Export Performance during Financial Crises: Evidence from Greek Firm Level Survey-data

Vangelis Pastelakos[♠], **Yannis Bilias**[♣], **and Panos Hatzipanayotou**[♦]

March 2019

Abstract

A growing literature on competitiveness and international trade has highlighted the importance of firm-level factors for exporting. We overcome the data unavailability by collecting data on Greek firms' international operations via a survey. Our findings indicate that export changes are mostly related to foreign demand while constraints in financing are related to firms' extroversion levels. Large and young firms were more resilient to the global trade decline. Policy implications and promising directions for future research are derived by combining our results on trade discouraging factors during the financial crisis and export enhancement factors in times of economic turbulence.

Keywords: Firm Survey, Exporting Activity, International Trade, Financial Crisis, Greek Exporting Firms

J.E.L classification: F10, F14, G01

[♠] Department of International and European Economic Studies, Athens University of Economics and Business; 76, Patission str., Athens 104 34, Greece. **E-mail:** pastelakos@aueb.gr

[♣]**Corresponding Author:** Department of International and European Economic Studies, Athens University of Economics and Business; 76, Patission str., Athens 104 34, Greece. **E-mail:** bilias@aueb.gr

[♦] Department of International and European Economic Studies, Athens University of Economics and Business, and CES-ifo (Center for Economic Studies and the Ifo Institute of Economic Research). **E-mail:** hatzip@aueb.gr

Acknowledgement: Part of the research project was conducted at the Lab of International Economic Relations, AUEB.

Export Performance during Financial Crises: Evidence from Greek Firm Level Survey-data

1. Introduction

The 2008 financial crisis and the subsequent debt crisis in Europe have exposed the structural weaknesses and competitiveness issues of many economies of the euro area. Greek economy became the centre of interest. Long lasting fiscal deficits and an accumulation of massive public debt have forced Greece to receive international financial aid in return of harsh austerity measures. The Greek economic problem have become an international issue, not only because of the involvement foreign creditors but also because of its implications for the euro zone. Greece have received too much criticism for low export performance, that, among other reasons, is behind high current account deficits. Hence, the design of competitiveness-enhancing policies is vital for Greece to achieve a sustainable economic growth and the economic stability in the euro area.

The policy debate in Europe often focuses on macroeconomic imbalances, leaving aside many factors determined by firm-level conditions. However, a strand of the literature suggests a broader definition of competitiveness including a number of firm-level indicators and has shown that aggregating firm-level information is important for examining competitiveness at the country level (e.g., Altomonte et al, 2011). It is important for policy making to explore firm characteristics through firm level data, which provide important information for the development and implementation of competitiveness policies complementarily to traditional macroeconomic analysis. Nevertheless, firm-level analysis is hampered by data availability issues and the non systematic analysis of the changing economic micro-environment. For these reasons, firm level analysis has been rarely used in implementing strategies and policies aiming at promoting competitiveness. Especially in Greece, where the availability of data is rather limited, too little work has been done towards this direction.

To this end, we conduct a survey to collect micro level data from Greek exporters in order to obtain information on their firms' export performance during the financial crisis and amid the Greek debt crisis. Considering the highly adverse global economic environment and a domestic economy that was getting far deeper in recession, one would expect that most of the firms would report decreased exports

during the financial crisis. However, this is not the case since the majority of firms responded that their exports remained constant or increased. While most empirical studies focus on a specific aspect of the financial crisis (e.g. financial frictions effects), this paper controls for several trade factors that cover various aspects. The selection for inclusion of each factor in the analysis is not arbitrary nor it is merely based on prior literature findings but it is also justified by the survey results. This means that according to the survey respondents all factors under examination had an actual impact on their exporting activity. Moreover, the survey gave the opportunity to exporters to reveal factors that had a strong impact on their activity and have not been considered by the literature (e.g. taxation).

Our findings on Greek exporting firms are in accordance with the literature that suggests that export changes during the financial crisis are mostly determined by the falling foreign demand. Concerning firm attributes, younger and larger firms are more likely to have exhibited a good performance in terms of export volumes during the financial crisis. Furthermore, we assess the impact of reduced access to finance during the global crisis on firms' extroversion level at the time of the survey (mid 2011). Our research results indicate that financial factors have played a role in determining firms' export share in total sales and their number of export destinations. The size of a firm in terms of employees and whether it imports are also related to firm's level of extroversion. The analysis is not restricted to trade discouraging factors but also sheds some light into factors that according to exporters themselves, would help firms to increase their exports (e.g. use of new technologies in sales, innovative products).

Our contribution to the literature is threefold. First, the survey to Greek exporters provides the necessary micro level data to examine literature's arguments for trade discouraging factors over the financial crisis, it reveals new explanations for the trade drop and suggests factors that would enhance exports. Second, the analysis identifies out of a wide range of factors those that most crucially influenced exports under adverse economic conditions, highlighting in this way the areas that are worth attracting the academic and policy making interest in Greece. Third, it provides information on the relationship between access to finance and firms' extroversion.

