

INTERNATIONAL TRADE AND FINANCE: A REVIEW

*COMERCIO INTERNACIONAL Y FINANZAS: UNA REVISIÓN*

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ABSTRACT

The emphasis of international trade theories shifted in the last forty years, from comparative advantage, to scale economies and product differentiation. More recently, the “new” new trade theories have stressed the role of firm heterogeneity, which has led to a renewed interest on the study of how credit constraints may hamper the export activities of firms. In this paper, we provide a brief survey of the relationship between international trade and finance, a field that only recently has been the subject of systematic analysis in the economic literature, from both a theoretical and empirical point of view. In general, barriers to external financing play a significant role as an obstacle to the exporting activity of firms, especially for younger and smaller firms; and these results would have been reinforced by the global financial crisis.

*Keywords:* International Trade; Financial Constraints; External Financing; Exports

## RESUMEN

El interés de las teorías del comercio internacional se ha desplazado en los últimos cuarenta años desde la ventaja comparativa a las economías de escala y la diferenciación de producto. Más recientemente, las “nuevas” nuevas teorías del comercio internacional han subrayado el papel de la heterogeneidad de las empresas, lo que se ha traducido en un renovado interés por el estudio de cómo las restricciones de crédito pueden dificultar las actividades de exportación de las empresas. En este artículo presentamos una breve panorámica de la relación entre comercio internacional y finanzas, un área que sólo recientemente ha sido objeto de un análisis sistemático en la literatura económica, desde un punto de vista tanto teórico como empírico. En general, las barreras a la financiación externa desempeñan un papel significativo en tanto que obstáculo a la actividad exportadora de las empresas, especialmente para las empresas más jóvenes y más pequeñas; y estos resultados se habrían reforzado a raíz de la crisis financiera global.

*Palabras clave:* Comercio internacional; Restricciones financieras; Financiación externa; Exportaciones.

*JEL classification:* D21, F10, G15.

## 1. INTRODUCTION<sup>1</sup>

The central role of international trade is one of the most salient features of the evolution of the world economy over the last decades. By assuming the homogeneity of products, traditional theories of international trade stated that the patterns of trade were dictated by comparative advantage, i.e., relative cost differences among countries. Later on, in the 1980s, the so-called new trade theories assumed instead product heterogeneity. More specifically, these theories emphasised the role of scale economies, internal to the firms, in a context of product differentiation, so that the consumers' love for variety would ensure the existence of trade in goods produced in a particular location, due to scale economies; see Krugman (1979, 1981) and Helpman (1981). More recently, the "new" new trade theories, starting from Melitz (2003), were based on the assumption of firm heterogeneity, which resulted in exporting firms having a larger size, and higher productivity levels, than non-exporting firms. In this way, more productive firms will tend to enter export markets, forcing less productive firms to concentrate on the domestic market, and unproductive firms to exit the market. Accordingly, firms that are relatively more productive are more inclined to export.

An interesting development, derived from these "new" new trade theories, refers to the concepts of "intensive" and "extensive" margins in international trade. So, at the intensive margin trade volumes change within existing trade relationships, whereas at the extensive margin the change in trade volumes is due to the creation of new trade relationships. There is a number of empirical studies on the intensive and extensive margins of trade. We can mention here the influential study of Felbermayr and Kohler (2006), who argued that the increasing value (in absolute terms) of the elasticity of trade volumes with respect to distance (the so-called "distance puzzle") is caused by the extensive margin. Also, Hummels and Klenow (2005) found that the higher volume of exports of larger countries was mainly explained by the extensive margin. In turn, Helpman, Melitz and Rubinstein (2008) obtained that most of the increase in exports between 1970 and 1997 was due to trade between partners already trading at the start of the period. In an extension of

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Melitz's (2003) model, Besedeš and Prusa (2011) stressed that the survival component of the intensive margin (i.e., how existing trade relationships last) is the most important factor behind the poor export performance of developing countries. Finally, we can mention the paper of Minondo and Requena (2012), who applied the concepts of intensive and extensive margins to a regional setting for the case of Spain. According to their results, the extensive margin played a key role in explaining the differences in exports growth across regions; a role that was proved to be much stronger than that found in studies across countries.

In relation to the above, there has been in recent years a renewed interest on the study of how credit constraints may hamper the export activities of firms. There is a large evidence about the role of financial constraints as an obstacle to firms' investment and growth. These restrictions in the access to external financing can be due to several reasons, in particular informational asymmetries and agency problems; see, e.g., Hubbard (1998) or Stein (2003). Thus, given the presence of imperfections in capital markets, investment would depend at a large extent on firms' internal cash flow. Especially young firms tend to face greater financial constraints than mature firms, which may lead them to grow more slowly.

