

2013

GLOBAL RISKS TRADE FINANCE REPORT

- A report from the ICC Trade Register
- Performance data on short-term trade finance and medium and long-term export finance
- In-depth analysis on markets and products
- Historical information ranging back to 2005 by year, country, and product



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PREFACE

ICC TRADE REGISTER, AN INITIATIVE FOR THE GLOBAL BANKING SYSTEM

When world trade collapsed during the global economic meltdown that began in 2008, trade and export finance suffered a resulting decline. The traditional role of trade and export finance as a low-risk asset class even came into question amid the turmoil in global financial markets. When regulators and bankers tried to assess the trade and export finance picture and its role during the crisis, timely, accurate and comprehensive data were lacking.

In 2009, the ICC Banking Commission established the ICC Trade Register to advance understanding of various products and their risk characteristics in trade and export finance. This initiative assisted the industry in developing a pool of data to evaluate the long-held claim that trade and export finance is a relatively low-risk form of financing. It also provides a much-needed empirical basis for discussions regarding the treatment of trade financing under the Basel framework.

Knowing the volume of trade and export finance and the likelihood of default for trade and export finance products, the ICC Trade Register is vital to crafting fair regulations necessary for a well-functioning global trading and banking system. Because of its long tenure as a respected source of independent policy and market analysis, ICC has been uniquely placed to supply timely and all-inclusive data on trade and export finance to help the banking industry and regulators make sense of this fast-changing sector.

Indeed, the ICC Trade Register and the present report, Global Risks Trade Finance 2013, present additional analytical methods and data that will be essential to adequately capture the magnitude and nature of risks in trade finance.

The demand for further data that can provide a complete portrait of the trade and export finance sector will only increase over the next 15 years, as global trade is poised to grow substantially. This need is made all the more urgent, since a rebound in world trade is essential to propel the continued recovery of the global economy.

Going forward, the ICC Trade Register will benefit from continuous improvement. The use of additional data from an increasing number of participating banks (21 in 2012) has been essential in providing significant additional value to the ICC Trade Register. In addition, for the first time, medium and long-term export finance data were collected and analysed, which improved overall data availability and composition.

We would like to thank the participating banks and all partners of the ICC Trade Register project for their continued support. I hope you find the report informative, insightful and suggestive of new perspectives.



THIERRY SÉNÉCHAL
EXECUTIVE SECRETARY
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“ICC has been uniquely placed to supply timely and all-inclusive data on trade and export finance to help the banking industry and regulators make sense of this fast-changing sector.”

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LIST OF ACRONYMS

ADB	Asian Development Bank
AVC	Asset Value Correlation
BCBS	Basel Committee on Banking Supervision
BIS	Bank for International Settlements
bp	Basis Point
BRIC	Fast-growing developing economies of Brazil, Russia, India, and China
CCF	Credit Conversion Factor
EBRD	European Bank for Reconstruction and Development
EAD	Exposure at Default
ECA	Export Credit Agency
EIU	Economist Intelligence Unit
EL	Expected Loss
EM	Effective Maturity
FI	Financial Institution
FX	Foreign Exchange
GDP	Gross Domestic Product
ICC	International Chamber of Commerce
IDB	Inter-American Development Bank
IFC	International Finance Corporation
IRB	Internal Ratings-based
L/C	Letter of Credit
LCR	Liquidity Coverage Ratio
LGD	Loss Given Default
MDB	Multilateral Development Bank
MIC	Middle-Income Countries
NSFR	Net Stable Funding Ratio
OECD	Organisation for Economic Co-operation and Development
OTC	Over-the-counter
PD	Probability of Default
RWA	Risk Weighted Assets
SME	Small and Medium-Sized Enterprise
USD	United States Dollar
WTO	World Trade Organization

EXECUTIVE SUMMARY

Trade finance is critical for supporting global trade flows, which totalled around US\$18 trillion in 2011. It encompasses a wide range of products and services that help reduce the risks of cross-border transactions. The ICC Trade Register captures data on trade finance to build a reliable and comprehensive fact base for understanding the real risks within international trade. The analysis this year builds on what was done in previous years to create a view of the risks in trade finance, which is more consistent with the Basel methodology (for more information refer to Appendix B).

