(0.00644)	(0.00525)
nonEU x y2022m1	0.0127*	0.000405
	(0.00667)	(0.00546)
nonEU x y2022m2	0.00576	-0.00326
	(0.00666)	(0.00553)
nonEU x y2022m3	-0.00157	-0.00553
	(0.00653)	(0.00541)
nonEU x y2022m4	0.000440	-0.00482
	(0.000440)	(0.00563)
nonEU x y2022m5	0.0104	0.00488
	(0.00672)	(0.00551)
nonEU x y2022m6	0.0110	-0.000631
	(0.00672)	(0.00563)
nonEU x y2022m7	0.0139**	0.00417
	(0.00708)	(0.00573)
nonEU x y2022m8	0.0285***	0.0189***
	(0.00716)	(0.00587)
nonEU x y2022m9	-0.00129	-0.00340
	(0.00701)	(0.00569)
nonEU x y2022m10	0.00653	-0.00149
	(0.00704)	(0.00572)
nonEU x y2022m11	0.00588	-0.00302
	(0.00701)	(0.00566)
nonEU x y2022m12	0.00710	0.000274
	(0.00716)	(0.00577)
Constant	0.762***	0.764***
	(0.000854)	(0.000696)
Observations	1,021,329	1,061,017
R-squared	0.663	0.627
Firm FE	YES	YES

Product-time FE		YES		NO	
Time FE		NO		YES	

Table A5. Event study, effect of pandemic and geopolitical tensions on rebalancing – robustness checks

Imports share	(1) 3 years	(2) Keep GVC firms	(3) Drop energy	(4) Keep strategic goods	(5) Keep intermediate goods	(6) Volume
nonEU x y2019m1	-0.00108	0.00176	0.00982*	0.0124	0.00512	0.0105*
	(0.00557)	(0.00511)	(0.00559)	(0.0325)	(0.00802)	(0.00586)
nonEU x y2019m2	-0.00242	-0.00324	0.00705	-0.0315	0.0129	0.00108
	(0.00557)	(0.00519)	(0.00562)	(0.0283)	(0.00799)	(0.00591)
nonEU x y2019m3	-0.00525	-0.00544	0.00409	0.0617**	0.00277	0.00340
	(0.00545)	(0.00504)	(0.00554)	(0.0299)	(0.00789)	(0.00582)
nonEU x y2019m4	0.00180	-1.64e-05	0.00946*	-0.0360	0.0175**	0.0105*
	(0.00548)	(0.00501)	(0.00555)	(0.0346)	(0.00785)	(0.00591)
nonEU x y2019m5	-0.00207	-0.00141	0.00495	0.0145	0.00754	0.00581
	(0.00527)	(0.00499)	(0.00543)	(0.0322)	(0.00785)	(0.00575)
nonEU x y2019m6	-0.00132	-0.00237	0.00152	0.0286	-0.00117	0.00710
	(0.00540)	(0.00495)	(0.00542)	(0.0369)	(0.00759)	(0.00568)
nonEU x y2019m7	0.00698	0.00542	0.0120**	-0.0354	0.0177**	0.0192***
	(0.00530)	(0.00492)	(0.00540)	(0.0290)	(0.00768)	(0.00576)
nonEU x y2019m8	0.00677	0.00220	0.00945	-0.0342	0.00899	0.0132**
	(0.00561)	(0.00528)	(0.00581)	(0.0388)	(0.00833)	(0.00603)
nonEU x y2019m9	0.000244	-0.00435	0.00338	-0.0187	0.00688	0.0116**
	(0.00536)	(0.00495)	(0.00541)	(0.0336)	(0.00775)	(0.00565)
nonEU x y2019m10	0.00408	-0.00138	0.00440	-0.0241	0.00291	0.00972*
	(0.00501)	(0.00465)	(0.00512)	(0.0261)	(0.00712)	(0.00541)
nonEU x y2019m11	-0.00650	-0.0112**	-0.00301	-0.0101	-0.00329	-0.000626
	(0.00510)	(0.00468)	(0.00511)	(0.0279)	(0.00735)	(0.00542)
nonEU x y2020m1	-0.00890*	-0.0131***	-0.00330	-0.0399	0.0112	0.00460
	(0.00527)	(0.00486)	(0.00524)	(0.0325)	(0.00753)	(0.00558)
nonEU x y2020m2	-0.000236	-0.00275	0.00407	-0.00820	-0.00192	0.00156
	(0.00546)	(0.00505)	(0.00539)	(0.0371)	(0.00781)	(0.00571)
nonEU x y2020m3	-0.00491	-0.00749	0.00227	0.00720	-0.00237	0.00131
	(0.00570)	(0.00530)	(0.00575)	(0.0337)	(0.00809)	(0.00602)
nonEU x y2020m4	0.0141**	0.00319	0.0175***	-0.0783**	0.0173*	0.0222***
	(0.00660)	(0.00607)	(0.00663)	(0.0378)	(0.00895)	(0.00699)

