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The Availability and Cost of Short-Term Trade Finance and its Impact on Trade

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THE AVAILABILITY AND COST OF SHORT-TERM TRADE FINANCE AND ITS IMPACT ON TRADE

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ABSTRACT

The systemic nature of the recent financial crisis precipitated a general and synchronized drop of activity in the interbank market, contaminating most banks in almost all regions. The ensuing economic crisis was characterised by a drop in production coupled with a much larger drop in trade flows. There may be a number of reasons for the particularly sharp drop in trade. This paper examines one potential reason for the drop in trade between mid-2008 and the first quarter of 2009 – changes in the cost and availability of trade finance to potential exporters and importers. Results from an econometric model developed to examine this question show that short-term trade finance availability has had an effect on trade flows during the crisis period, but that its impact has been smaller than that of falling demand. It also shows that the availability and cost of trade finance seem to have had a limited impact on trade outside crisis periods. During the crisis period, the cost of financing negatively impacted trade overall due to an increase in spreads. This indicates that financing was probably prohibitively expensive for some traders, thereby severely constraining their ability to trade. This paper however highlights one of the major difficulties regarding policymaking in the area of trade finance – that there is little reliable quantitative information.

ACKNOWLEDGEMENTS

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TABLE OF CONTENTS

Tables

Figures

EXECUTIVE SUMMARY

The systemic nature of the economic crisis has precipitated a general and synchronized drop of activity in the interbank market, contaminating most banks in almost all regions. The synchronization and symmetry of the interbank market crisis had two simultaneous effects:

- a price effect: the virtual absence of interbank and secondary markets pushed spreads to historic highs. Existing indicators of the price effect, *i.e.* the rising cost of financing through banks, during the crisis indicate that the increase was unprecedented in recent years.
- a volume effect: banks reacted to perceived increased risks and higher liquidity costs by limiting their overall exposure. Furthermore, due to the collapse of some institutions, and the financial constraints imposed on almost all banks, fewer banks remained active in the trade finance market.

The volume effect, or the perceived fall in trade finance activity, has been sharp. Short-term trade finance started falling in Q3 2008 and continued to fall sharply through Q1 2009. Trade finance to non-OECD countries fell more sharply than that to OECD countries.

It is difficult to determine with certainty whether the trade finance activity has been hit more severely than other forms of bank financing (such as domestic financing, housing loans etc.) due to a lack of strict compatibility among data sources. According to information presently available, however, the amount of short-term trade financing put into motion through insurers fell later, and less, than general short-term financing flows during the present crisis. One reason that trade finance may have fallen less than short-term finance more generally is that as perceived risk has grown, firms have turned more massively to bank-intermediated finance as opposed to intra-firm financing which has traditionally been a large part of trade finance.

Trade finance flows in some countries fell more sharply than would be expected given their risk ratings. These include Russia, some Eastern European countries, Iceland and Ireland. Other OECD countries whose trade finances were severely lowered were Turkey, Spain, Greece, Italy and Portugal. OECD countries whose trade finance situation was relatively less affected were: Japan, Mexico, Canada and the United States.

In order to better understand the impact of changes in short-term finance on trade flows, an econometric model was constructed. This is a difficult and inexact exercise due largely to the dearth of information on short-term finance flows. The authors believe the proxy used here for the availability of short-term trade finance is the best available. However, the proxy covers only a portion of short-term trade finance flows, and thus the results reported here should be treated with care. It is advisable to keep in mind the caveats outlined in the paper and to take away from this research general trends and insights into structural differences in lending practices that the models suggest rather than focusing on individual model coefficients.

The main finding of this paper is that the drop in short-term trade finance had a significant impact on the fall in trade, but not as much so as the fall in demand. This general result confirms the findings of a qualitative survey of banking professionals.

Econometric results show a differentiated picture of the impact of trade finance on trade pre- and post-crisis onset, pointing to a threshold effect. Trade finance availability seems to have a limited impact on exports under "normal" circumstances, *i.e.* outside crisis periods. Once the crisis hit, however, the effect was multiplied by more than three. The drop in trade finance worldwide since the outset of the crisis (Q2 2008 – Q1 2009) was about 25% according to the proxy used here –keeping in mind the caveats described in the paper.

Assuming that the drop in the proxy for trade finance used here reflects the actual drop in trade finance, and, other things equal, we estimate that for every 10% drop in the volume of trade finance, imports go down by almost 4%. These results suggest that the drop in trade finance may have accounted for just under one third of the total drop in trade in the dataset used here which covers the period Q2 2008 to Q1 2009.

The model furthermore suggests that about 36% of the drop in imports during the same period can be explained by the decline in GDP. This leaves close to one third of the fall in imports that can be ascribed to other factors such as the break in globally fragmented supply chains (cf. OECD, 2010).

Available data indicates that trade in some regions – Asia, MENA and South America – was more severely impacted by changes in short-term trade finance than other regions (Europe and North America). This may be due to the fact that some countries in Asia, MENA and South America were considered higher risk, or their level of risk was re-evaluated after the onset of the crisis. It may also be due to the recent higher cost of financing that some producers of lower value-added goods could not afford.

This analysis suggests that both the availability of trade finance and the cost of financing impacted trade flows. The cost of financing generally had no statistically significant impact on trade prior to the onset of the crisis. In the crisis period, however, the cost of financing negatively impacted trade overall due to an increase in spreads. This indicates that financing was probably prohibitively expensive for some traders, thereby severely constraining their ability to trade.

It should be underlined that these results are only indicative. This paper has highlighted one of the major difficulties regarding policymaking in the area of trade finance – that there is little reliable quantitative information. Without complete information, policymaking in this area remains guesswork as policy impact cannot be measured with a reasonable degree of confidence. Banks, however, collect such data on short-term finance for trade and report them internally. A concerted international effort to collect and disseminate such information would be of assistance in better understanding the impacts of different policies thereby informing the policy community of best practice in responding to the spillover effects of financial crises in future.

Research indicates that the drop in trade credit has been shallower than otherwise expected due to an early and massive policy response. The G-20 Trade Finance Initiative was developed in the first quarter of 2009. It was designed to take lessons from the Asian financial crisis of the late 1990s. The initiative was undertaken at the level of the G-20 to ensure that all links in the trade finance chain could be addressed and coordinated among the world's largest importers and exporters. It addressed the financial sectors in major buyer countries as well as OECD Export Credits Agencies, and also focused on working capital shortages where they existed. Finally, it utilized a wide range of financial instruments necessary to overcome the bottlenecks identified in specific markets.

In November of 2008, OECD Participants pledged to make available extraordinary levels of medium- and long-term official export credits to backstop declines in private markets. Subsequently, G-20 Experts met in Washington in mid-March 2009 and committed to provide up to $250 billion of official short-term export financing. Leaders announced the initiative on April 2 in London. During implementation, a second

meeting in Washington was held in September 2009 and produced additional short-term financing commitments that would be available if needed, pushing the potential size of the commitment level well beyond $250 billion, strongly signalling to the market that financing was available. At the same time, implementation data demonstrated that the commitments, while heavily utilized, had not been exhausted. Equally important, macro economic analysis and an updated bank survey showed that trade and short-term trade finance markets had begun to recover.

Meeting in Pittsburgh in November 2009, Ministers decided that the initiative would continue in order to ensure adequate levels of financing for the recovery. In addition, the coordination and monitoring of medium- and long-term financing was added to the initiative to ensure that the whole spectrum of official trade finance tenors was monitored and coordinated effectively. This expansion of the initiative's focus was in recognition that recovery in the financial markets for medium- and long-term lending would lag the recovery underway in short-term markets, and could undermine broader development objectives if not addressed in a coordinated way.

Looking forward, the question of exit strategies from short-term official trade finance programs has also been raised, but seems premature to be addressed as a priority issue at a time when international trade is just starting to recover. Yet, in order to level the playing field, in particular in terms of differences in risk-pricing and spreads charged, countries will need to coordinate the content and the timing of their exit strategies.

THE AVAILABILITY AND COST OF SHORT-TERM TRADE FINANCE AND ITS IMPACT ON TRADE

What is trade finance?