However, the dependence of exports on external finance can be greater than in the case of domestic production, for three reasons (Chor and Manova, 2012): (i) exports are associated with some sunk and fixed specific costs (such as learning about export opportunities, making investments specific to foreign markets, or establishing distribution networks abroad); (ii) international transactions take usually a longer time than domestic transactions do; and (iii) many international transactions require insurance due to additional risks as compared to domestic transactions.

A historical study on the linkages between financial development, international trade and growth is provided in Bordo and Rousseau (2012), using data for 17 now-developed countries over the period 1880-2004. In particular, they found that finance and trade were mutually dependent for the 1880-1914 and 1880-1929 periods, but these links seemed to vanish after 1945. The authors explained this result in terms of the theory of Rajan and Zingales (2003), so that the financial system would have greatly developed following the first globalisation; however, once reached this high state of development, trade and finance would have achieved a new equilibrium, due to the opposition of incumbents to an increased financial development.

The aim of this paper is to provide a brief survey of the relationship between international trade and finance, a field that only recently has been the subject of systematic analysis in the economic literature. The theoretical approaches are reviewed in section 2, and the empirical evidence is examined in section 3. Some concluding remarks are given in the final section.

## 2. WHY FINANCE IS IMPORTANT FOR INTERNATIONAL TRADE?

At the micro level, financial constraints are important in the investment decisions of firms and, since this involves entry-level sunk costs, financial constraints are particularly important for small-scale and young firms taking the decision to become exporters. Financial constraints are important for the exporting behaviour of firms, for at least two reasons (Stiebale, 2011):

- (i) Recent theoretical models emphasise the role of financial markets in international trade, which can allow to get a comparative advantage and create a foreign demand for produced goods.
- (ii) Exporting involves sunk costs, so that only those firms with adequate liquidity can afford to cover such costs.

The Modigliani-Miller theorem (Modigliani and Miller, 1958) assumes that internal and external financing are fully substitutes in the presence of complete capital and credit markets, so that the financial structure of firms is independent from investment decisions. On the other hand, the same theorem also assumes that firms' managers have a clear picture of the returns of new investment projects and the value of firms' assets.

Yet, in practice firms face difficulties when they decide to borrow, in the form of credit or equity. More so, investment decisions are tied to financial factors like access to internal financing, obtaining new credits, issuing equity, or the working of certain credit markets (Fazzari, Hubbard and Petersen, 1988). In this way, there is a number of studies available in the literature that focus on the impact of credit market imperfections on exports, investment and growth of firms, the basic idea being that credit constraints can hinder firms' performance; see, e.g., Bernanke and Gertler (1990) or Clementi and Hopenhayn (2006).

The literature is aware of the presence of capital market imperfections due to asymmetrical information problems (i.e., moral hazard and adverse selection). For example, in the model of Myers and Majluf (1984), creditors attribute an average value as they are unable to make distinctions between the quality of firms. In turn, the existence of asymmetric information can increase the cost of debt or even result in credit rationing. In this context, Jaffee and Russell (1976) claim that market interest rates must rise, and the size of debt limited, when creditors are unable to distinguish the quality of the debtor. On the other hand, Stiglitz and Weiss (1981) emphasise that this could happen due to unsuitable credit rationing. Under these conditions, Akerlof's (1970) "market for lemons" argument is worth mentioning: due to asymmetric information, creditors are unable to make a distinction between good and bad debtors while making a credit agreement. Therefore, higher interest rates can increase the likelihood of relatively good debtors to fail to pay back, leading creditors to reduce their expected profits and exit the market (Fazzari *et al.*, 1988). By creating a difference between internal and external funds, all these problems complicate the access of firms to funds in the process of making investments, as stated by the pecking order theory (Carreira and Silva, 2010).

While information problems in capital markets emerge at the firm level, financial constraints also have a macro level dimension. Fluctuations in the firm's liquidity flow are linked to the general economic activity along with cyclical fluctuations (Fazzari *et al.*, 1988). Negative shocks to the economy may be amplified by the worsening in the conditions of the credit market; this is called the financial accelerator theory. According to this theory, debtors facing high agency costs at the beginning of a recession (i.e., firms with poor balances) get a relatively smaller share from increasing credits. Briefly, a shock that reverses economic growth may also worsen financial conditions; firms and households may find affected their access to credit, and, simultaneously, the need for external funds may increase. Accordingly, the recession would be aggravated as a consequence of the fall in spending and production (Bernanke, Gertler and Gilchrist, 1996). From another perspective, recessions caused by tighter monetary policies may lead to a greater "flight to quality", with investors moving from riskier to safer investments, due to the negative effect of increased interest rates on balances, and monetary austerity may reduce the flow of credit from the banking system (Bernanke and Blinder, 1988; Kashyap and Stein, 1994).