For the 2013 Trade Register report 21 banks have provided data on more than 15 million short-term trade finance transactions globally. Both data volume and quality have been increasing year on year and the ICC Banking Commission will continue to work with the participating banks to support the Trade Register. The 2012 data set strongly reinforces the hypothesis that trade finance transactions enjoy a lower than average likelihood of default. That is, in relation to comparable corporate default rates, the trade register data recorded a lower level of defaulted transactions. However, in order to arrive at an assessment of expected losses, exposure at default and Loss Given Default (LGD) need to be considered. Notwithstanding the methodological and data challenges, the results indicate some further support of the hypothesis that trade instruments are low risk products, demonstrated by relatively low loss rates.

For short-term trade finance, the analysis of the data in the Trade Register shows:

FIGURE 1
Analysis of short-term trade finance data in the Trade Register

TOTAL 2008-11	TRANSACTION DEFAULT RATE	DEFAULTED TRANSACTION LOSS RATE	M (IMPLIED, DAYS)	SPECIFIC TXN-LEVEL LOSS RATE
Import L/Cs	0.020%	42%	80	0.008%
Export Confirmed L/Cs	0.016%	68%	70	0.011%
Loans for Import	0.016%	64%	110	0.010%
Loans for Export: Bank risk	0.029%	73%	140	0.021%
Loans for Export: Corporate risk	0.021%	57%	70	0.012%
Performance Guarantees	0.034%	85%	110	0.029%
Total	0.021%	57%	90	0.012%

The total average and the product-level and transaction-level loss rates (farthest right column on the table above) compare favourably with the average observed annual credit loss rate of 1.49% for Moody's customers over the same period.

Additional analysis showed that:

Variability of default rates across provider banks was very low, with the vast majority clustered between 0% and 0.1% across all products. Furthermore, the interquartile ranges are small, indicating that the variability in default rates is extremely low. We observe some high maximum figures within the sample, but these are not the same bank across products and specific countries drive the higher default rates in specific years. Therefore, we would hypothesise that the cause of these outliers is specific to the counterparty in each case, rather than due to consistent bank operational failures.

Default rates for countries in recession were higher, as might be expected. As a country experiences recession, counterparties within it become less liquid and so the likelihood of late or non-payment of loans increases, as does the likelihood of them failing to fulfil their obligations on letters of credit (L/Cs) or guarantee covered transactions.

Export confirmed L/Cs and loans for export (bank risk) appear strongly negatively correlated to GDP growth. As growth slows down, the likelihood of default increases. In both instances, the issuing bank is facing off against another bank instead of a corporate. Considered against the backdrop of 2008-2009 credit markets, it seems plausible the increased default rates were driven by an inability of these counterparty banks to access short-term lending to pay trade finance obligations and so late or non-payments increased.

Conversion rates are low for import L/Cs, export confirmed L/Cs and performance guarantees. These products are contingent on an event happening, such as underlying service or transaction occurring, or presentation of compliant documents, before the bank needs to make a payment to the beneficiary of the product. Once these contingent events have occurred and the contingent liability has converted into an exposure, the issuing bank will typically use funds from the importers' accounts directly to make the payment. That means the issuing bank generally only pays out of its own funds where there are insufficient funds in the importers' accounts to meet the claim.

For medium and long-term Export Credit Agency (ECA)-backed transactions, a similarly relative low risk is observed:

FIGURE 2
Medium and long-term ECA-backed transactions

TOTAL 2006-11	TRANSACTION-WEIGHTED			EXPOSURE-WEIGHTED		
	Default rate	Economic Loss Rate	EL	Default rate	Economic Loss Rate ¹	EL
Observed	1.11%	31.8%	0.35%	0.59%	27.5%	0.16%
Expected		7.0%	0.08%		6.1%	0.04%

As reported in the Register, the 'observed' figures are based on recoveries (which in many cases is partial, since ECAs pay out over time as opposed to immediately), while the 'expected' figures are based on the assumption that ECAs pay out in full (which is what typically happens).

However, Basel III will have a profound impact on trade finance:

Capital: Increases in the overall amount and quality of capital will lead to higher capital requirements across the board, both for trade finance and other types of lending. Higher levels of capital will also be required for those transactions where there is a bank counterparty, such as confirmed L/Cs. Finally, the cap on leverage will set a floor for the capital requirements of short-term off balance sheet products like L/Cs.

Liquidity: The proposed liquidity management and supervision framework will likely lead to higher funding costs for trade finance products. This is due to the need to hold high quality liquid assets as a buffer against draw downs on facilities and to fund short-term lending to small and medium-sized enterprises (SMEs) and corporates with some proportion of long-term funding, which is typically more expensive. The latest adjustment to the liquidity rules as of 7 January 2013 includes some preferential treatment for trade finance instruments.