1. The exchange of goods and services between two firms can be paid in different ways, primarily by way of cash payment — *e.g.* at delivery — or by deferred payments. In the former case, the exporter is extending credit to the importer during the delivery time of the goods. In the latter case some form of financing is put in place to enable the buyer to repay the seller according to a scheduled payment. Such financing of trade can take many technical forms, which can involve, or not, financial institutions. For instance a seller can extend credit to the buyer and accept a deferred payment over a certain period of time, in one sum or in instalments, with or without the intervention of a bank.

2. Trade finance products typically include intra-firm financing, inter-firm financing or more dedicated tools such as letters of credit, advance payment guarantees, performance bonds, and export credits insurance or guarantees[1]. Among these products a traditional distinction is made between short-term trade finance products, which enable in various ways a deferred payment over a period of less than one year, and medium and long-term export financing/guarantees, which can be extended with repayment terms reaching or even exceeding ten years. Whilst the former financing facilities are typically used for trade in commodities, intermediate or consumer goods, the medium and long-term financing techniques are preferred in the case of exports of capital goods or goods with a longer useful life, and are sometimes part of projects which generate their own revenues and can service the debt incurred by the importer (project finance).

3. Short-term trade finance is supplied primarily by private banks (bank-intermediated trade financing) and by firms (firm to firm or intra-firm credit). [2] Historically, there was a presence of public Export Credit Agencies in the short-term trade finance market; however, over the last 15 years, Governments have progressively stepped out from this market, on the grounds that such a segment was "marketable" and there was no need for public intervention. In the European Union, government intervention via official trade finance schemes is considered as state aid under the EC Treaty, unless certain circumstances justify public support in this area.

1. For a comprehensive description of these instruments see Appendix A, and Jean Pierre Chauffour and Thomas Farole "Trade Finance in Crisis: Market Adjustment or Market Failure?" *Policy Research Working Paper*, N°5003, World Bank, July 2009.

2. One of the most distinguishing characteristics of trade finance as compared to other forms of credit is that it is offered and obtained not only through third-party financial institutions but also through inter-firm transactions. That inter-firm trade finance is so prevalent is typically explained by certain advantages that enable trading partners to better assess and mitigate risk than third parties (Petersen and Rajan, 1997).

Trade finance in the present crisis

Systemic nature….

4. The general and synchronized drop of activity in the interbank market revealed a massive lack of confidence among banks in their respective balance sheets. This lack of confidence contaminated most of the banks in almost all regions and the consequences of the interbank liquidity crisis hit many markets at the same time.

5. Unlike in previous banking crises, which were confined to certain regions in the world, there was no obvious sheltered financial institution which would have been able to offer alternative sources of trade financing. This led several international financial institutions to accelerate the development of trade-related liquidity instruments in the end of 2008/beginning of 2009. The synchronization and symmetry of the interbank market crisis, in particular after the collapse of Lehman Brothers, had two simultaneous effects:

- a price effect: the virtual absence of interbank and secondary markets pushed spreads to historic highs.
- a volume effect: banks reacted to perceived increased risks and higher liquidity costs by limiting their overall exposure. Furthermore, due to the collapse of some institutions, and the financial constraints imposed on almost all banks, fewer banks remained active in the trade finance market.

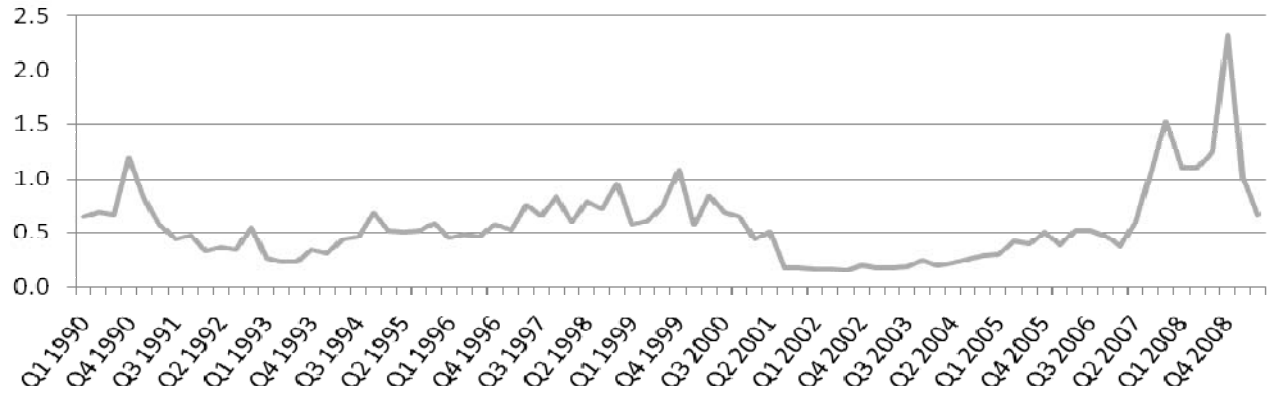
Rising cost for financing…

6. Existing indicators of the price effect, *i.e*. the rising cost of financing through banks, during the crisis indicate that the increase was unprecedented. One common indicator of the cost of short-term financing in general (*i.e.* not just financing for trade) is the TED spread.[3] The TED spread, which has been climbing since mid-2007, rose sharply in 2008Q3 to attain 233 basis points (2.33%) in 2008Q4 (Figure 1). This indicates a large increase in the cost of funds which has been unprecedented since the beginning of the indicator's calculation.[4]

3. The TED spread is the difference between the interest rates on interbank loans and short-term U.S. government debt. The TED spread is calculated as the difference between the three-month T-bill interest rate and three-month LIBOR. The TED spread fluctuates over time, but historically has often remained within the range of 10 and 50 bps (0.1% and 0.5%). A rising TED spread indicates that liquidity is being withdrawn.

4. Note that these are quarterly series, *i.e.* averages of three months of daily rates. Aggregation means that they are somewhat lower than daily highs reported elsewhere.

Figure 1. The cost of short-term financing increased sharply



TED spread, %.
Source: IMF-IFS.

7. The sharp rise in the price of lending/borrowing is confirmed by results from a survey of loan officers in US banks and US branches of foreign banks. Regarding lending terms, about 65% of US branches of foreign banks, on net, reported a rise in the costs of credit lines in April 2009, compared with 30% in July 2009. Seventy percent of foreign respondents reported increasing premiums on riskier loans in April (and 30% in July). In addition, about 15% of foreign banks reported increasing spreads of loan rates over their cost of funds in July, down from about 60% in April. This anecdotal evidence therefore suggests that the cost of financing rose sharply in Q2 2009 and fell somewhat in Q3 2009 while remaining at high levels.

Fall in trade finance activity…

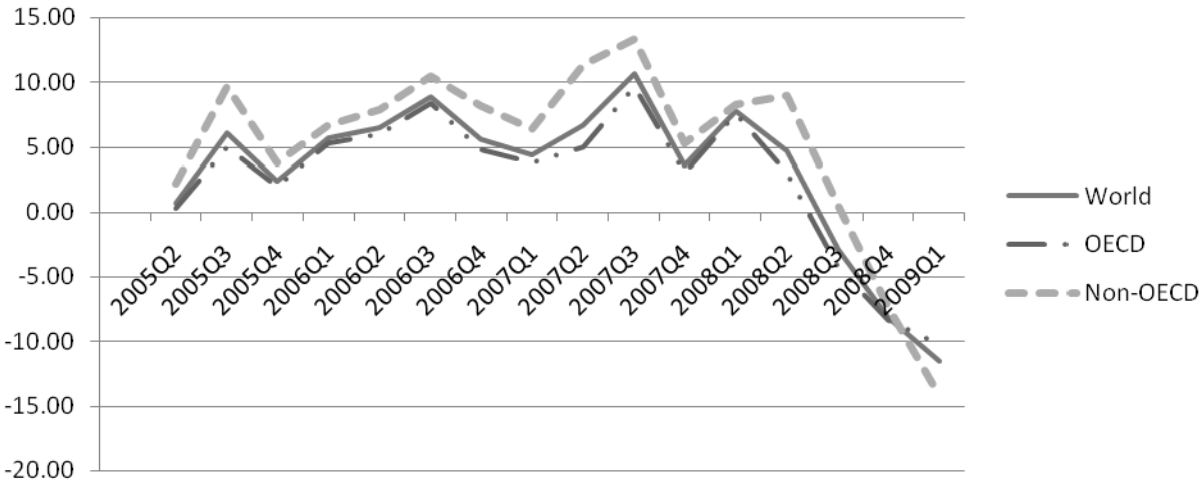
8. The volume effect, or the perceived fall in trade finance activity, has been sharp. Short-term trade finance[5] started falling in Q3 2008 and continued to fall sharply through Q1 2009. In Q1 2009, short term finance fell by 11.5% overall as compared with the previous quarter (Figure 2).[6] This mirrors very closely estimates of the fall in short-term finance reported by bankers (IMF-BAFT Trade Finance Survey, 2009).