Linked to the financial accelerator theory, the relation between the net value of the debtor and its spending was first analysed by Townsend (1999). Here, debtors with increased net value will decrease the cost of external funds and encourage investment spending. Myers and Majluf (1984) argue that increasing a part of an internally financed investment reduces the magnitude of Akerlof's (1970) "lemon" problem, which increases investment by reducing external financing costs. According to the pecking order theory (Myers, 1984; Fazzari *et al.* 1988), firms favour the use of internal funds, since it is the cheapest form of financing; and, when forced to use external financing, they prefer issuing equity to credits. This is consistent with the financial accelerator theory because a recession may reduce both the internal financing and debt capacity of firms (Bernanke *et al.*, 1996).

Contrary to the Modigliani-Miller theorem, Fazzari *et al.* (1988) argue that, while the cost of capital differs according to the source of funds, the capability to attain internal and external funds will affect the investment decisions of firms. For example, when firms have a greater internal cash flow, their balance and net value position increase, actually decreasing borrowing costs. Unlike the theorem, when financial factors are related to the investment decisions of firms, these investments are also related to cash flow. This is so because financial constraints in the capital markets can magnify the macroeconomic effects of shocks on cash flow, as well as worsening firms' balances.

Fazzari *et al.* (1988) and Whited (1992) focus their analyses on debt financing rather than equity. The authors argue that, when a firm undergoes difficulties to access external financing, it is more vulnerable to the accessibility of internal funds for investment, so that investment is negatively affected. They also claim that problems of asymmetric information in the credit market affect financially unsound firms in their ability to access external financing, emphasising

ing that this has an impact on the distribution of real investment spending. The underlying idea is that firms with free entry to capital markets have a different investment behaviour compared to firms that do not have it. Under these circumstances, financial factors violate the Modigliani-Miller theorem to play a role in the investment process.

When taking a closer look at financial frictions in international trade, the literature shows that, in the presence of credit constraints, those countries with more developed financial institutions have a comparative advantage over those with fragile financial sectors (Kletzer and Bardhan, 1987; Beck, 2002, 2003; Chaney, 2005; Manova, 2008).

Standard theories of international trade predict that a country has a comparative advantage in those goods relatively intensive in the factor relatively abundant in that country. However, this view assumes that firms can enter any industry independently of their financial needs. But, in the presence of financial frictions, the existence of borrowing constraints across sectors will limit investment opportunities for those firms having a worse access to financing (Manova, 2008).

Kletzer and Bardhan (1987) and Baldwin (1989) were the first studies to emphasise the significance of financial markets for international trade. According to Baldwin (1989), sophisticated financial markets and countries with better product diversification specialise in risky industries. On the other hand, while Baldwin (1989) points out to the risk diversification function of financial markets, Kletzer and Bardhan (1987) emphasise the role of financial institutions and markets in providing external financing to industries in need of. The authors claim that with higher levels of credit market constraints, a country faces more expensive foreign financing or credit allocation, therefore pushing that country to specialise in sectors that do not require running capital or foreign financing.

Starting from Kletzer and Bardhan's (1987) theoretical model, Beck (2002) finds a relationship between financial development and international trade and argues that those economies with a well-developed financial sector have comparative advantage in manufacturing industries. In other words, the study reveals that financial development has a significant effect on having larger export shares and a more favourable trade balance in manufactured goods. Therefore, countries with relatively well developed financial sectors enjoy comparative advantage in industries reliant on external financing. Even more, since scale economies rise in conjunction with increased external financing, producers of goods under increasing returns to scale benefit from a higher degree of financial development compared to the producers of other goods. In economies with well-developed financial systems, these conditions result in a greater total output and a more favourable trade balance. In a later study, Beck (2003) addresses whether financial development leads to comparative advantage in industries using greater amounts of external financing. The author concludes that countries with well-developed financial systems enjoy a comparative advantage in those industries using more external finance. In a similar vein, Levine

(2003) argues that financial development relaxes external finance constraints hindering the growth of firms and industries, by making easier the access to external finance.