Using micro level data from seven European countries (Greece not included), Navaretti et al.(2011) concluded that firms' size and the type of export destination shave affected export volumes during the financial crisis. Another firm characteristic that may be related to export performance is whether a firm is an importer. Wagner (2012)

presents findings of several empirical studies indicating that firms that both import and export are more productive than others. There are also evidence of a positive link between two way trade and firm survival (e.g., Wagner, 2013). The market longevity of a firm may be related to its exporting activity and ability to alleviate difficulties. In some cases, younger firms are more likely to become exporters because exporters may be plants that started operations with exports in mind (e.g., Alvarez and Lopez, 2005).

The financial crisis affected firms that they were engaged in foreign trade through various channels. A large part of the relevant literature focuses on the role of falling demand in trade collapse during the crisis. Based on micro level data, the findings of Behrens et al. (2013) for Belgium, Bricongne et al. (2012) for France and Chakraborty (2018) for India indicate that of demand played an important role in trade drop. Several factors of trade decline have been analyzed by different authors in Baldwin (2009) including protectionism (e.g., Freund, 2009; Altomonte and Ottaviano, 2009), broadly defined trade costs (e.g., Jacks et al., 2009) and exchange rates (e.g., Wakasugi, 2009).

The financial crisis highlighted the necessity for a better understanding of the relationship between financial factors and trade. Manova (2010) argues that credit constraints matter for international trade flows because firms often incur upfront costs which they recover after making sales (e.g., R&D, intermediate input purchases, etc). Minetti and Zhu (2011) found that the probability of exporting is lower for credit rationed firms and that rationing reduces export sales. Focusing on China, Manova et al. (2015) explained that limited credit availability is an obstacle to firms' international trade flows. Similarly, Muûls (2008) for Belgium, Greenaway et al. (2007) for the UK and Amiti and Weinstein (2011) for Japan provided evidence of a strong relationship between financial factors and firms exporting activity. Chor and Manova (2012) findings indicate that countries with tighter credit conditions exported less to the US during the financial crisis. On the contrary, a body of the relevant literature find no effect of financial factors on exports during the crisis (e.g. Levchenko et al., 2010). Empirical evidence suggest that existing exporters are not affected by financial constraints. For example, Berman and Hericourt (2010) find that lower financial constraints positively affect export market participation but they do not affect the quantity exported or the probability of remaining an exporter. Similarly, Bellone et al.(2010) found that better access to financial markets increases the probability of

French firms' internalization but they found no evidence of a positive relationship between financial health and export sales.

The paper proceeds as follows. The following section describes the data collection methodology. Section 3 assesses firms' exporting performance during the crisis and the role of various trade factors. Sections 4 assesses the impact of financial constraints during the crisis on firms' exporting behavior and presents survey results on factors that would enhance Greek exports. The last section provides concluding remarks and suggestions for further research.

2. Questionnaire and Data collection

The main source of data is a telephone survey on Greek exporters carried out during the second and third quarters of 2011. The survey sample was randomly selected out of Greek exporting firms.[1] The database includes information, updated until 2008, on some firms' characteristics which were matched with exporters' responses to the survey to form the dataset used in our analysis. These are the year of establishment, number of employees and whether or not a firm is an importer. By saying imports or employees in 2008, we refer to the corresponding database information. Our analysis focuses on firms that primarily export manufactured goods. The sampled exporters are 348 in total, 85.3% of these firms export final goods and the rest of them export intermediate goods.

The primary aim of the survey questionnaire is to assess Greek firms' exporting activity during the financial crisis. The posed questions reflect i) explanatory factors suggested by the relevant literature for the trade decline during the crisis (e.g., foreign demand, financial constraints) and ii) other such factors that have been suggested by the exporters in a pre-test of the survey (e.g., taxation, fiscal problems).[2] Specifically, exporters were able to define the extent to which each proposed factor had an actual

[1]The database is the ICAP directory provided by the Hellenic Foreign Trade Board (HEPO) and consists of 10,418 individual exporting firms. A survey sample of 430 firms was randomly selected out of this population but for homogeneity issues the analysis considers only firms that primarily export manufactured goods. These exporters are those who declared manufacturing as a primary export activity in the question: "What is the primary and secondary (if exists) export activity of your firm?" The available answers were: 1. Raw material, 2. Manufacturing (goods for final consumption), 3. Manufacturing (Intermediate goods), 4. Services, 5. D.K./D.A.

[2]The survey questionnaire was designed by considering a pilot survey and a feedback from a small number of exporters. Specifically, a draft questionnaire was distributed to a small number of exporters who suggested improvements for its structure, content and provided guides for the question forms so that the questionnaire will be clear to the interviewees. Afterwards, the questionnaire was completed by 63 exporters in order to pre test the survey instrument and to further improve the questionnaire design.

impact on their export activity. Furthermore, they provided information about specific characteristics of their exporting firms which is presented in Table A.1. To achieve the highest possible validity in the responses, we called for the interviews the persons in charge of the firms' exports. Since the survey was directed to exporting firms, depending on a firm's size, the person in charge of exports was either the owner of the firm or a high ranking staff member.