5. Short-term trade finance is proxied here by data made available by the Berne Union International Union of Credit & Investment Insurers. It refers to Berne Union members' direct insurance or lending. Short-term refers to insured export credits with credit terms up to and including 12 months; but typically transactions take place over 2-3 months. Insurance is contracted by private or public reinsurers. Short-term insurers generally insure firms that are extending credit to other firms, often using their working capital (*i.e.* credit has not necessarily been extended by banks for the transaction). The series refer to commitments, *i.e.* a limit extended by insurers. The limit can be utilized or not but since the cost of insurance is due in any case, there is an incentive to adjust the limit to being close to the value of the traded goods. The actual limit may, however, be used more than once in the course of a year. Both goods and services are included although the majority of insured trade refers to trade in goods. Data are stocks at the end of each quarter.

6. It should be kept in mind that the proxy used here, short-term export credit exposures by Berne Union insurers, is incomplete. Much of trade finance takes place through other channels that are not captured in this proxy. This is therefore a best estimate given the lack of available data sources that would provide a more comprehensive picture of short-term trade finance, and should be regarded as such.

9. Trade finance to non-OECD countries fell more sharply than that to OECD countries. In Q1 2009 short-term lending for trade by international banks to countries outside the OECD area fell by 14% as compared to a drop of 10% on average to OECD. Trade finance to OECD countries fell earlier than that to developing countries with some countries' level of financing decreasing already in Q2 2008 (e.g. United States, United Kingdom).

Figure 2. Changes in short-term trade finance, quarter-on-quarter



Note: Data refer to changes in short-term export credit exposures that are insured by Berne Union member insurers.
Source: Berne Union.

10. Anecdotal evidence by professionals in the banking and insurance sectors suggests that trade finance that is taking place outside the institutions has fallen more sharply than lending by banks and trade insurance by credit and investment insurers. This sentiment is difficult to translate into a quantitative result, but it should be kept in mind that the proxy for changes in trade finance used here may underestimate the actual situation. In addition, trade finance taking place outside financial institutions is generally more prevalent in countries where those institutions are less developed, *i.e.* some developing countries (Menichini, 2009).

Trade finance or finance?

11. It is difficult to determine with certainty whether the trade finance activity has been hit more severely than other forms of bank financing (such as domestic financing, housing loans etc.) due to a lack of strict compatibility among data sources. According to information presently available, however, the amount of short-term trade financing put into motion through insurers fell later, and less, than general short-term financing flows during the present crisis. The outstanding short-term liabilities on banks as collected by the Bank of International Settlements (BIS) started falling worldwide in Q2 2008, one period prior to the fall in trade finance indicators. Short-term liabilities have also fallen more sharply than trade finance: overall short-term lending by banks fell by 17% in Q4 2008 as compared with the previous quarter, and this was the third consecutive quarter of negative growth in short-term lending.

Table 1. Changes in short-term trade finance vis-à-vis short-term finance, quarter-on-quarter (%)

	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1
Short-term trade finance					
World	7.74	4.68	-2.86	-8.11	-11.50
OECD	7.54	2.97	-4.29	-8.42	-10.27
Non-OECD	8.22	8.93	0.52	-7.41	-14.22
Short-term finance					
World	10.20	-5.00	-7.56	-16.51	-2.19
OECD	10.53	-6.16	-8.15	-15.68	-3.77
Non-OECD	8.03	2.87	-3.91	-21.36	7.82

Short-term trade finance refers to export exposure short-term of Berne Union insurers. Short-term finance refers to the short-term liabilities on banks collected by the Bank of International Settlements.

Source: Bank of International Settlements (BIS), Berne Union.

12. The fact that short-term trade finance fell less overall than total short-term finance may indicate that trade finance represents a lower risk to banks and insurers than some other types of finance. Anecdotal evidence from discussions with some banking professionals, particularly those banks specializing in trade finance, suggests that trade finance is indeed a "safer bet" than other types of credit for a number of reasons:[7]

- Generally, it is possible to mitigate banks' risk by using the traded goods as collateral[8]
- Professionals outside the sector of activity have a clear signal that there is demand for the transaction
- The transaction is concrete and its progress can be tracked
- In general when firms are doing badly they stop their trading activities only as a last resort.

In time of crisis, therefore, some banks may restructure their activity toward perceived lower risk activity such as trade finance.

13. In some ways this is a relatively surprising finding since there are a certain number of additional risks in trade finance as opposed to other types of short-term finance. There is less information overall about foreign importing or exporting firms in many cases. In addition, importing and exporting firms are more likely to be small and medium sized enterprises, as compared with firms that do not trade, which are generally regarded as higher risk than large firms, and also may have a less developed relationship with their bankers or insurers. An export transaction also involves, in addition to corporate risks, sovereign risks and sometimes an exchange rate risk. Finally, if there is a need to litigate regarding a shipment of goods, doing so internationally may be more costly. Intuitive reasoning about the riskiness of trade finance is therefore ambiguous.

7. "We never lose money in trade transactions" indicated a Global Head of Structured Finance of one of the top five banks in trade finance, personal conversation, 17 September 2009.

8. In times of sharply falling commodity and other prices and falling demand, however, the value of the traded goods may become uncertain, implying added risk.

14. It has been shown here that short-term liabilities overall fell more sharply and earlier than short-term trade finance. The downturn, however, in short-term finance overall may have slowed more quickly than that for short-term trade finance. In Q1 2009, short-term lending fell by only 2% over the previous quarter, as compared with a drop of 11.5% in short-term trade finance in the same period. If the trade finance figures are in any way a lagged reflection of the short-term lending situation, we can expect trade finance to recover in future periods.

15. Another reason that the figures quoted here may show that trade finance has fallen less than short-term finance more generally is that as perceived risk has grown, firms have turned more massively to bank-intermediated finance under more risky conditions, *e.g.* when extending credit internationally. For exporting firms, the overall increase in the cost of funds has resulted in tighter cash management; firms became more selective or even unwilling to extend inter-firm supplier credits. There is evidence that as risk assessments have been revised upward, firms have exceedingly turned to more secure forms of financing to cover their risk, shifting from trading through open accounts to seeking bank financing for their transactions. Over the last ten years, the financing of international trade has moved from letters of credit to open account and buyer/supplier relationships. In the current crisis, however, trading firms have moved back to letters of credit, bringing the banks back into the system. The number of SWIFT transfers through letters of credit or guarantees, which are more costly but also less risky forms of financing, have fallen slightly in the end of 2008 and beginning of 2009, but not nearly as much as indicators examined for trade finance and for overall short-term finance. As the demand for letters of credit has risen, banks have become very cautious in examining these instruments, which may have delayed or even led to the cancelation of some transactions. In addition, letters of credit are a costly way of doing business, hence the move away from these instruments prior to 2008. It is not sure whether traders in low margin products will remain profitable if they are obliged to use costly instruments such as letters of credit.

Mitigating risk …

16. Further confirmation of the move away from more risky forms of trade finance like open account and toward bank-intermediated finance comes from bankers themselves through surveys. Bank-intermediated finance accounted for 41% of short-term trade finance in Q2 2009, up from 37.5% in Q4 2007 (Table 2).[9] Cash in advance, often a lower income country or SME extending credit to an exporter accounted for 20% of trade according to the IMF-BAFT survey in Q2 2009. Open account operations include financing that does not fit in the above two categories, *i.e.* intra-firm credit, non-financial firms extending credit to other non-financial firms, or non-financial firms obtaining credit directly from export credit agencies. Open account operations fell sharply during the crisis and accounted for 39% of trade finance according to the survey in Q2 2009. Inter-firm credit alone accounts for an estimated 30% of trade finance in the US and Japan.