There are other studies worth mentioning. For instance, Rajan and Zingales (1998) show that those industries reliant on external finance enjoy proportionally greater profits from a comparatively higher level of financial development and therefore lower external financing costs; and also that industries reliant on external financing grow faster in countries with well-developed financial systems. Also, Demirgüç-Kunt and Maksimovic (1999) find that the disadvantages preventing a firm's growth decrease proportionally with higher financial development.

Incorporating firm heterogeneity into the models adds new perspectives to the analysis. As is well known, the new trade theories of the 1980s shifted the focus on comparative advantage of the traditional theories, to the role of increasing returns to scale and consumers' demand for variety. However, these models were based on the behaviour of a representative firm. New micro datasets allow for firm heterogeneity, though, revealing an avenue of research that challenges previous approaches. Accordingly, the "new" new trade theories, pioneered by Melitz (2003), emphasise the role of firm heterogeneity, so that exporting firms tend to have a larger size, as well as higher productivity levels compared to non-exporting firms. Therefore, a trade liberalisation or a fall in transportation costs lead to high-productivity exporting firms to survive and expand, and to low-productivity non-exporting firms to shrink or exiting the market. This effect, in turn, would raise aggregate productivity.

The assumption of firm heterogeneity seems to be a realistic one. For instance, in a study for a sample of French firms, Eaton, Kortum and Kramarz (2004) found that most firms did not export, and those that did it sold most of their production at the domestic market; all this suggested the existence of "substantial barriers to exporting" (Eaton *et al.*, 2004, p. 150). In this way, following Melitz (2003), the subsequent literature assumes that firms are heterogeneous and that there is a close relationship between productivity and liquidity. The presence of liquidity constraints means an obstacle for firms trying to engage in international trade (Stiebale, 2011), and hence financial constraints can prevent firms investing and growing (Stein, 2003). Financial constraints are particularly significant for young firms because only firms that can accumulate enough liquidity from domestic sales or have access to external finance, can export under imperfect financial markets (Stiebale, 2011). In other words, firms subject to financial constraints can only invest if they have enough liquidity; see also Berman and Héricourt (2010) or Poncet, Steingress and Vandenbussche (2010).

To conclude this section, we will briefly refer to the possible relationship between liquidity constraints and exchange rate. We can mention here a paper by Chaney (2016), who shows how the presence of credit constraints can decrease the sensitivity of trade flows to exchange rate fluctuations. To begin with, the mere existence of financial constraints inhibits exports. On the other

hand, it is clear that an exchange rate appreciation, by lowering competitiveness, results in lower exports. But, at the same time, the appreciation of the exchange rate raises the value of domestic assets in terms of foreign prices, which relaxes liquidity constraints and leads some firms to start exporting. Hence, this effect tends to offset the negative effects on exports of the appreciation of the exchange rate.

### 3. SOME EMPIRICAL EVIDENCE

Firm-level empirical studies on the relationship between financial constraints and international trade are not too abundant. The studies of Greenaway, Guariglia and Kneller (2007), Forlani (2010) and Muûls (2015) are worth mentioning in this context. Greenaway *et al.* (2007) were the first to find that exporters showed better financial health than non-exporters, for a panel of 9,292 UK manufacturing firms over the period 1993-2003. In turn, Forlani (2010) and Muûls (2015) found that firms were negatively affected by financial constraints and supported the negative relation between exports and credit constraints, for a sample of Italian and Belgian firms, respectively.

By classifying firms according to profit share policies, Fazzari *et al.* (1988) investigated the responsiveness of investment to cash flow for a sample of US manufacturing firms. Firms were able to pay lower dividends because they had to finance investments exceeding internal cash flow. By exploring the relation between investment and cash flow, the authors pointed to the fact that, for those firms facing external finance constraints, investment is more sensitive to cash flow. Also, for a panel of UK firms, Guariglia (1999) found a significant relationship between financial variables and inventory investment, especially for firms with weak balance sheets, during periods of recession and tight monetary policy, and for work-in process and raw material inventories.

Rather than investigating how financial constraints affect investments, Carpenter and Petersen (2002) studied how financial constraints can affect the growth of total assets, for a sample of 1,600 small US firms. They found a direct relation between asset growth and internal finance when a firm suffers from cash flow constraints. However, they also obtained a non-significant relation between these two variables for firms entering into external finance. Accordingly, financial constraints were more binding for small-scale firms.

In their study on the impact of liquidity constraints on firm growth, Oliveira and Fortunato (2006) used cash flow as a measure of liquidity constraints and persistence of growth of Portuguese firms. In the end, the authors found that, compared to larger and more mature firms, younger and smaller firms show greater sensitivity of growth to cash flow. Accordingly, financial constraints could have more severe impacts on the growth of smaller and younger firms. In addition, younger and smaller firms showed more persistent growth than those that were older and larger.