Greek firms' exporting performance during the crisis is assessed according to exporters' responses to the survey. Specifically, Greek exporting firms' were asked the following close ended question: "During the Financial Crisis, your firm's export volumes have:1. Increased, 2. Remained Constant, 3. Decreased". This refers to changes in exports during the financial years of 2008 to 2010. Considering the deep recession, one would expect that most of firms would report decreased exports. However, this is not the case since exports have been decreased for the 37.6% of the sample while the majority of firms responded that their exports remained constant or increased during the crisis (41.1% and 21.3% respectively); see Table A.1. At an aggregate level, Greece's exports were declining between 2008 and 2010, then they started to considerably increase although the domestic economy was getting far deeper in recession.Exporters were also asked about the magnitude of their export volumes increase or decrease. According to the reported data in Table A.2, among those who reported "increased exports", 62.7% stated that they recorded an up to 20% increase in exports. On the other hand, the reduction in export volumes is significantly larger for most of the firms. The 77.3% of firms with reduced exports during the crisis, stated that their exports' decrease was up to 60%. These findings might explain the decline of aggregate exports during the financial crisis although most of the examined firms reported increased or constant export volume changes during this period of time.

A picture of the relationship between firms' export performance and their characteristics is given by crossing responses for export volume changes with responses for firms' attributes. As firms' number of employees increase, the percentage of firms that had increased exports during the crisis also increases, and vice versa (for example, exports increased for 17.1% of firms with less than 9 employees and 33.3% of firms with more than 50 employees). This indicates that on average, larger firms have performed better than their smaller counterparts. Furthermore, the share of exporters that reported increase in their export volumes, is higher among firms that were not involved in importing business at the beginning of the crisis in 2008 (18.4% for

importers and 25.5% for non importers). There are no particular differences in export performance between firms that primarily export goods for final consumption and those exporting intermediate goods. Cross-tab results export volume changes with primary exporting activity, age, size, import status, number of served destinations and share of exports in total sales are presented in Table A.3 in the appendix.

Survey respondents were asked to rank, on a scale range from one to five, the negative impact of various broadly defined factors on firms' exporting activity during the crisis. An "one" means that a firm has been absolutely not affected by the examined factor while a "five" indicates that the firm was absolutely affected. The factors reflect explanations for the trade drop during the crisis that are suggested by the literature and the pilot survey's findings. A summary of the responses on factor rankings is presented in Table 1.

INSERT Table 1.

To account for financial problems, the availability of bank financing of trade credit and operational costs as well as the finding of alternatives to the banking sector sources of financing (e.g. foreign direct investments, stock market or a parent company) are assessed for their effect on firms' exports. Hence, access difficulties to all possible sources of external financing are considered in the analysis. These factors were ranked with "five" by about the 25% of the sample. A relative large share of firms have been negatively affected at high levels, by reduced liquidity, taxation and oil prices. In their majority, firms have been also negatively affected, at different levels, by falling foreign demand and Euro exchange rate during the crisis.

In the pilot survey, Greek exporters revealed factors that discouraged their exporting activity during the crisis and yet they received too little attention by the related literature. These factors are oil prices, raw material prices, fiscal problems and taxation. All these factors are included in the questionnaire. Exporters were also asked to state any other export discouraging factor that it is not included in the questionnaire. Almost 20% of the surveyed exporters reported such a factor. Their responses include several factors that have not been examined by the literature and are collected in Table 2.

INSERT Table 2.

3.Trade Determinants for Greek exporting firms

Factor rankings are assessed for their influence on changes in the volume of firms' exports in a probit regression analysis with results presented in Table 3. Response categories "Increased" and "Remained Constant" of the export volume question are merged to form a variable (EXBIN) that takes on the values 1 (former categories 1 and 2) and 0 (former category 3). The dependant variable is a dummy variable equal to one if firms experienced increased or constant export volumes during the crisis and zero otherwise. We choose to merge the first with the second category (i.e. "increase" and "remain constant") for explanatory reasons. In general, a firm that managed to increase or keep constant its exports in the adverse economic environment of the crisis, has demonstrated a relative good exporting performance. To minimize subjectivity in survey responses, factor rankings were merged from five to three categories, the derived categories are: absolutely not affected (1), small to moderate effect (2 and 3) and large to absolute effect (4 and 5). Any "do not know/ do not answer" response to the questionnaire has been excluded from the econometric analysis. The variables used in the analysis are presented in Table A.4 in the Appendix; Table A.5 gives some descriptive statistics on the these variables.

INSERT Table 3.

Both firms' market longevity (AGE) and size (STAFF) are statistically significant predictors of exporting performance (EXBIN) during the crisis. Larger exporting enterprises are more likely to have performed better than their smaller counterparts over the crisis. Actually, for every additional employee, the log odds of good export performance (versus decreased export volumes) increases. This means that larger firms are more likely to have their exports increased or remained constant during the crisis period. Younger firms are more likely to have exhibited increased or constant exports during the crisis rather than older firms. This may imply that young exporters may be well prepared or more flexible against the crisis having considered its negative effects before they got involved in the exporting business. Moreover, young firms may be more innovative, more productive and more dynamic than older firms.