Table 2. Survey of different types of trade finance pre- and post-crisis

% of trade covered by different types of trade finance

	Q4 2007	Q2 2009
Bank-intermediated finance	37.5	40.8
Cash-in-advance	18.4	20.6
Open account	44.1	38.6

Source: IMF-BAFT Survey of Trade Finance.

9. Letters of credit are included in this category although there is no transfer of funds per se in this case.

17. Another indicator that firms have turned to more bank-intermediated finance is that the share of trade that has been financed by Berne Union group insurers has risen in recent quarters. This is indicative of a return to financing trade in a more formal manner than had been used prior to the financial crisis. The share of trade that is financed or insured through Berne Union members was 30% of world trade in Q1 2009, up from 25% before the financial crisis (Table 3).

18. This finding contradicts some earlier evidence that the use of less formal channels of financing, generally firms extending credit between themselves, tends to increase in times of crisis (Calomiris, 1995; Love *et al.*, 2007). In practice, intra-firm credit is a chain of simultaneous debtors and creditor firms. Firms generally extend trade finance to their customers and receive it from their suppliers. This exposes them on one side to the risk of non-payment by their customers, and at the same time to the risk of credit stopping by their suppliers. Because of this, intra-firm trade credit is considered a mechanism of propagation of shocks (Menichini, 2009). The systemic nature of the present crisis, that has hit banks and firms in most countries and sectors simultaneously, may explain the finding that firms have sought to return to more formal forms of financing despite banks' generally less favourable conditions. Credit dries up along an intra-firm credit chain as soon as the weakest firm can no longer extend credit to its customer.

19. A greater share of OECD total trade is financed through Berne Union insurers than non-OECD firms' trade. In addition, the gap is widening. OECD firms' increase in trade financed by Berne Union insurers rose by a higher percentage since the beginning of the crisis compared to non-OECD countries. This may point to greater availability at more favourable conditions that is extended to firms in OECD countries, particularly those that are considered lower risk, as opposed to non-OECD countries since the beginning of the crisis.

Table 3. Insured short-term trade finance as a share of trade, %

	2007Q2	2007Q3	2007Q4	2008Q1	2008Q2	2008Q3	2008Q4	2009Q1
World	25	26	25	27	25	24	27	30
OECD	28	30	28	29	28	28	31	35
Non-OECD	19	20	20	21	20	19	22	23

Figures refer to the share of short-term export exposures as reported by the Berne Union as a share of exports.
Source: Berne Union, UN Comtrade.

20. Within these two major country groups, some lower risk countries are more highly leveraged in terms of bank-intermediated finance. This indicates that borrowers in countries that are considered low risk (0 on the scale of the OECD export credit risk rating) are more readily able to finance the imported components of their exports, and generally mitigate their risk through banks and insurers.

A regional view …

21. Countries that are generally considered to represent high risk were most affected by changes in trade finance in the recent crisis. Most of the countries whose trade finance flows fell very sharply were rated 6 or 7 by the export credit country risk rating (on a scale from 0, lowest risk to 7, highest).[10] There are exceptions, however, with some countries showing huge falls in their trade finance flows whereas their

10. Some countries, *e.g.* high-income OECD and Euro area countries, are automatically classified as zero risk. Changes in country risk assessments are undergone only in the case of a significant country-specific development. See http://www.oecd.org/document/49/0,3343,en_2649_34169_1901105_1_1_1_37431,00.html for more ample information on the methodology and use of the country credit risk classification.

risk ratings were low or average. A case in point is Iceland. Iceland's risk level was (and still is) zero (on the OECD export credit risk rating scale from 0 to 7) whereas its stock of trade finance fell by an average of 28% per quarter since Q3 2008. Other countries that have been harder hit than would be expected given their risk ratings are Russia, some Eastern European countries and Ireland. Ireland, although showing a zero risk rating, saw its stock of trade finance fall by 13% per quarter since Q3 2008. Other OECD countries whose trade finances were severely lowered were Turkey, Spain, Greece, Italy and Portugal. OECD countries whose trade finance situation was relatively less affected were: Japan, Mexico, Canada and the United States.

22. In the case of OECD countries, those with the sharpest fall in short-term trade finance were often countries that were the most heavily leveraged going into the crisis. In particular, Greece, Portugal, Iceland and, to a lesser extent, Poland, Spain and Italy were already borrowing a significant portion of their trade values through bank-financed or insured short-term credit.

23. Russia, Ukraine and some Eastern European countries show a large drop in their trade finance figures. This finding is corroborated by a number of surveys. The IMF-BAFT survey of bankers reports a drop in trade finance to Eastern Europe of 13% between October 2008 and January 2009. This compares with a drop of 9% in industrialized countries in the same period. These findings are further underlined in an OECD survey of firms, professional organisations and banks dealing with trade finance and agriculture. In the agriculture sector, it is reported that "banks are extremely reticent about credit lines for specific export destinations such as Ukraine, Russia and certain Baltic countries" (OECD-FAO, 2009). The interpretation given is that since these countries have weaker legal systems, it is often difficult or impossible to obtain compensation or even make claims in case of problems.

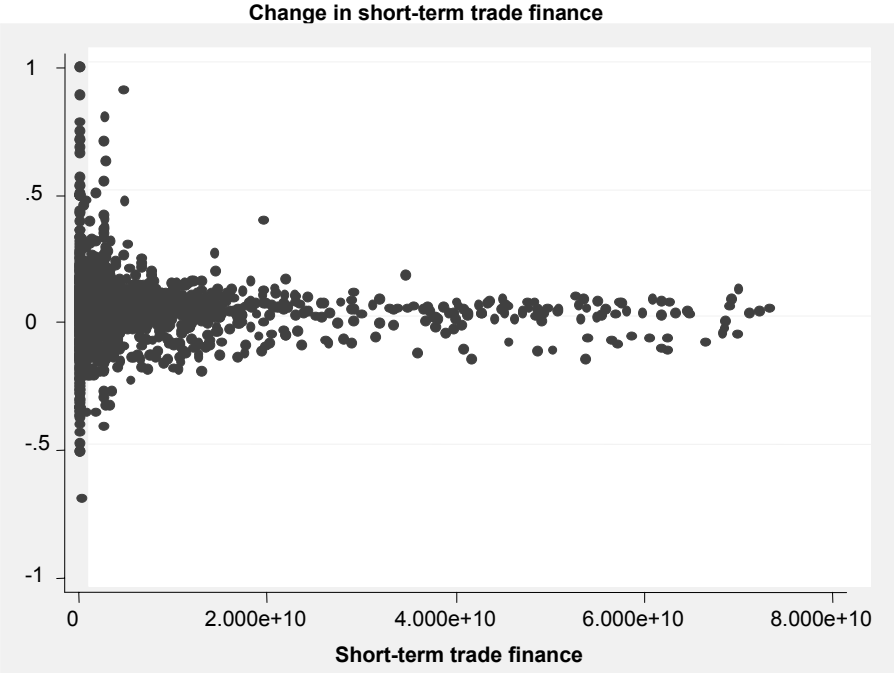
Who accesses trade finance?

24. Since the onset of the crisis, anecdotal evidence resulting from discussions with trade finance professionals showed that banks involved in this area have carried out more rigorous risk assessments, resulting in a risk-pricing which reflected their own liquidity problems, rather than an increase in the risk of the borrower. These trends were confirmed by the successive surveys conducted by the Bankers Association for Finance and Trade.[11]

25. According to the same sources, most banks have become much more selective in granting loans to exporters and importers, focusing primarily on their best clients. The second effect of tighter lending policies was that some transactions were made more expensive due to the cost of the export financing and fewer trade transactions were therefore financed. The largest borrowers tended to continue accessing funds whereas the situation of smaller borrowers was more differentiated. This phenomenon is reflected in the trade finance data. In Figure 3, large borrowers tended to experience small changes in trade finance whereas smaller borrowers' changes in trade finance are much more dispersed.

11 See in particular the September 2009 survey in http://www.aba.com/aba/documents/press/BAFTReportGlobalTradeFinanceMarkets.pdf

Figure 3. Level of short-term trade financing and its change



Short-term trade finance is proxied by Berne Union short-term export exposures (USD) and their changes refer to one period lags.