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This ICC report would not have been possible without the pathfinding work done during the global financial crisis of 2007-2009 by the ICC Banking Commission and various policy makers. We would like to thank the Asian Development Bank and WTO Director General Pascal Lamy for providing the initial impetus to create a consolidated trade finance database hosted by ICC. In particular, the WTO Expert Group on Trade Finance became an important forum during the crisis, holding regular meetings with partners from commercial banks, the Berne Union, regional development banks and other multilateral export credit and specialised agencies. This group, of which ICC was a member, was instrumental in understanding the causes of the shortage of trade finance and in devising cooperative solutions through which public institutions could help private sector financial institutions shoulder the risk of operating in an unstable financial environment. We would like to thank Steven Beck of the Asian Development Bank for funding the initial phase of the ICC Register Project. Finally, we would like to thank the Oliver Wyman team providing the analysis in this report.

ICC thanks the following banks participating in the ICC Trade Register, which have helped us to prepare this report:

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HSBC

KfW

ING

J.P. Morgan Chase

Royal Bank of Scotland

**Santander Global
Banking**

Société Générale

Standard Chartered Bank

Standard Bank Group

**Sumitomo Mitsui
Banking Corp**

UniCredit

Wells Fargo

1. INTRODUCTION

GLOBAL RISKS TRADE FINANCE

This report, produced by the ICC Banking Commission in collaboration with Oliver Wyman, presents the global trade finance industry's 2012 perspectives on the risks in trade finance. Its objectives are:

- To support regulators and policymakers by providing an objective and transparent review of the risk characteristics of trade finance instruments, using a rich base of industry data;
- To progress the understanding of trade finance instruments amongst industry participants more broadly, including their risks and importance in global trade;
- Promote understanding of the international regulations affecting bank capital requirements for trade finance, and their history and objectives, in order to help bridge the communication gap between the industry and regulators.

1.1. OVERVIEW OF TRADE FINANCE

Cross-border trade is vital for companies wishing to grow into new markets or find cheaper, more global supply chains. While international transactions are a necessity for multinational companies, exports and imports of medium-sized corporates and the mid-market in developed markets is increasing steadily², thereby adding to the number of customers who require risk mitigation and financing of cross-border trade.

In 2011 total world merchandise imports reached approximately US\$18 trillion, growing around 16% from 2010³. It is expected to grow slightly (approximately 2%) in 2012 with higher growth prospects in the longer term⁴, though not as aggressively as in 2011-2012. Development was divergent across regions in 2011-2012, with growth being led by developing countries, while absolute volumes are still being dominated by flows between Organisation for Economic Co-operation and Development (OECD) countries. New flows are emerging between developing markets, with Asia-Pacific and the Middle East the largest intra-region trading areas. Indian trade with China drove south Asian exports; Latin American exports remained steady; Middle Eastern and African exports were impacted by the Eurozone crisis. Banks across the globe are improving capabilities in international trade and finance, though higher capital requirements and the effects of the Eurozone crisis are resulting in balance sheet restrictions, funding premiums and increased cost pressure. Development banks have increased limits and resources and, after some period of relatively muted usage, ECA backing is very much back on the table, particularly for longer dated transactions.

All trade transactions require financing to be provided either by the buyer or by the seller. If a buyer is to pay cash on delivery then they must cover the period between obtaining goods and selling them on to recoup the expenditure. If a seller allows a buyer some time to pay then the seller must finance that period.

“The ICC Trade Register has been instrumental in fostering dialogue with regulators on a global scale. The integrity of the data is proven and is a strong incentive for other banks to participate.”

Pascal Lamy,
Director General,
World Trade
Organization

All trade transactions have inherent risk, which both the buyer and seller assume and which each must manage effectively. Risk arises from both idiosyncratic and macro risks. The former includes operational risks (such as mis-documentation or substandard product performance), credit risk arising from the counterparty, country risks and liquidity risk. The latter includes risks such as political risks due to potential changes in a country's trade policies. Furthermore, as a significant share of trade transactions involves more than one currency, foreign exchange (FX) risk also needs to be considered. The focus of this report is predominantly on credit risk, although other risk types are also touched upon.