In accordance to the literature that identifies reduced demand as an important determinant of international trade over the crisis, we find a statistically significant relationship between falling foreign demand (FD') and export performance. Having

absolutely not affected by falling foreign demand (i.e., rank 1), versus being affected at high levels (i.e., rank 3), increases the log odds of good export performance during the crisis. On the other hand, our results indicate that financial factors are not related to firms' exporting performance. Specifically, bank financing of trade credit (TC'); bank financing of operational costs (OC') and finding alternative to the banking sector sources of finance (ASF') are not statistically significant predictors of firms' export volume changes during the financial crisis. Despite that according to the survey results all the examined factors had an actual impact on firms exporting activity during the financial crisis, once we control for AGE, STAFF, and FD', we find no statistically significant relationship between export volume changes during this period of time and the rest of the examined factors (i.e., TAX', EX', RM', OP', PROT', FP').

4. Exporting Behavior

4.1 Financial Factors and Extroversion

In order to further assess the impact of adverse financial conditions in Greek exports, we examine the relationship between financial factors effect in exporting activity during the crisis with firms' export share of total sales and number of export destinations. Exporters provided information on their export share of total sales by selecting out of certain choices, a percentage range describing their ratio of domestic market sales in total sales. The survey responses are presented in Table 4. A variable (EXPSH) consisting of three categories, each one referring to a different percentage range level of home sales, is specified accordingly. Changes from category one towards category three indicate changes from high export intensity to low export intensity. Hence, category one refers to relative large export share, category two to medium export share and category three to small export share. Exporters were also asked in the survey about their number of export destinations. The survey responses are presented in Table 4. A variable (EXPDES) consisting of four categories is formed to describe different levels of export destinations. Changes from category one towards category four, indicate changes from large export participation to small export participation.

INSERT Table 4.

Table 5 presents ordered probit regressions that examine the determinants of the variables EXPSH and EXPDES. Using a broader definition for financial constraints, a

dummy variable (DLIQ) indicating if a firm's exporting activity was not affected by liquidity problems during the crisis is also included in the analysis. A variable (IMP) indicating whether or not a firm was importing in 2008 is also considered in the analysis to account for differences in extroversion levels between exporters and exporters that are also importers.

INSERT Table 5.

Firms that were relatively large at the out breaking of the crisis are less likely to export in few export destinations and a small fraction of their sales. On the other hand, exporters who were also importers are more likely to fall in the last categories of EXPSH and EXPDES. The variables for bank financing effect on exporting activity during the crisis (TC' and OC') are not statistically significant predictors of firms' number of export destinations. The first category of ASF' and DLIQ are statistical significant but only at 10% level. This indicates that firms which had not problems in finding external finance from other than banking sources over the crisis are less likely to export in few markets. Similarly, exporters who had not been affected by liquidity problems during the crisis are less likely to export in few market destinations.

A category of each of the bank financing variables is statistically significant in the EXPSH regressions. The coefficients' sign may suggest that exporters who faced problems in accessing bank finance during the crisis were more levered and that such firms tend to sell more abroad. In regard to this element, Minetti and Zhu (2011) found that the probability of exporting is higher for firms with lower cash flow and higher leverage ratio. They suggested that the cash flow effect might be caused by size effect and they attributed the effect of leverage to the use of exports by highly indebted firms to shift the risk associated with their high leverage to creditors.

4.2. Factors Enhancing Exports

From a policy making point of view, it is important to have information not only on the trade discouraging factors but also on the factors that would enhance exports. The survey shed some light on this matter by asking exporters to define the most important factor that would enhance their firms' exports. A set of factors, that derived

from the pilot survey outcome, were available for selection. The respondents had also the option to name any other factors.[3]

Factors related to sales as well as research and development are important toa relative large number of exporters. Actions of promotion and advertising, price discounts, payment allowances and the use of new technologies in sales were cumulatively selected by 34.8% of the sample while the development of innovative goods and services and studies/market research are important factors to about 15%. Employment issues are important to only a small share of the exporters. Wages reduction, staff reduction and adoption of elastic forms of employment are cumulatively selected as export enhancement factors by 8% of the sample. Availability of trade credit was selected by the 10.9% of the sample, a percentage share that is not as high as someone would expect considering the very adverse financing conditions at the time of the survey. Almost two out of ten firms identified a factor that was not available for selection in the questionnaire. Among the most frequently selected factors are reduced taxation, increased state subsidies, increased liquidity, measures against bureaucracy and more competitive euro exchange rate.

5. Concluding remarks

According to the surveyed exporters themselves, all of the examined factors had an actual effect on their exporting activity. Therefore, all factors are worth being considered in analyzing the crisis effects on exports or in designing a trade policy framework for times of economic uncertainty. Actually, the financial crisis and the subsequent financial downturn of Greek economy have created an adverse economic environment which is still present in the country. Hence, the examined trade factors are possibly still hampering Greek firms' exporting activity.

Among the various factors that have negatively affected exporting activity during the crisis, falling foreign demand is the only statistically significant determinant of firms' export volume changes during this period of time. Hence, this factor should draw extra attention when researchers or policy makers assess Greek firms' exporting activity under financial distress. Any actions to support exporting firms should consider firms' characteristics. Our findings indicate that larger and younger firms are more likely to have demonstrated a good export performance during the crisis. Hence, this

[3] Export Enhancement Factors, Table A.6

type of firms are more resilient to financial shocks and have more chances to survive in times of economic uncertainty.