When analysing the impact of comparative advantage in international trade on a country's level of financial development, Do and Levchenko (2007)

showed that countries enjoying comparative advantage in financially intensive goods had a greater demand for external finance and therefore experienced financial development. Their sample included 96 countries, both developed and developing, over the period 1970-1999. Yet, financial development in countries manufacturing export goods independent from external finance had a poor record of financial development. This result, i.e., that financial development is dependent on trade patterns, works in the opposite sense than that analysed in the papers of Kletzer and Bardhan (1987) and Baldwin (1989).

There are some studies analysing the impact of financial constraints on firm survival ratios or entry-exit into the market. By classifying firms into domestic and global, Bridges and Guariglia (2008) examined the impact of financial variables on the probability of firm failure in a panel of 61,496 UK firms over the period 1997-2002, pointing out that domestic firms showed a greater tendency to fail, due to their lower collateral and higher leverage rates. The authors attribute this result to global firms having greater cash flow stability and being able to repay their external debt, and that global engagements, i.e., whether firms are foreign-owned or export, protect firms from financial constraints and improve performance. Consequently, financial variables and constraints affect domestic firms, but not the survival probability of global firms. In turn, Musso and Schiavo (2008) found, in a study of almost 15,000 French manufacturing firms, that financial constraints increased the probability of exiting the market; that being able to get external funds had positive effects on firm growth; and that financial constraints were positively related to productivity growth. Additionally, the authors argued that large-scale and mature firms had easier access to external finance, since they had less difficulty in gathering information, which had a positive effect on firm growth and survival. Also, Muûls (2015) showed that Belgian firms with higher productivity, higher profitability and lower credit constraints, were more likely to be exporters or importers; and that credit constraints were positively associated with the intensive and extensive margins of exports in terms of both product and country of destination, but only with the extensive margin in terms of products for the case of imports.

Another study along these lines is Manova (2008), which concluded that credit constraints were an important factor in explaining the international trade flows of 91 countries over the 1980-1997 period. In particular, the author showed that financial liberalisations led to higher exports more than proportionately in financially fragile sectors needing more external finance or utilising less collateralizable assets, as well as in countries with a less developed financial system.

In a study on Chinese firms, Poncet *et al.* (2010) found that private firms were credit constrained, unlike state-owned and foreign-owned firms, which were not. Also, the credit constraints suffered by private firms were reduced by the presence of foreign capital, but aggravated by the presence of state firms.

Berman and Héricourt (2010) analysed the role of financial factors on the export decisions and the amount of exports of a sample of 5,000 firms in emerging countries. While financial constraints were important for export deci-

sions, a better financial health did not affect either the probability of remaining an exporter or the amount exported. In addition, productivity was important for export decisions only if firms had enough access to external finance.

We can also mention here the paper by García-Vega, Guariglia and Spaliara (2012), who obtained evidence, for a panel of 23,674 UK manufacturing firms over the 1993-2006 period, that those firms experiencing higher volatility in their earnings, were more likely to go bankrupt, needed to be more productive to stay in the market, and were more likely to enter export markets.

Another perspective in the literature emphasises that financial markets could make firms' exports more fragile, especially in the face of credit constraints. In particular, Minetti and Zhu (2011) showed, for a sample of Italian manufacturing firms, that credit rationing significantly reduced both the probability of exporting and the amount exported. In addition, credit rationing was a heavier obstacle for the exports of firms belonging to industries more technologically developed, and more dependent on external finance. We can mention in this line the results of Silva and Carreira (2011), who stressed how the existence of financial constraints and significant sunk costs could mean a large barrier for firms to begin to export, for the case of Portuguese firms. In addition, European monetary integration would have allowed to reduce financial constraints for firms, by making easier their access to external finance, as well as decreasing interest rates.

On the other hand, credit constraints can affect not only the volume of trade, but also the duration of exports. According to the results of Besedeš, Kim and Lugovskyy (2014), using product level data on exports by a large array of countries to the United States and 12 members of the European Union between 1989 and 2007, credit constraints are an important initial barrier for a firm to export but, once an export relationship has been initiated, this negative effect tends to disappear over time, as far as that export relationship endures.

One of the most distinctive features that characterise the evolution of international trade in the last decades, is the expansion of global value chains. The development of global value chains, i.e., the international fragmentation of production, means that the different stages of the production process of a particular good or service are located across different countries; see Amador and Cabral (2016) for a review of the literature. In this regard, according to the results of Manova and Yu (2016) for the case of China, credit constraints lead firms to carry out more import-and-assembly and pure assembly processing trade, rather than ordinary trade; in other words, the existence of credit constraints means that firms would tend to focus on relatively lower value-added, less profitable activities.