Trade finance instruments allow companies to perform international trade transactions effectively whilst reducing the risks to which the companies are exposed. This means that trades can be made, working capital can be unlocked, operating costs can be reduced and the efficiency of financial supply chains can be improved upon. Depending on the relative importance of each of the factors, a set of different instruments exists, ranging from L/Cs through to open account trade and supply chain solutions.

Bank involvement in trade finance is defined by the type of transaction and the degree of security required by the transaction parties. Banks can take on a number of roles including (i) acting as intermediaries in the exchange of documents; (ii) issuing performance guarantees for either party or guaranteeing payment on behalf of the buyer; or (iii) extending lines of credit to facilitate a transaction. In becoming party to a trade finance transaction, the bank reduces risk and increases liquidity for the counterparties by taking on a proportion of the risk itself. However, this risk is inherently low due to trade finance instruments' relatively low default rates (as we will see in the analyses in this report), as well as the embedded protection afforded by the possibility of seizing the underlying collateral in the form of the goods.

Trade finance forms an important component of a bank's service offering to its corporate and SME clients. There are also natural links to cash management, especially for on balance sheet trade loans, which are often packaged together with cash management as part of a broader working capital management service. However, it is a scale-dependent business where profit margins increase with volumes due to the high levels of infrastructure investment and operations required. This means that a large disparity in profitability exists between the market leaders and smaller, often mostly domestic banks, which often barely break even.

With Basel III poised to increase the financial resources needed to support trade finance (see section 1.4), smaller banks may find it difficult to offer trade finance to their clients. If these banks then pull back from trade finance as a result, it may take years to rebuild capacity because building trade finance capabilities, as well as the associated transaction capabilities of payments and cash management, is not only costly but also takes time to bear fruit – typically five to seven years. The supply of trade finance cannot be 'turned on' readily even if the demand for these banking services increases.

1.2. OVERVIEW OF SHORT-TERM TRADE FINANCE PRODUCTS

We generally distinguish short-term from medium to long-term trade finance products. We define short-term trade finance products as all instruments facilitating trade transactions with a maturity of normally less than a year and a clear link to a specific trade transaction. Short-term trade finance instruments are traditionally considered highly liquid products given the relationship to a specific transaction and clearly identified trade good. They are also collateralised by a) a set of documents; and b) the underlying goods themselves. Furthermore, at least one bank, but in many cases two or more banks, are involved, transforming what was a corporate counterparty risk for an exporter into (at least to some extent) a financial institution (FI) counterparty risk. In the following sections we outline the main characteristics of the most commonly used short-term trade finance instruments. Please also see the appendix for a detailed description of the instruments and their product and transaction profile.

1.2.1. Import Letters of Credit

As noted above, when a firm in one country (the importer) wants to import goods from a firm in another country (the exporter), it needs to agree on how it is going to pay for the goods. Where the importer is not familiar to the exporter, the exporter may be unwilling to run the risk of shipping goods to the importer only to find that they do not get paid. This means that, in the absence of trade finance products, if the exporter is unwilling to run the risk that the importer will not pay, the exporter can either choose to make the importer pay for the goods in advance, which the importer may be unwilling to do, or choose not to sell its goods to the importer⁵.

This is where an import L/C can play a beneficial role. Instead of requiring upfront payment from the importer, the exporter can ask the importer for a guarantee from a bank that the payment will be made, i.e. it can ask for an import L/C. Under this arrangement, the risk to the exporter of non-payment is reduced, as banks are typically lower risk than a normal company in another country.

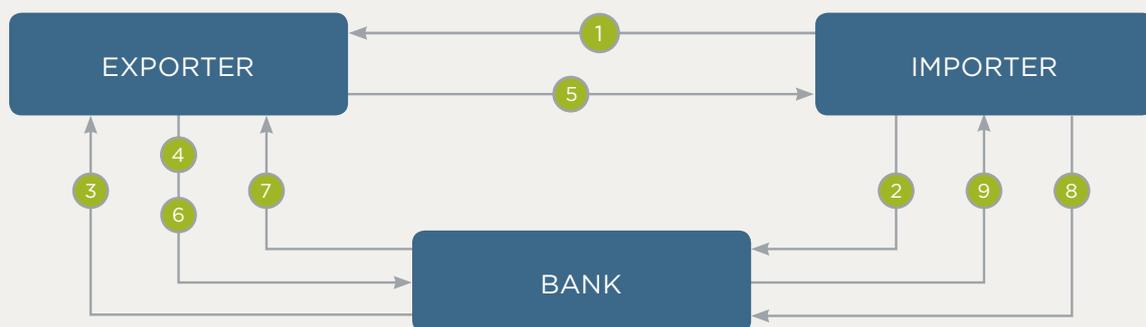
An import L/C is a document issued by a bank on behalf of an importer to an exporter that guarantees payment for goods or services. It is also known as a straight L/C or unconfirmed L/C.