Our empirical results suggest that financial factors' effect on exporting activity during the crisis had a small impact on firms' extroversion levels. Bank financing difficulties are related to firms' exports to total sales ratio, but in a way which implies that exporters who faced restrictions in bank borrowing, perhaps due to their high leverage, have also the tendency to be more intense in exports. Nevertheless, exporters who had no problem with finding alternative to the banking sector sources of financing and those who have not been affected by liquidity problems during the crisis are more likely to export to more markets. Hence, supporting exporters to overcome lack of liquidity and to access sources of finance outside the banking sector, would increase their participation in global markets. Concerning firms' attributes, enterprises which in the beginning of the crisis were larger and were not importers are less likely to export in few markets or a small share of their total sales. To this end, firms of these characteristics are in less need of supportive measures to achieve high levels of extroversion after a period of economic distress.

In addition to trade discouraging factors, we present survey evidence on factors that would increase exports, providing in this way a double direction guidance for policy formulation. Exporters' perceptions indicate that an export strategy for Greece should be sales oriented and concentrate on promoting innovation among firms, rather than reducing employee related expenses. Trade associations and research centers may have a role to play in satisfying exporters' needs of innovative goods and procedures by conducting the relevant research.

A drawback of this study is that it uses data from a survey that conducted only once and hence the provided results are mainly descriptive. Collecting data on exporters activity in a regular basis will allow the monitoring of export dynamics and to implement a wider range of data analysis methods. A future research on Greek exports could investigate deeper the factors that have a relative stronger impact on exporting activity during the crisis. Another topic for future research may also be the examination of the trade discouraging factors that mentioned by the exporters in the survey and were not considered in this study's analysis, such as the negative country's image.

References

López, R., and Alvarez, R. (2005). Exporting and Performance: Evidence From Chilean Plants. *Canadian Journal of Economics*. 38. 1384-1400.doi10.1111/j.0008-4085.2005.00329.x.

Altomonte C., Navaretti, G.B., Di Mauro, F. and Ottaviano, G.(2011). *Assessing Competitiveness: How firms level data can help*, Bruegel.

Altomonte, C. and Ottaviano, G.I.P.(2009). Resilient to the crisis? Global supply chains and trade flows. In: Baldwin, R. (ed.),*The great trade collapse: Causes, Consequences and Prospects*. VoxEU.org, Ch. 11.

Amiti, M., and Weinstein, D. (2011). Exports and Financial Shocks. *Quarterly Journal of Economics*, 126 (4), 1841-1877. doi: 10.1093/qjw/qjr033

Baldwin, R., Ed.(2009). *The great trade collapse: Causes, Consequences and Prospects*. VoxEU.org,

Behrens, K., Corcos, G. and Mion, G. (2013). "Trade Crisis? What Trade Crisis?", The Review of Economics and Statistics, 95(2), 702–209.doi 10.1162/REST_a_00287

Bellone, F., Musso, P., Nesta, L., and Schiavo, S. (2010). Financial Constraints and Firms Export Behavior, *The World Economy*, 33, (3), 347-373. doi: 10.1111/j.1467-9701.2010.01259.x

Berman, N., and Hericourt, J. (2010). Financial Factors and the margins of trade: evidence from cross-country firm-level data. Journal *of Development Economics* 93, 206-217. doi: 10.1016/j.jdeveco.2009.11.006

Bricongne, Jean-Ch., and Fontagne, L., Gaulier, G., Taglioni, D., and Vicard, V. (2009). Firms and the Global Crisis: French Exports in the Turmoil. *Journal of International Economics*. doi 10.1016/j.jinteco.2011.07.002

Chakraborty, P. (2018).The great trade collapse and Indian firms. *The World Economy*, 41,100–125. doi:10.1111/twec.12517

Chor, D., and Manova, K. (2010). Off the Cliff and Back? Credit Conditions and International Trade during the Financial Crisis, *Journal of International Economics*, 87, (1), 117-133. doi:10.1016/j.jinteco.2011.04.001

Freund, C.(2009)., The trade response to Global Downturns, In: Baldwin, R. (ed.),*The great trade collapse: Causes, Consequences and Prospects*. VoxEU.org, Ch.7.

Greenaway, D., Guariglia, A., and Kneller, R. (2007). Financial factors and exporting decisions. *Journal of International Economics*, 73(2), 377–395.doi: 10.1016/j.jinteco.2007.04.002

Jacks, D.S., Meissner, Ch.M., and Novy, D.(2009). The role of trade costs in the great trade collapse. In: Baldwin, R. (ed.),*The great trade collapse: Causes, Consequences and Prospects*. VoxEU.org, Ch. 18.

Levchenko A.A., Logan T. L., and Tesar, L.L. (2010).The Collapse of International Trade during the 2008–09 Crisis: In Search of the Smoking Gun,*IMF Economic Review,* Palgrave Macmillan, 58(2), 214-253.