Source: Berne Union.

Trade Finance and Trade

26. There are two main potential reasons for the drop in trade that will be examined in detail here: i) a drop in demand, and ii) a drop in the willingness of banks to lend and the increase in the rates by which they lend (short-term trade finance). We attempt to factor out the impact of each of these elements econometrically.

27. The previous section outlined the impact of the crisis on the short-term trade finance market. Short-term trade finance is found, unsurprisingly to be correlated with trade flows. The close positive relationship between changes in short-term trade finance and trade is rather intuitive: those that could continue financing continued to trade.

28. In order to ascertain the relative impact of fall in demand and decreases in trade finance on trade, an econometric model was developed. One set of models attempts to ascertain the impact on imports of domestic GDP, and availability of trade finance, proxied by short-term exposures. Another set of models attempts to ascertain the impact on total trade (*i.e.* imports plus exports) of domestic GDP, the demand for exports (proxied by total world GDP) and trade finance. A third set of models examines the trade finance effect regionally in an attempt to understand better whether or not regional differences were present in the relationships. All models also examine the impact of the cost of trade financing, proxied here by the high-yield spread on 10-year US government bonds. All models shed some light on the different impacts before the crisis (Q1 2005 to Q1 2008) and after the onset of the crisis (Q2 2008 to Q1 2009). The model specifications, data descriptions and a short description of the modelling results can be found in Appendix 2.

29. It should be underlined that these results are only indicative. Mathematical models oversimplify interactions and shocks in the global economy even during periods of relative stability. During a crisis period, the situation is never "other things equal", the condition sine qua non for interpretation of model coefficients. In the present model, we have the added difficulty of using a proxy for trade finance that in fact covers only one segment of the trade finance market. All other forms of trade finance, had they been covered, may have reacted differently in the current crisis, and may have had a different effect on trade than the proxy that was used here. These coefficients can therefore be regarded as the best estimates that exist in the context of a challenging exercise and should be used with caution.

30. The data used in this study are quarterly data available for 43 countries; the sample is biased toward countries that collect and regularly update quarterly or monthly trade, GDP and exchange rate information. The countries in the sample are likely to be more developed than those not in the sample and their trade has not necessarily evolved in the same way as world trade overall. The drop in trade in the countries included in the dataset in constant prices over the entire crisis period (peak to trough) is 33% as regards imports and 37% as regards exports. The drop in short-term trade finance during the same period was 25%. The drop in domestic demand (GDP) was 17% over the period.

31. Econometric results show a differentiated picture in terms of the impact of trade finance on trade pre- and post-crisis onset, pointing to a threshold effect. Indeed, trade finance availability seems to have a limited impact on exports under "normal" circumstances, *i.e.* outside crisis periods. According to model results, a 1% decrease in trade finance extended to a given country implies a 0.12% decrease in its imports in the period prior to the onset of the financial crisis, a relatively small effect. Once the crisis hit, however, the effect was multiplied by more than three. A 1% drop in trade finance during the crisis period implies a 0.39% drop in imports. This is a significant effect and may explain some of the sharp fall in trade observed since Q2 2008. The proxy for trade finance used here fell during the crisis (Q2 2008 to Q1 2009) by 25%. According to the model results, and keeping in mind all the caveats of data availability and estimation in times of crisis outlined above, the drop in financing can be associated with a 10% drop in imports, other things being equal.

32. Looking at changes in total trade flows, as opposed to just imports, a similar threshold effect is observed: a 1% fall in trade finance implies a 0.05% fall in trade before the onset of the crisis, and 0.17% fall after the crisis. The drop in trade finance worldwide since the outset of the crisis was about 25% according to the proxy used here. If that drop reflected the actual drop in trade finance, whether bank-intermediated, internationally insured, or otherwise, it could be expected that total trade (imports + exports) would have dropped by 4%, other things being equal.[12]

33. The impact of changes in domestic GDP on trade flows also rose following the onset of the economic crisis. The impact of changes in domestic GDP on the level of imports rose significantly after the onset of the crisis: a 1% increase (decrease) in GDP was associated with a 0.55% increase (decrease) in the level of imports pre-crisis, and a 0.71% increase (decrease) in imports after the onset of the crisis. Given that GDP fell by 17% in the post-crisis period on average for the countries covered in the dataset used here, this would, other things being equal, suggest that changes in demand would have accounted for a 12% drop in imports in those countries.[13]

34. Alternative models were used to measure the impact of changes in demand on trade flows. When examining changes in total trade (imports plus exports), the proxy used for global demand is total world

12. The result of the impact of trade finance on total trade flows is significantly less than that for imports. This is intuitively appealing as trade flows are assumed to be financed through bank intermediation in only one direction, usually by importers.

13. See appropriate caveats outlined in footnote 6 and paragraph 29.

GDP. The impact on trade of changes in global demand was much stronger in recent periods than pre-crisis. According to the estimates here, in the pre-crisis environment a 1% increase in world GDP, the proxy used here for global demand for trade, is associated with a 0.7% increase in trade. After the onset of the crisis, however, changes in global demand have an even stronger effect on trade flows. In recent periods, a 1% decrease in global demand implies a 0.97% decrease in trade, other things being equal.[14] Given that global demand fell by 15% in the crisis period on average in the dataset used here, this would, other things being equal, account for a 14.5% drop in trade.

35. These findings – that the drop in short-term trade finance had a significant impact on the fall in trade, but not as much so as the fall in demand – confirms the finding in the qualitative IMF-BAFT survey. Bankers and exporters indicated that the drop in global demand was the most important reason for the decline in trade and that reduced trade financing was the second most important reason (IMF-BAFT, 2009). Some analysts (Mora and Powers, 2009) suggest that the policy responses to inject trade credit, which were early and massive, may have alleviated some trade credit problems.

36. Available data indicates that trade in some regions – Asia, MENA and South America – was more severely impacted by changes in short-term trade finance than other regions (Europe and North America).[15] This seems to concur with anecdotal evidence (outlined in Berman and Martin, for example) that thinner financial markets in some developing countries have made importers and exporters in those markets more vulnerable to changes in trade finance flows. This analysis indicates that trade in Asia, MENA and South America is affected three to four times more strongly by changes in short-term trade finance than is trade in Europe or North America. These findings imply that the sharp falls in trade during the crisis period can be explained in part due to decreases in trade finance for all regions, and most particularly in Asia, MENA and South America. This may be due to the fact that some countries in Asia, MENA and South America were considered higher risk, or their level of risk was re-evaluated after the onset of the crisis. It may also be due to the recent higher cost of financing that some producers of lower value-added goods could not afford.

37. Although it is difficult to compare results found in different studies, the results found here for Asia are similar to those found in a preliminary paper by Mary Amiti of the Federal Reserve Bank of New York and David Weinstein of Columbia University. They exploit Japanese matched bank-firm data to examine whether banks transmit financial shocks to exporters and find that about one-third of the decline in Japanese exports in 2008 can be explained by the decline in bank capital. Using the coefficient for Asia as a rough comparison, the results found in this study suggest that the 12% decline in trade finance experienced in Japan (according to Berne Union data) was responsible for a 7% drop in trade. Since the total drop in trade in Japan over the period under review was 22%, trade finance seems to have been associated with about one-third of that drop, confirming the finding by Amiti and Weinstein.

38. The analysis undertaken in this study suggests that both the availability of trade finance and the cost of financing impacted trade flows. The cost of financing, proxied here by high-yield spreads, generally had no significant impact on trade prior to the onset of the crisis. In the crisis period, however, a one

14. This finding is significantly smaller than that by Freund (2009) who, using a different model for 31 countries and deflating using the United States consumer price index, finds an elasticity of trade to GDP of more than 3. In order to compare the results of this study with those of Freund, the combined impacts of global GDP and domestic GDP would need to be added in models 3 and 4 of table A2.2. These combined results are still smaller than those found by Freund who does not include indicators of the cost or availability of trade finance in her models. More traditional estimates found in the literature are between 1 and 2, more closely consistent with the findings here.

15. It should be noted however that country coverage in these regions is not complete. See Appendix Table A2.3 for country coverage in the econometric analysis.

percentage point change in the high-yield spread can be associated with a 0.8% drop in imports and a 0.5-0.7% drop in total trade. Although this result implies a small effect on trade overall due to an increase in spreads,[16] it indicates that financing was probably prohibitively expensive for some traders, thereby severely constraining their ability to trade.