Another relevant aspect refers to the quality of the products exported. In a recent paper using a data set that included estimates of export quality and financial development for all countries and manufacturing industries over the last thirty years, Crinò and Ogliari (2017) showed that financial imperfections

affected significantly the average quality of products, across countries and industries, with most of this effect evolving along the intensive margin.

To conclude, notice that the global crisis has two dimensions that can explain the great fall in international trade: on the producer side, the credit crisis resulted in a large decrease in the availability of external finance, leading to a fall in the production and export capacities of firms; and, on the consumer side, depressing expectations led to a fall in global demand and imports (Chor and Manova, 2012). In particular, using data on US imports, Chor and Manova (2012) found that countries with higher interbank interest rates saw their exports to the US decrease during the crisis, being this effect particularly strong in sectors requiring more external financing, or having a more restricted access to trade credit or less collateralizable assets. In other words, exports of financially fragile sectors were relatively more responsive to the costs of external financing as a consequence of the financial crisis.

In related work, Amiti and Weinstein (2011) argued that financial constraints had a significant impact on exports throughout the crisis. Specifically, they showed, using a sample of Japanese manufacturing exporters, that the deterioration in the health of financial institutions was an important determinant of the large fall in exports relative to output during the crisis.

#### 4. CONCLUDING REMARKS

The emphasis of international trade theories shifted in the last forty years, from comparative advantage (mainly determined by the countries' relative factor endowments), as in traditional theories, to scale economies and product differentiation, as in the so-called new trade theories. More recently, the "new" new trade theories, starting from Melitz (2003), stressed the role of firm heterogeneity, so that exporting firms would have a larger size and higher productivity levels than non-exporting firms. In turn, this has led to a renewed interest on the study of how credit constraints may hamper the export activities of firms.

In this paper, we have provided a brief survey of the relationship between international trade and finance, a field that only recently has been the subject of systematic analysis in the economic literature, from both a theoretical and empirical point of view. In general, the presence of financial constraints, i.e., the difficulties a firm may find to access capital markets, acts as an obstacle to firms' investment and growth. However, the harmful effects of these financial constraints can be greater in the case of exports for a variety of reasons, such as the existence of some particular sunk and fixed costs associated with exports, or the fact that, compared to domestic transactions, international transactions take usually a longer time and require insurance due to the presence of additional risks.

In general, our review of the literature has shown how barriers to external financing play a significant role as an obstacle to the exporting activity of firms. This effect would be especially severe for younger and smaller firms, which tend

to face larger financial constraints than more mature or greater firms. Also, operating in countries with more developed financial systems can be an advantage for firms trying to export. Finally, by leading to a large decrease in the availability of external finance, the global financial crisis would have reinforced the unfavourable effects of financial constraints on the international operations of firms.

## REFERENCES

- Akerlof, G. A. (1970): "The Market for 'Lemons': Quality Uncertainty and the Market Mechanism", *Quarterly Journal of Economics*, 84, 488-500.
- Amador, J. and Cabral, S. (2016): "Global Value Chains: A Survey of Drivers and Measures", *Journal of Economic Surveys*, 30, 278-301.
- Amiti, M. and Weinstein, D. E. (2011): "Exports and Financial Shocks", *Quarterly Journal of Economics*, 126, 1841-1877.
- Baldwin, R. E. (1989): "The Political Economy of Trade Policy", *Journal of Economic Perspectives*, 3, 119-135.
- Beck, T. (2002): "Financial Development and International Trade: Is There a Link?", *Journal of International Economics*, 57, 107-131.
- Beck, T. (2003): "Financial Dependence and International Trade", *Review of International Economics*, 11, 296-316.
- Berman, N. and Héricourt, J. (2010): "Financial Factors and the Margin of Trade: Evidence from Cross-Country Firm Level Data", *Journal of Development Economics*, 93, 206-217.
- Bernanke, B. and Blinder, A. (1988): "Credit, Money, and Aggregate Demand", *American Economic Review, Papers and Proceedings*, 78, 435-439.
- Bernanke, B. and Gertler, M. (1990): "Financial Fragility and Economic Performance", *Quarterly Journal of Economics*, 105, 87-114.
- Bernanke, B., Gertler, M. and Gilchrist, S. (1996): "The Financial Accelerator and the Flight to Quality", *Review of Economics and Statistics*, 78, 1-15.
- Besedeš, T. and Prusa, T. J. (2011): "The Role of Extensive and Intensive Margins and Export Growth", *Journal of Development Economics*, 96, 371-379.
- Besedeš, T., Kim, B.-C. and Lugovskyy, V. (2014): "Export Growth and Credit Constraints", *European Economic Review*, 70, 350-370.
- Bordo, M. D. and Rousseau, P. L. (2012): "Historical Evidence on the Finance-Trade-Growth Nexus", *Journal of Banking & Finance*, 36, 1236-1243.
- Bridges, S. and Guariglia, A. (2008): "Financial Constraints, Global Engagement and Firm Survival in the United Kingdom: Evidence from Micro Data", *Scottish Journal of Political Economy*, 55, 444-464.
- Carpenter, R. E. and Petersen, B. C. (2002): "Is the Growth of Small Firms Constrained by Internal Finance?", *Review of Economics and Statistics*, 84, 298-309.
- Carreira, C. and Silva, F. (2010): "No Deep Pockets: Some Stylized Empirical Results on Firms' Financial Constraints", *Journal of Economic Surveys*, 24, 731-753.