Manova, K. (2010). Credit Constraints and the Adjustment to Trade Reform, in Porto, G. and Hoekman, B. (eds.), *Trade Adjustment Costs in Developing Countries: Impacts, Determinants and Policy Responses*, The World Bank and CEPR.

Manova, K, Wei, S.J., and Zhang, Z. (2015). Firms Exports and Multinational Activity under Credit Constraints, Review f Economics and Statistics, 97 (3), 574 – 588. Doi:10.2139/ssrn.1534905

Minetti, R. and Chun Zhu S. (2011). *Credit constraints and firm export: Microeconomic evidence from Italy*. Journal of International Economics 83, 109-125. doi:10.1016/j.jinteco.2010.12.004

Muûls, M. (2008). Exporters and credit constraints. A firm-level approach, No 139, Working Paper Research, National Bank of Belgium.

Navaretti, G.B., Bugamelli, M., Schivardi, F., Altomonte, C.,Horgos, D. and Maggioni., D., 2011. *The global operations of European firms, the second EFIGE policy report. Bruegel Blueprint 12.*

Wagner, J. (2013). Exports, imports and firm survival: First evidence for manufacturing enterprises in Germany. *Review of World Economics / Weltwirtschaftliches Archiv*, 149(1), 113-130. doi 10.1007/s10290-012-0141-2

Wagner, J. (2012). International trade and firm performance: A survey of empirical studies since 2006. *Review of World Economics / Weltwirtschaftliches Archiv*, 148(2), 235-267. doi 10.1007/s10290-011-0116-8

Wakasugi, R., (2009). Why was Japan's trade hit so much harder? In: Baldwin, R. (ed.),*The great trade collapse: Causes, Consequences and Prospects*. VoxEU.org, Ch.23.

TABLES OF THE MAIN TEXT

Table 1. Factor rankings

	Using a scale range from 1 to 5, where 1 means "Absolutely not affected" and 5 means "Absolutely affected"; evaluate the extent to which your firm's export activity has been negatively affected by the following factors during the Financial Crisis (N=348)										
	TC	OC	ASF	TAX	LIQ	EX	RM	OP	PROT	FP	FD
1	30.5%	29.6%	34.8%	15.8%	16.7%	33.0%	33.0%	12.1%	51.4%	39.1%	27.3%
2	13.5%	13.8%	12.6%	13.5%	10.6%	19.0%	19.0%	15.5%	18.7%	18.4%	23.9%
3	14.1%	16.7%	14.1%	15.5%	14.1%	21.6%	21.6%	15.5%	13.2%	15.5%	25.0%
4	16.4%	16.1%	14.7%	18.1%	21.0%	11.5%	11.5%	22.4%	8.0%	12.9%	12.9%
5	25.0%	23.6%	23.0%	36.2%	37.4%	13.2%	13.2%	34.2%	7.5%	12.9%	8.9%
D.K./D.A	0.6%	0.3%	0.9%	0.9%	0.3%	1.7%	1.7%	0.3%	1.1%	1.1%	2.0%
TC= Bank Financing of trade credit, OC= Bank financing of operational costs, ASF= Finding alternative to banking sector sources of financing, TAX=Taxation, LIQ=Liquidity, EX= Euro exchange rate, RM= Raw material prices, OP-Oil prices, PROT= Protection policies in foreign countries, FP= Fiscal Problems, FD= Foreign demand											

Table 2. Additional trade discouraging factors

Has your firm's exporting activity been negatively affected by any other factor during the Financial Crisis? (N=348)	
Yes	19.3%
No	80.7%
If Yes, what is that factor?	
Bureaucracy	2.3%
Insufficient state support	2.0%
Low competitiveness	4.0%
Negative country image	1.7%
Socioeconomic turbulence in Middle East	0.9%
Strikes	1.1%
Other	7.2%

Table 3. Exporting performance during the Financial Crisis – probit estimates

	EXBIN					
	1	**2**	**3**	**4**	**5**	**6**
AGE	-0.020** (0.008)	-0.034 (0.026)	-0.026*** (0.008)	-0.030*** (0.008)	-0.028*** (0.008)	-0.028*** (0.009)
AGESQR		-0.000 (0.001)				
STAFF	0.004*** (0.001	0.004*** (0.001)	0.004** (0.001)	0.004*** (0.001)	0.003** (0.001)	0.004*** (0.002)
TAX'1					0.310 (0.235)	
TAX'2					0.198 (0.171)	
EX'1					0.185 (0.202)	
EX'2					0.181 (0.185)	
FD'1			1.303*** (0.217)	1.263*** (0.221)	1.207*** (0.227)	1.369*** (0.242)
FD'2			0.538*** (0.179)	0.497*** (0.182)	0.487*** (0.183)	0.548*** (0.189)
TC'1				0.440 (0.296)		
TC'2				0.161 (0.230)		
OC'1				-0.380 (0.341)		
OC'2				-0.305 (0.230)		
ASF'1				0.110 (0.254)		
ASF'2				0.049		

				(0.207)		
RM'1						0.335 (0.339)
RM'2						-0.304 (0.203)
OP'1						-0.203 (0.336)
OP'2						0.162 (0.204)
PROT'1						-0.337 (0.257)
PROT'2						-0.134 (0.247)
FP'1						0.277 (0.234)
FP'2						0.126 (0.210)
Obs.	348	348	341	339	334	335
Pseudo R^2	0.029	0.030	0.120	0.124	0.127	0.147
Overall Stat. Significance	***	***	***	***	***	***
Intercepts are not reported. *, ** and *** denote 10%, 5% and 1% level of significance.						