Possible long-term structural changes in trade finance

39. Anecdotal evidence as well as information analysed here point to some important structural changes in bank lending. Bankers have indicated that "greater emphasis will be placed on income statements and repayment capacity and the extent to which firms are leveraged, as well as the market risks of their main sector operations. For many firms, the effects of these changes will only begin to be seen in the coming months as loans come due and renewals under stricter criteria are applied" (OECD-FAO, 2009).

40. Interviews with major banks involved in trade finance have revealed that credit is being allocated in a more selective manner as market risks rise. Seven out of ten banks have changed their trade-related lending guidelines since October 2008. Eighty-three percent of those interviewed indicated they were more cautious with lending to certain countries; 77% are more cautious when lending to certain sectors of activity. Two-thirds requested shorter tenors than before (IMF-BAFT, March 2009).

41. When bankers were asked what governments or international financial institutions could do to facilitate problems in trade financing, many indicated a role that needed to be filled through provision of credit lines through official bodies; government schemes that could target trade finance specifically; extending government guarantee programmes and providing insurance for trade (IMF-BAFT, 2009).

Policy responses adopted since the onset of the crisis

42. Since the outbreak of the global financial crisis, OECD members with official export credit programmes have taken a variety of measures to ensure that the demand for government-supported trade finance would be met. In support of these efforts, the OECD has provided a forum for member countries and other important exporters to discuss the issue and explore the possibility of developing a coordinated response. In November 2008, OECD countries, the European Commission, the WTO Secretariat and a number of major economies (including Brazil, Estonia, India, Israel, Romania, the Russian Federation and Slovenia) pledged their determination to ensure that sufficient capacity would be available to support international trade flows. To this end, these governments and institutions adopted a formal Statement on 24 November 2008.

43. In January 2009, the financial crisis was again the main topic addressed at a special OECD export credit meeting, at which the decision was taken to adjust some of the disciplines of the Export Credit Arrangement to facilitate the financing of projects, in particular in the area of project-finance type transactions where official support was particularly needed.

44. Following the April G20 meeting, where a USD 250 billion pledge was adopted in the area of short-term trade finance, 36 countries (OECD members providing export credits, Brazil, China, Estonia, Indonesia, Israel, Romania, Singapore, Slovenia), and participating institutions (the European Commission, the IMF, the World Bank, the IFC, the MIGA and the WTO,) agreed at the OECD to co-ordinate export credit support to help boost international trade and investment. At the April 2009 export credits meetings, which took place just after the London G20, these countries and participating institutions decided that the OECD would host regular meetings to exchange information and monitor progress. To this end, a second

16. High yield spreads increased from a low of 3-4% pre-crisis to a high of 16% after the onset of the crisis.

Statement was adopted on 23 April 2009 which welcomed the commitment by the G20 nations to provide at least $250 billion in short-term trade finance support over the next two years through their national export credit and investment agencies as well as multilateral financial institutions.

45. The trade and export finance experts of the G20 countries and international institutions participating in this G20 exercise continued to coordinate their efforts to monitor the implementation of the $250bn package since April 2009. The OECD Secretariat contributed to this process by compiling the most recent data in relation to medium and long term officially supported export credits, and by mapping measures taken at the national level in this area.

46. Looking forward, the question of an exit strategy for these official trade finance programs has also been raised, but seems premature to be addressed as a priority issue at a time when international trade is just starting to recover. Yet, in order to avoid any unlevelled playing field, in particular in terms of differences in risk-pricing and spreads charged, Members should seek to coordinate the content and the timing of their exit strategies.

47. In addition, some members have suggested that coordinated expertise may be drawn from this coordinated response to the crisis so that official support schemes are able to respond more swiftly to any new crisis on the trade finance front.

48. Finally, although the issue does not benefit from consensus among governments, there have been discussions about the impact of Basel II rules on trade finance flows. For some, by playing a pro-cyclical role, these disciplines have increased the selectivity of banks in choosing business lines which were less risky and more remunerating; trade finance has not been traditionally a high margin business for banks and therefore this segment may have been hit more directly when banks had to face balance sheet constraints in a tougher regulatory environment. There have been calls for modifications of Basel II regulations in order to facilitate the provision of trade finance; these calls remain under discussion.

49. This paper has underlined one of the major difficulties regarding policymaking in the area of trade finance – that there is little reliable quantitative information. In order to produce this study, incomplete data have been used which indicate that these results are more indicative than prescriptive. Information has been collected from a number of surveys (such as IMF-BAFT, ICC and OECD) and data sources that cover one part of trade finance, are best existing proxies for trade finance. Without complete information, policymaking in this area remains guesswork as results from policies cannot be completely measured. Banks, however, collect such data on short-term finance for trade and report them internally. A concerted international effort to collect and disseminate such information would be of assistance in better understanding the impacts of different policies thereby informing the policy community of best practice in responding to the spillover effects of financial crises in future.

BIBLIOGRAPHY

Amiti, Mary and David Weinstein, Exports and Financial Shocks, NBER Working Paper no. 15556, December 2009.

Auboin, Marc, Boosting Trade Finance in Developing Countries: What Link with the WTO?, World Trade Organization, Geneva, November 2007.

Auboin, Marc, and Moritz Meier-Ewert, Improving the Availability of Trade Finance during Financial Crises, WTO, Geneva, 2003.

Berman, Nicolas and Philippe Martin, The vulnerability of sub-Saharan Africa to the financial crisis: the case of trade, mimeo, July 2009.

Calomiris, Charles, Charles Himmelber and Paul Wachtel, Commercial Paper, Corporate Finance and the Business Cycle: A Microeconomic Perspective, NBER Working Paper no. 4848, 1995.

Chauffour, Jean-Pierre and Thomas Farole, Trade Finance in Crisis: Market Adjustment or Market Failure?, World Bank Policy Research Paper 5003, July 2009.

Federal Reserve Board, The July 2009 Senior Loan Officer Opinion Survey on Bank Lending Practices, http://www.federalreserve.gov/boarddocs/SnloanSurvey/200908/#_ftn2, August 17, 2009.

Freund, Caroline, Demystifying the collapse in trade, http://www.voxeu.org/index.php?q=node/3731, 3 July 2009.

Humphrey, John, Are Exporters in Africa Facing Reduced Availability of Trade Finance, mimeo, Institute of Development Studies, Brighton, UK, March 2009.

Iacovone, Leonardo and Veronika Zavacka, Banking crises and exports: Lessons from the past, VoxEU.org, September 1, 2009.

International Chamber of Commerce, Rethinking Trade Finance 2009: An ICC Global Survey, Document no. 470-1120 TS/WJ, 31 March 2009.

International Monetary Fund, IMF-BAFT Trade Finance Survey, March 2009.

Love, Inessa, Lorenzo Preve and Virginia Sarria-Allende, Trade credit and Bank Credit: Evidence from recent financial crises, Journal of Financial Economics, no. 83, 2007.

Menichini, Anna Maria C., Inter-firm Trade Finance in Times of Crisis, Policy Research Working Paper no. 5112, World Bank, November 2009.

Mora, Jesse and William M. Powers, Decline and gradual recovery of global trade financing: US and global perspectives, compiled in Baldwin, Richard "The Great Trade Collapse: Causes, Consequences and Prospects", http://www.voxeu.org/index.php?q=node/4298, 27 November 2009.

OECD/FAO, OECD-FAO Agricultural Outlook 2009-18, Paris and Rome, 2009.

OECD (2010), Trade and Economic Effects of Responses to the Economic Crisis, Paris.

Petersen, Mitchell and Raghuram Rajan, Trade Credit: Theories and Evidence, Review of Financial Studies, Fall, 1997, Volume 10, pp. 661-9.

Ronci, Marcio, Trade Finance and Trade Flows: Panel Data Evidence from 10 Crises, IMF Working Paper WP/04/225, 2004.

Thomas, Alun, Financial Crises and Emerging Market Trade, IMF Staff Position Note SPN/09/04, 11 March 2009.