- Chaney, T. (2005): "Productivity Overshooting: The Dynamic Impact of Trade Opening with Heterogeneous Firms", University of Chicago, mimeo; available online at [https://www.researchgate.net/publication/228961536\\_Productivity\\_Overshooting\\_The\\_Dynamic\\_Impact\\_of\\_Trade\\_Opening\\_with\\_Heterogeneous\\_Firms](https://www.researchgate.net/publication/228961536_Productivity_Overshooting_The_Dynamic_Impact_of_Trade_Opening_with_Heterogeneous_Firms).
- Chaney, T. (2016): "Liquidity Constrained Exporters", *Journal of Economic Dynamics and Control*, 72, 141-154.
- Chor, D. and Manova, K. (2012): "Off the Cliff and Back? Credit Conditions and International Trade During the Global Financial Crisis", *Journal of International Economics*, 87, 117-133.
- Clementi, G. L. and Hopenhayn, H. A. (2006): "A Theory of Financing Constraints and Firm Dynamics", *Quarterly Journal of Economics*, 121, 229-265.
- Crinò, R. and Ogliari, L. (2017): "Financial Imperfections, Product Quality, and International Trade", *Journal of International Economics*, 104, 63-84.
- Demirgüç-Kunt, A. and Maksimovic, V. (1999): "Institutions, Financial Markets, and Firm Debt Maturity", *Journal of Financial Economics*, 54, 295-336.
- Do, Q.-T. and Levchenko, A. A. (2007): "Comparative Advantage, Demand for External Finance, and Financial Development", *Journal of Financial Economics*, 86, 796-834.
- Eaton, J., Kortum, S. and Kramarz, F. (2004): "Dissecting Trade: Firms, Industries and Export Destinations", *American Economic Review, Papers and Proceedings*, 94, 150-154.
- Fazzari, S. M., Hubbard, R. G. and Petersen, B. C. (1988): "Financing Constraints and Corporate Investment", *Brookings Papers on Economic Activity*, 1, 141-206.
- Felbermayr, G. J. and Kohler, W. (2006): "Exploring the Intensive and Extensive Margins of World Trade", *Review of World Economics*, 142, 642-674.
- Forlani, E. (2010): "Liquidity Constraints and Firm's Export Activity", Development Studies Working Paper 291, Centro Studi Luca D'Agliano, Università degli Studi di Milano, Milano.
- García-Vega, M., Guariglia, A. and Spaliara, M.-E. (2012): "Volatility, Financial Constraints, and Trade", *International Review of Economics and Finance*, 21, 57-76.
- Greenaway, D., Guariglia, A. and Kneller, R. (2007): "Financial Factors and Exporting Decisions", *Journal of International Economics*, 73, 377-395.
- Guariglia, A. (1999): "The Effects of Financial Constraints on Inventory Investment: Evidence from a Panel of UK Firms", *Economica*, 66, 43-62.
- Helpman, E. (1981): "International Trade in the Presence of Product Differentiation, Economies of Scale and Monopolistic Competition: A Chamberlin-Heckscher-Ohlin Approach", *Journal of International Economics*, 11, 305-340.
- Helpman, E., Melitz, M. and Rubinstein, Y. (2008): "Estimating Trade Flows: Trading Partners and Trading Volumes", *Quarterly Journal of Economics*, 123, 441-487.