Table 4. Survey results on export share of total sales and export destinations

What percentage share of your firm's total sales is in domestic market? - EXPSH			
1. (up to 40%)	2. (41%-80%)	3. (over 80%)	D.K./D.A.
25.0%	30.2%	43.7%	1.1%
In how many countries does your firm export to? - EXPDES			
1.(over 10)	2.(6-10)	3.(3-5)	4.(up to 2)
10.6%	22.4%	39.1%	27.9%

Table 5. Exporting behavior – ordered probit estimates

	EXPDES			EXPSH		
	1	**2**	**3**	**1**	**2**	**3**
AGE	0.000 (0.007)	-0.000 (0.007)	-0.000 (0.007)	0.004 (0.007)	0.004 (0.007)	0.006 (0.007)
STAFF	-0.003*** (0.001)	-0.003*** (0.001)	-0.003*** (0.001)	-0.002*** (0.001)	-0.002*** (0.001)	-0.002*** (0.001)
IMP	0.407*** (0.120)	0.407*** (0.120)	0.354*** (0.119)	0.610*** (0.128)	0.618*** (0.128)	0.604*** (0.127)
TC'1	-0.203 (0.177)			0.323* (0.187)		
TC'2	-0.003 (0.157)			0.232 (0.166)		
OC'1		-0.275 (0.203)			0.289 (0.212)	
OC'2		-0.029 (0.157)			0.281* (0.165)	
ASF'1	-0.296* (0.174)	-0.212 (0.195)		-0.162 (0.185)	-0.173 (0.205)	
ASF'2	-0.071 (0.160)	-0.051 (0.164)		-0.215 (0.168)	-0.235 (0.172)	
DLIQ			-0.276* (0.159)			-0.024 (0.172)
Obs.	344	345	347	341	342	344
Pseudo R^2	0.0436	0.0428	0.0321	0.0458	0.0462	0.0462
Overall Stat. Significance	***	***	***	***	***	***

Intercepts are not reported. *, ** and *** denote 10%, 5% and 1% level of significance.

APPENDIX

Table A.1 Exporters' characteristics

Question/Answer	Percent [N=348]
What is the primary export activity of your firm?	
Manufacturing - goods for final consumption	85.3
Manufacturing - intermediate goods	14.7
During the Financial Crisis, your firm's export volumes have:	
Increased	21.3
Remained Constant	41.1
Decreased	37.6
D.K./D.A.	0.0
Imports in 2008	
Yes	59.5
No	40.5
Year of establishment	
Before 1980	7.5
1980-1989	12.6
1990-1999	39.4
After 2000	40.5
Employees in 2008	
0-9	40.2
10-49	44.3
50-249	12.1
Over 250	3.4
What is your firm's annual turnover?	
Up to 2m. €	48.0
Up to 10m. €	30.5
Up to 50m. €	8.9
Over 50m. €	4
D.K./D.A.	8.6
In how many countries does your firm export to?	
1 – 2	27.9
3 – 5	39.1
6 – 10	22.4
11 – 20	5.7
>21	4.9
What percentage share of your firm's total sales is in domestic market?	
No sales in domestic market (0%)	2.6
1% - 20%	16.4
21% - 40%	6.0
41%– 60%	10.6
61% - 80%	19.5
81%–99%	43.7
D.K./D.A.	1.1
Source for Imports in 2008, employees in 2008 and Year of establishment is ICAP database	

Table A.2 Exports' Variation Magnitude

To what extent have your firm's exports Increased?		To what extent have your firm's exports decreased?	
1%-20%	62.7%	1%-20%	28.8%
21%-40%	12%	21%-40%	26.5%
41%-60%	8%	41%-60%	22%
61%-80%	6.7%	61%-80%	10.6%
81%-100%	8%	81%-100%	9.8%
D.K./D.A.	2.7%	D.K./D.A.	2.3%