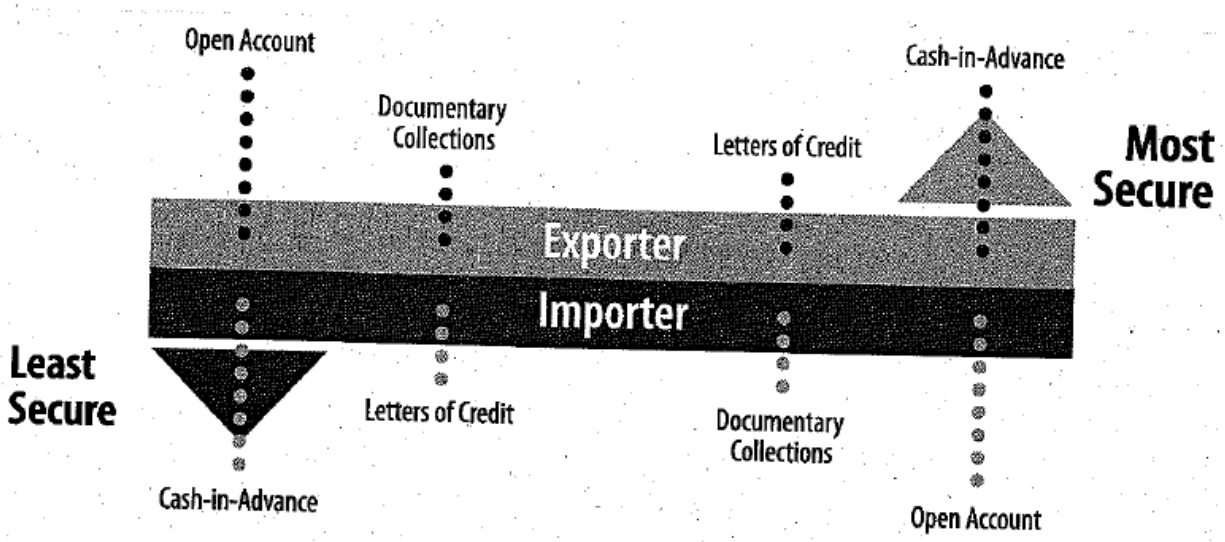
US Dept. of Commerce, Trade Finance Guide: A quick reference for US exporters, Washington, April 2008

APPENDIX A.

METHODS OF PAYMENT IN INTERNATIONAL TRADE[17]

50. International trade presents a spectrum of risk, which causes uncertainty over the timing of payments between the exporter (seller) and importer (foreign buyer). For exporters, any sale is a gift until payment is received. Therefore, exporters want to receive payment as soon as possible, preferably as soon as an order is placed or before the goods are sent to the importer. For importers, however, any payment is a donation until the goods are received. Therefore, importers want to receive the goods as soon as possible but to delay payment as long as possible, preferably until after the goods are resold to generate enough income to pay the exporter.

Figure A.1. Payment Risk Diagram



Selected types of Trade Finance credit mechanisms

Cash-in-Advance

51. With cash-in-advance payment terms, the exporter can avoid credit risk because payment is received before the ownership of the goods is transferred. Wire transfers and credit cards are the most commonly used cash-in-advance options. However, requiring payment in advance is the least attractive option for the buyer, because it creates cash-flow problems. Foreign buyers are also concerned that the

17. The information in this appendix is taken directly from the US Department of Commerce *Trade Finance Guide: A quick reference for US exporters*, April 2008.

goods may not be sent if payment is made in advance. Thus, exporters who insist on this payment method as their sole manner of doing business may lose to competitors who offer more attractive payment terms.

Letters of Credit

52. Letters of credit (LCs) are one of the most secure instruments available to international traders. An LC is a commitment by a bank on behalf of the buyer that payment will be made to the exporter, provided that the terms and conditions stated in the LC have been met, as verified through the presentation of all required documents. The buyer pays his or her bank to render this service. An LC is useful when reliable credit information about a foreign buyer is difficult to obtain, but the exporter is satisfied with the creditworthiness of the buyer's foreign bank. An LC also protects the buyer because no payment obligation arises until the goods have been shipped or delivered as promised.

Documentary Collections

53. A documentary collection (D/C) is a transaction whereby the exporter entrusts the collection of a payment to the remitting bank (exporter's bank), which sends documents to a collecting bank (importer's bank), along with instructions for payment. Funds are received from the importer and remitted to the exporter through the banks involved in the collection in exchange for those documents. D/Cs involve using a draft that requires the importer to pay the face amount either at sight (document against payment) or on a specified date (document against acceptance). The draft gives instructions that specify the documents required for the transfer of title to the goods. Although banks act as facilitators for their clients, D/Cs offer no verification process and limited recourse in the event of non-payment. Drafts are generally less expensive than LCs.

Open Account

54. An open account transaction is a sale where the goods are shipped and delivered before payment is due, which is usually in 30 to 90 days. This option is the most advantageous option to the importer in terms of cash flow and cost, but it is consequently the highest risk option for an exporter. Because of intense competition in export markets, foreign buyers often press exporters for open account terms since the extension of credit by the seller to the buyer is common. However, the exporter can offer competitive open account terms while substantially mitigating the risk of non-payment by using of one or more of the appropriate trade finance techniques, such as export credit insurance.

APPENDIX A2.

ECONOMETRIC METHODOLOGY: EVIDENCE FROM PANEL DATA AND TIME SERIES

55. In this section the methodology used to ascertain the effect of changes in the stock of trade finance, demand and the cost of financing on both import flows and total trade is assessed. It is well known that there is a paucity of reliable data on trade finance. We use a proxy to assess the impact of changes in trade finance on cross-country changes in imports and total trade over time. In particular, we estimate separately the last three quarters of 2008 and first quarter of 2009 and investigate how the effect of changes in trade finance availability, demand and cost of financing may have affected imports and total trade flows before and after the onset of the crisis.

56. For the analyses, the estimation sample consists of a panel of 43 countries for the period Q1 2005 to Q1 2009. The data used in estimations is presented in Table A2.1.

Table A2.1 Panel data variables

Variables	Description
log imports	Log of imports in constant USD 2000=100
log trade	Log of imports + exports in constant USD 2000=100
log world gdp	Log of world gdp in constant USD 2000=100
log gdp	Log of country gdp in constant USD 2000=100
log berne	Berne Union - log of the stock of export credit insurance in USD 2000=100
High yld spread	Log of US high yield spread on 10-year government bonds.

Model specification

57. The empirical methodology involves estimating several models using the GMM Arellano-Bond dynamic panel estimator which relate import (trade) volumes to past levels of imports (trade), demand conditions, a trade finance proxy and other determinants of cross country imports (trade) over time.[18] Since

18. This method of estimation chosen here was the Arellano Bond estimator as it is a dynamic estimator that is suitable for analyzing panel data where the data exhibit a dynamic relationship over time. International trade data is appropriate for use with the Arellano Bond estimator for this reason. One of the main differences between Arellano Bond and fixed effects panel estimation is the presence of the lagged dependent variable as a regressor in the model. This lagged variable captures the dynamic nature of trade and measures how current trade (imports) is affected by past trade (imports). Additionally, the Arellano Bond estimator estimates the model in first-differences. This is a requirement to handle the correlation between the unobserved heterogeneity inherent in panel data models and the lagged dependent variable. The models presented here were also estimated using basic fixed-effects panel data estimation. Although the magnitude of some of the coefficients changed, the basic relationships found using the Arellano-Bond estimator remained in the fixed-effects models.

import (trade) volumes exhibit much persistence over time, an appropriate model relates current imports (trade) to changes in past imports (trade) as well as other explanatory variables. A baseline model for imports is specified as follows:

$$limports_{i,t} = \beta_0 + \alpha_1 limports_{i,t-1} + \beta_1 lberne_{i,t} + \beta_2 \lg dp_{i,t} + \beta_3 spread_t + \alpha_i + u_{i,t} \quad (1)$$

where the α_i are the individual country effects assumed to be correlated with the right hand side variables. The model is estimated in first differences which removes the country level unobserved heterogeneity. Equation (1) is modified for total trade as follows:

$$ltrade_{i,t} = \beta_0 + \alpha_1 ltrade_{i,t-1} + \beta_1 lberne_{i,t} + \beta_2 \lg dp_{i,t} + \beta_3 lworldgdp_t + \beta_4 spread_t + \alpha_i + u_{i,t} \quad (2)$$

58. Equations (1) and (2) are estimated separately for the periods prior to and after Q2 2008 to assess the effect of the variables of interest on imports and total trade. Additionally, an interaction term of trade finance with regional dummies is included for both periods to assess any regional differences which the impact of trade finance may have on trade.