- Hubbard, R. G. (1998): "Capital-market Imperfections and Investment", *Journal of Economic Literature*, 36, 193-225.
- Hummels, D. and Klenow, P. J. (2005): "The Variety and Quality of a Nation's Exports", *American Economic Review*, 95, 704-723.
- Jaffee, D. M. and Russell, T. (1976): "Imperfect Information, Uncertainty, and Credit Rationing", *Quarterly Journal of Economics*, 90, 651-666.
- Kashyap, A. K. and Stein, J. C. (1994): "Monetary Policy and Bank Lending", in Mankiw, N. G. (ed.): *Monetary Policy*, The University of Chicago Press, Chicago, 221-261.
- Kletzer, K. and Bardhan, P. (1987): "Credit Markets and Patterns of International Trade", *Journal of Development Economics*, 27, 57-70.
- Krugman, P. R. (1979): "Increasing Returns, Monopolistic Competition, and International Trade", *Journal of International Economics*, 9, 469-479.
- Krugman, P. R. (1981): "Intraindustry Specialization and the Gains from Trade", *Journal of Political Economy*, 89, 959-973.
- Levine, R. (2003): "More on Finance and Growth: More Finance, More Growth?", *Review*, Federal Reserve Bank of St. Louis, July/August, 31-46.
- Manova, K. (2008): "Credit Constraints, Equity Market Liberalizations and International Trade", *Journal of International Economics*, 76, 33-47.
- Manova, K. and Yu, Z. (2016): "How Firms Export: Processing vs. Ordinary Trade with Financial Frictions", *Journal of International Economics*, 100, 120-137.
- Melitz, M. J. (2003): "The Impact of Trade on Intra-industry Reallocations and Aggregate Industry Productivity", *Econometrica*, 71, 1695-1725.
- Minetti, R. and Zhu, S. C. (2011): "Credit Constraints and Firm Export: Microeconomic Evidence from Italy", *Journal of International Economics*, 83, 109-125.
- Minondo, A. and Requena, F. (2012): "The Intensive and Extensive Margins of Trade: Decomposing Exports Growth Differences across Spanish Regions", *Investigaciones Regionales—Journal of Regional Research*, 23, 53-76.
- Modigliani, F. and Miller, M. H. (1958): "The Cost of Capital, Corporation Finance and the Theory of Investment", *American Economic Review*, 48, 261-297.
- Musso, P. and Schiavo, S. (2008): "The Impact of Financial Constraints on Firm Survival and Growth", *Journal of Evolutionary Economics*, 18, 135-149.
- Muñls, M. (2015): "Exporters, Importers and Credit Constraints", *Journal of International Economics*, 95, 333-343.
- Myers, S. C. (1984): "The Capital Structure Puzzle", *Journal of Finance*, 39, 574-592.
- Myers, S. C. and Majluf, N. S. (1984): "Corporate Financing and Investment Decisions When Firms Have Information That Investors Do Not Have", *Journal of Financial Economics*, 13, 187-221.
- Oliveira, B. and Fortunato, A. (2006): "Firm Growth and Liquidity Constraints: A Dynamic Analysis", *Small Business Economics*, 27, 139-156.

- Poncet, S., Steingress, W. and Vandenbussche, H. (2010): "Financial Constraints in China: Firm-level Evidence", *China Economic Review*, 21, 411-422.
- Rajan, R. G. and Zingales, L. (1998): "Financial Dependence and Growth", *American Economic Review*, 88, 559-586.
- Rajan, R. G. and Zingales, L. (2003): "The Great Reversals: The Politics of Financial Development in the Twentieth Century", *Journal of Financial Economics*, 69, 5-50.
- Silva, F. and Carreira, C. (2011): "Financial Constraints and Exports: An Analysis of Portuguese Firms during the European Monetary Union", *Notas Económicas*, 34, 35-56.
- Stein, J. C. (2003): "Agency, Information and Corporate Investment", in Constantinides, G. M., Harris, M. and Stulz, R. (eds.), *Handbook of the Economics of Finance* (vol. 1, Part 1). North Holland, Amsterdam, 111-165.
- Stiebale, J. (2011): "Do Financial Constraints Matter for Foreign Market Entry? A firm-level Examination", *The World Economy*, 34, 123-153.
- Stiglitz, J. E. and Weiss, A. (1981): "Credit Rationing in Markets with Imperfect Information", *American Economic Review*, 71, 393-410.
- Townsend, R. M. (1979): "Optimal Contracts and Competitive Markets with Costly State Verification", *Journal of Economic Theory*, 21, 265-293.
- Whited, T. M. (1992): "Debt, Liquidity Constraints, and Corporate Investment: Evidence from Panel Data", *Journal of Finance*, 47, 1425-1460.