nonEU x y2020m5	-0.00448	-0.0108*	-0.00190	-0.00662	0.00207	0.00121
	(0.00600)	(0.00563)	(0.00610)	(0.0354)	(0.00846)	(0.00640)
nonEU x y2020m6	-0.00838	-0.00449	0.000658	0.0175	-0.000268	0.00333
	(0.00580)	(0.00534)	(0.00581)	(0.0351)	(0.00811)	(0.00617)
nonEU x y2020m7	-0.00383	-0.00297	0.000966	-0.0222	0.00676	0.00550
	(0.00579)	(0.00533)	(0.00583)	(0.0362)	(0.00840)	(0.00622)
nonEU x y2020m8	0.00218	0.00306	0.00836	0.00420	0.000253	0.0137**
	(0.00591)	(0.00559)	(0.00605)	(0.0408)	(0.00882)	(0.00633)
nonEU x y2020m9	-0.00277	-0.00313	0.00300	0.000363	-0.00250	0.00959
	(0.00559)	(0.00526)	(0.00562)	(0.0362)	(0.00796)	(0.00588)
nonEU x y2020m10	-0.00751	-0.00391	0.000997	0.00294	-0.00835	0.00441
	(0.00580)	(0.00528)	(0.00570)	(0.0347)	(0.00828)	(0.00603)
nonEU x y2020m11	-0.00528	-0.00119	0.00432	-0.00367	0.00794	0.00996
	(0.00583)	(0.00539)	(0.00586)	(0.0374)	(0.00844)	(0.00620)
nonEU x y2020m12	-0.0109*	-0.00517	-0.00476	-0.00912	0.000573	0.00722
	(0.00579)	(0.00536)	(0.00577)	(0.0361)	(0.00841)	(0.00611)
nonEU x y2021m1	0.000194	0.00109	0.00744	-0.0125	0.00772	0.00942
	(0.00603)	(0.00549)	(0.00605)	(0.0366)	(0.00856)	(0.00637)
nonEU x y2021m2	-0.0121**	-0.0198***	-0.0109*	0.0127	-0.0145	-0.00249
	(0.00613)	(0.00574)	(0.00613)	(0.0378)	(0.00883)	(0.00642)
nonEU x y2021m3	-0.00969	-0.00914	-0.00765	-0.0116	-0.0126	-0.00358
	(0.00608)	(0.00558)	(0.00605)	(0.0405)	(0.00833)	(0.00642)
nonEU x y2021m4	-0.0113*	-0.0110*	-0.00942	-0.0594	-0.0126	-0.00391
	(0.00619)	(0.00570)	(0.00615)	(0.0392)	(0.00859)	(0.00646)
nonEU x y2021m5	-0.0112*	-0.00846	-0.00827	-0.0627	-0.00936	-0.00614
	(0.00621)	(0.00570)	(0.00609)	(0.0399)	(0.00852)	(0.00645)
nonEU x y2021m6	-0.0120*	-0.0147**	-0.00920	-0.000165	-0.0127	-0.00148
	(0.00631)	(0.00575)	(0.00628)	(0.0388)	(0.00876)	(0.00664)
nonEU x y2021m7	-0.000208	-0.00366	0.00351	0.0130	0.00658	0.00620
	(0.00645)	(0.00584)	(0.00630)	(0.0397)	(0.00890)	(0.00662)
nonEU x y2021m8	0.0109*	0.0106*	0.0147**	-0.0106	0.0155*	0.0213***
	(0.00653)	(0.00599)	(0.00645)	(0.0422)	(0.00920)	(0.00677)
nonEU x y2021m9	0.00375	-0.00222	0.00208	0.0477	-0.00295	0.00395
	(0.00638)	(0.00585)	(0.00638)	(0.0412)	(0.00903)	(0.00664)
nonEU x y2021m10	-0.0111*	-0.0141**	-0.0114*	0.0267	-0.0181**	-0.00255
	(0.00640)	(0.00586)	(0.00631)	(0.0429)	(0.00894)	(0.00657)
nonEU x y2021m11	-0.00758	-0.00504	-0.00248	0.0393	0.000750	-0.00187
	(0.00634)	(0.00588)	(0.00636)	(0.0401)	(0.00887)	(0.00667)
nonEU x y2021m12	0.00462	-0.00135	0.00773	0.0269	0.00336	0.00862
	(0.00651)	(0.00598)	(0.00651)	(0.0487)	(0.00942)	(0.00682)
Constant	0.760***	0.746***	0.771***	0.791***	0.758***	0.768***
	(0.000825)	(0.000942)	(0.000830)	(0.0103)	(0.00108)	(0.000871)

Observations	786,680	572,605	792,940	10,087	410,342	787,630
R-squared	0.687	0.622	0.661	0.635	0.667	0.653
Firm FE	YES	YES	YES	YES	YES	YES
Product-time FE	YES	YES	YES	YES	YES	YES

Note: Robust standard errors in parentheses *** p<0.01, ** p<0.05, * p<0.1. Only continuous importers in the 12 months immediately before the crisis are retained. *Non-EU dummy$_{ip}$* equals 1 if the firm's main sourcing country for its main HS6 product in 2019 was outside the EU. The reference point is December 2019. The United Kingdom is dropped from the database to avoid Brexit to drive the results.