Econometric Results

59. Results from estimating equations (1) and (2) and their modifications are presented in Table A2.2. In general, the estimation results reveal all coefficients have the expected signs and are mostly statistically significant at the 1% significance level. On average, lagged imports positively and significantly affect current imports in the period before the collapse (Table A2.2, column 1). In other words, current imports will positively influence next period imports. This dynamic relationship can reflect such things as ongoing import supply contracts and path dependence. However, lagged imports matter much less after the onset of the crisis (column 2). This can be attributed to the short time horizon during the crisis in which we only observe four quarters, or that import volumes in the period after Q1 2008 are being determined by other factors than past import levels. This is intuitively appealing as during the crisis period imports have been falling sharply but unpredictably.

60. As expected, domestic demand, captured in the models by GDP, is a strong determinant of a country's imports. In the baseline specification of columns (1) and (2), domestic demand affects imports less than proportionally with estimated elasticities of 0.556 pre-crisis and a higher elasticity of 0.710 during the crisis.

61. The change in trade finance availability, captured by the change in the log of export credit exposure as reported by Berne Union members (*lberne*) is a positive and statistically significant determinant of changes in imports.[19] In columns (1) and (2), holding constant the effects of the other determinants of aggregate imports, the results reveal that a 1% increase in trade financing on average is associated with a change in imports of 0.123% pre-crisis and 0.391% during the crisis period.

19. The question arises as to the direction of the causality of trade flows and trade finance stocks, as with most economic estimation. Correcting for potential endogeneity is however non-trivial particularly in the present case. The two main ways of correction – finding a proper instrument for trade finance, and using lagged variables – were not possible in the present case due to lack of appropriate instruments and short time periods, particularly during the crisis period. This issue is prevalent in much econometric analysis, and is often difficult to correct, but is an additional reason to interpret results with caution.

62. A spread variable was included in the models to proxy the general cost of financing. This variable refers to high-yield spreads and is used in levels, as opposed to logs.[20] Its coefficient can therefore be interpreted as a change in percentage point of the high-yield spread affecting imports (trade). The estimates imply that changes in the high-yield spread has no impact on imports pre-crisis but a significant impact post-crisis where a 1 percentage point increase in the cost of financing is associated with a fall in imports of 0.8%, all else equal.

63. Turning to the trade models in columns (3) to (6), the estimated effects are consistent with the models for imports. Domestic demand conditions, captured by GDP, are also consistent with the estimated impact in the import models with larger estimates post-crisis than pre-crisis. Global demand conditions, captured by world GDP show the expected positive relationship to trade with estimated elasticities of 0.694 pre-crisis (column 3) rising to 0.973 after the onset of the crisis (column 4). Global finance conditions, or the cost of credit, is proxied by the spread variable. This variable, insignificant in the pre-crisis period, becomes significant after the crisis arises. Although the coefficient is of small magnitude, it indicates that the cost of financing became an issue in the post-crisis period. For a 1 percentage point increase in the cost of finance, estimated trade is predicted to fall by between 0.5 and 0.7%, holding constant other factors.

64. Finally, to assess whether the change in trade finance has had a differentiated effect on different regions, the models include interaction terms between six regional indicator variables and the trade finance proxy, *lberne* (columns 5 and 6 in Table A2.2). The baseline regional dummy variable (excluded category) is for Europe so all other regional interaction terms are expressed as they differ with respect to Europe. The estimated results from after the crisis reveal that falls in trade finance affected trade for Asia, MENA and South America more than Europe.

65. These models are explaining a significant amount of variation in the endogenous variables in question (imports or total trade). The R-squared refers to the squared correlation between the predicted dependent variable and the actual observed dependent variable.

20. Other indicators of the cost of financing were tried, including the TED spread and the qualitative results from the United States loan officers' survey. The goodness-of-fit was lower using these indicators. Results are available on demand.

Table A2.2 Econometric Results

Model	(1)	(2)	(3)	(4)	(5)	(6)
Period	Q12005-Q12008	Q2 2008-Q1 2009	Q12005-Q12008	Q2 2008-Q1 2009	Q12005-Q12008	Q2 2008-Q1 2009
Dependent variable	Log(imports)		Log(trade)			
Log(lagged imports)	0.312***	0.170***				
	(0.029)	(0.065)				
Log(gdp)	0.556***	0.710***	0.499***	0.615***	0.516***	0.559***
	(0.033)	(0.072)	(0.044)	(0.073)	(0.045)	(0.077)
Log(berne finance)	0.123***	0.391***	0.051*	0.173***	0.124***	0.127*
	(0.019)	(0.074)	(0.029)	(0.067)	(0.037)	(0.068)
High yld spreads	0.000	-0.008***	-0.007	-0.005*	-0.005	-0.007**
	(0.003)	(0.002)	(0.004)	(0.003)	(0.004)	(0.003)
Log(lagged trade)			0.184***	0.130*	0.162***	0.180**
			(0.033)	(0.068)	(0.034)	(0.072)
Log(Worldgdp)			0.694***	0.973***	0.544***	0.769***
			(0.128)	(0.258)	(0.138)	(0.262)
Log(berne) Asia					-0.127***	0.463***
					(0.034)	(0.166)
Log (berne) MENA					-0.007	0.648*
					(0.071)	(0.355)
Log(berne) Nth America					0.009	0.334
					(0.101)	(0.346)
Log (berne) Oceania					-0.028	0.196
					(0.097)	(0.312)
Log(berne) Sth America					-0.057	0.530**
					(0.041)	(0.214)
Constant	-0.724***	-1.454***	-5.986***	-9.035***	-4.702***	-7.188***
	(0.093)	(0.231)	(1.103)	(2.244)	(1.188)	(2.276)
R-squared	0.911	0.855	0.889	0.863	0.870	0.857
N	681	195	681	195	681	195

Source: *** p<0.01, ** p<0.05, * p<0.1. R squared calculated as the squared correlation between the predicted dependent variable and the observed dependent variable. All models estimated in first differences using the Arellano-Bond GMM dynamic panel estimator.

Data description and sources

66. *Imports.* From IMF International Financial Statistics (IFS) for all available countries q12000-q12009. From OECD for OECD countries and major non-OECD countries. All in USD. IFS data deflated using GDP deflator (2000=100). OECD data and major non OECD deflated using import price deflator. Import price deflators exist for only a small number of countries in IFS so the country GDP deflator was used to deflate all imports for IFS data.

67. *GDP* figures are generally not seasonally adjusted and are deflated by country-specific GDP deflators. Unadjusted data for USA, UK, Canada and Portugal do not exist so have been replaced with seasonally adjusted data for both the world time series and for panel.

68. *Berne_finance:* Berne Union export credit exposure is in current US dollars and has been deflated using US GDP deflator.

69. *Spread* is US high yield spread on 10-year government bonds.

Table A2.3 Countries included in the econometric analysis

Australia	Georgia	Netherlands
Austria	Germany	New Zealand
Belgium	Greece	Norway
Bolivia	Hungary	Philippines
Canada	Iceland	Poland
Colombia	Iran	Portugal
Costa Rica	Ireland	Romania
Croatia	Israel	Russia
Cyprus	Italy	Slovakia
Czech Republic	Japan	Spain
Denmark	Luxembourg	Sweden
Ecuador	Malaysia	Switzerland
Finland	Malta	Tunisia
France	Morocco	United Kingdom
		United States

Table A2.4 Correlation matrix

	Log (imports)	Log (trade)	Log (gdp)	Log (worldgdp)	Log (berne)	High yield spread
Log(imports)	1					
Log(trade)	0.9939	1				
Log(gdp)	0.9054	0.9037	1			
Log(worldgdp)	0.1201	0.1118	0.0808	1		
Log(berne)	0.8701	0.8644	0.8593	0.135	1	
High yld spread	0.0587	0.0743	0.0906	0.3651	0.1238	1