Table A.3 Firms' Characteristics and Export Performance

During the Financial Crisis, your firm's export volumes have:		Increased	Remained Constant	Decreased
		21.3%	41.1%	37.6%
What is the primary export activity of your firm?	Goods for final consumption	21.2%	41.1%	37.7%
	Intermediate goods	21.6%	41.2%	37.3%
Year of establishment	Before 1980	23.1%	46.2%	30.8%
	1980-1989	15.9%	29.5%	54.5%
	1990-1999	20.4%	40.1%	39.4%
	After 2000	23.4%	44.7%	31.9%
Employees in 2008	Up to 9	17.1%	40.7%	42.1%
	10-49	20.8%	39.6%	39.6%
	50-249	33.3%	47.6%	19.0%
	Over 250	33.3%	41.7%	25.0%
Imports in 2008	Yes	18.4%	41.5%	40.1%
	No	25.5%	40.4%	34.0%
In how many countries does your firm export to?	1 - 2	14,4%	45,4%	40,2%
	3 - 5	16,9%	42,6%	40,4%
	6 - 10	26,9%	38,5%	34,6%
	11 - 20	30,0%	40,0%	30,0%
	>21	58,8%	17,6%	23,5%
What percentage share of your firm's total sales is in domestic market?	no sales in domestic market (0%)	22,2%	55,6%	22,2%
	1% - 20%	31,6%	36,8%	31,6%
	21% - 40%	23,8%	23,8%	52,4%
	41% – 60%	37,8%	35,1%	27,0%
	61% - 80%	22,1%	38,2%	39,7%
	81% – 99%	11,8%	47,4%	40,8%
	D.K./D.A.	50,0%	25,0%	25,0%

Table A.4 List of Variables

EXBIN	Dummy variable indicating if a firm's export volumes had not decreased during the Financial Crisis
EXPSH	Categorical Variable, different levels of exports in total sales. Category 1 is LARGE EXPORT SHARE (up to 40% domestic sales) Category 2 is MEDIUM EXPORT SHARE (41% to 80% domestic sales), Category 3 is SMALL EXPORT SHARE (81% to 99% domestic sales)
EXPDES	Categorical Variable, different levels of the number of export destination markets. Category 1VERY LARGE EXPORT PARTICIPATION (over 10 countries), Category 2 is LARGE EXPORT PARTICIPATION (6 to 10 countries), Category 3 is MEDIUM EXPORT PARTICIPATION (3 to 5 countries), Category 4 SMALL EXPORT PARTICIPATION(up to 2 countries)
STAFF	Firm's employees in 2008
AGE	Firm's age
IMP	Dummy variable indicating if a firm imported in 2008
DLIQ	Dummy variable indicating if a firm's export activity has not been affected by liquidity problems during the Financial Crisis
	Categorical variables, five categories, where 1 means "Absolutely not affected" and 5 means "Absolutely affected", measuring different levels of the negative impact of:
TC	"Trade Credit financing" from the banking sector to firms exporting activity during the Financial Crisis
TC'	As above recoded in three categories, 1 is 1, 2 is 2 and 3, 3 is 4 and 5
OC	"Operational Costs financing" from the banking sector to firms exporting activity during the Financial Crisis
OC'	As above recoded in three categories, 1 is 1, 2 is 2 and 3, 3 is 4 and 5
ASF	"Finding Alternative to Banking sector sources of financing" to firms exporting activity during the Financial Crisis
ASF'	As above recoded in three categories, 1 is 1, 2 is 2 and 3, 3 is 4 and 5
TAX	"Taxation" to firms exporting activity during the Financial Crisis
EX	"Euro Exchange Rate" to firms exporting activity during the Financial Crisis
RM	" Raw material Prices" to firms exporting activity during the Financial Crisis
OP	"Oil prices" to firms exporting activity during the Financial Crisis
PROT	" Protectionism" to firms exporting activity during the Financial Crisis
FP	"Fiscal Problems" to firms exporting activity during the Financial Crisis
FD	"Foreign Demand" to firms exporting activity during the Financial Crisis
Source for STAFF, IMP, AGE is ICAP database	

Table A.5 Descriptive Statistics

	N	Min.	Max.	Mean	Std. Deviation
EXBIN	348	0	1	.62	.485
EXPSH	344	1	3	2.19	.813
EXPDES	348	1	4	2.84	.952
AGE	348	3	53	16.00	9.363
STAFF	348	0	920	37.87	83.114
IMP	348	1	2	1.41	.492
DLIQ	347	0	1	.17	.374
TC	346	1	5	2.92	1.591
OC	347	1	5	2.90	1.559
ASF	345	1	5	2.78	1.602
TAX	345	1	5	3.46	1.488
EX	342	1	5	2.52	1.403
RM	348	1	5	3.31	1.360
OP	347	1	5	3.51	1.407
PROT	344	1	5	2.00	1.290
FP	344	1	5	2.42	1.444
FD	341	1	5	2.51	1.273
TC’	346	1	3	2.11	.844
OC’	347	1	3	2.10	.828
ASF’	345	1	3	2.03	.855

Table A.6 Export Enhancement Factors

What is the most important factor that would enhance your firm's exports?		**If other, what is that factor?**	
Wages reduction	2.6%	Better psychology	.6%
Staff reduction	1.4%	Improved competitiveness	.9%
Adoption of elastic forms of employment	4.3%	Increased state subsidies	2.9%
Restriction of retained earnings	2.3%	Measures against bureaucracy	1.1%
Price discounts on goods	4.6%	More competitive Euro exchange rate	1.1%
Payment allowances on goods	8.9%	Other	3.4%
Trade credit existence	10.9%	Increased liquidity	2.6%
Clustering	8%	Reduced production cost	.9%
Actions of promotion and advertising	14.4%	Reduced taxation	6.0%
Development of innovative goods and services	7.5%		
Use of new technologies in sales	6.9%		
Studies/Market research	6.9%		
Other	19%		
D.K./D.A.	2.3%		