An import L/C is a contingent obligation (i.e. off balance sheet) and remains so until compliant documents are presented. At the point that compliant documents are presented, or at an otherwise specified time, the bank will typically pay the amount owed with funds deducted directly from the importer's other accounts or facilities with the bank. It is only at this time, if there are inadequate funds in the importer's accounts or facilities with the bank, that the bank has to pay the exporter and then reclaim its money from the importer. Exporter's banks are often involved in handling documents and payment without having to provide any guarantees themselves. Figure 3 shows how an import L/C works.

1.2.2. Export Confirmed Letters of Credit

One possible issue for the exporter when using an import L/C is that, whilst it has now reduced the risk of non-payment from the importer, it has replaced it with the risk that the bank issuing the L/C (also known as the issuing bank) may not make its payments. Whilst banks are often relatively low risk, if the exporter is unfamiliar with the issuing bank, or has concerns about the country where the bank is based, then it may still be unwilling to export the goods or provide the service.

FIGURE 3
Transaction process flow for an import letter of credit



1. Exporter and importer agree contract of sale
2. Importer requests L/C
3. Bank issues L/C on behalf of the importer in favour of exporter
 - L/C will set out the terms and conditions for payment
 - Typically on the presentation of a compliant set of documents
4. Exporter checks and accepts the L/C
5. Exporter ships goods to importer
6. Exporter issues documents, such as bills of lading, as required by the terms and conditions of the L/C and sends them to the issuing bank
7. Issuing bank checks the documents and, if compliant, arranges payment to the exporter
 - Either "at sight", i.e. upon presentation of compliant documents
 - Or "usance", i.e. after a specified term, such as 30 or more days after sight or shipment date
8. In exchange, the importer pays the issuing bank (or provides a bill of acceptance, draws down on a credit facility, etc.)
9. Issuing bank releases documents to the importer

This is where the export confirmed L/C can play a beneficial role. The exporter can approach a bank that it is familiar with or one that it trusts and asks them to guarantee the payment from the issuing bank, i.e. it can ask for an export confirmed L/C. Under this arrangement, the risk to the exporter of non-payment is further reduced as the bank it selects to guarantee the payment (also known as the confirming bank) may be lower risk than the issuing bank in another country.

This means that, as with an import L/C, an export L/C is a document issued by a bank on behalf of an importer to an exporter that guarantees payment for goods or services.

Confirmation is generally used when there is a risk that the issuing bank may not fulfil its obligation to pay, for example due to poor credit-worthiness or political instability in the country of the issuing bank. In effect, a confirming bank substitutes its credit-worthiness for that of the issuing bank. Figure 4 shows how an export L/C works.

FIGURE 4
Transaction process flow for an export confirmed letter of credit



1. Exporter and importer agree contract of sale
2. Importer requests L/C
3. Issuing bank issues L/C on behalf of the importer in favour of exporter and sends it to the confirming bank
4. Confirming bank checks and accepts (confirms) the L/C before advising the exporter of the receipt of L/C documents
5. Exporter checks and accepts the L/C
6. Exporter ships goods to importer
7. Exporter issues documents, such as bills of lading, as required by the terms and conditions of the L/C and sends them to the confirming bank
8. Confirming bank checks the documents and, if compliant, releases documents to the issuing bank
9. Confirming bank arranges payment to the exporter (at sight or usance)
10. Issuing bank checks the documents and, if compliant, releases documents to the importer
11. In exchange for the documents, the importer pays the issuing bank (or provides a bill of acceptance, draws down on a credit facility, etc.)
12. Issuing bank arranges payment to the confirming bank

1.2.3. Loans for Export

As explained above, the import L/C and export confirmed L/C reduce the risk of non-payment to the exporter. However, the exporter may still face the problem that the payment will take a reasonably long time to be made given the terms of the transaction and, while awaiting payment for this exported goods or service, the exporter may need to pay staff or buy further materials etc.

This is where a loan for export can play a beneficial role. Given that the exporter has a L/C, it can use this as collateral for a loan from a bank in order to accelerate payment i.e. it can use a loan for export⁶. Under this arrangement, the L/C component reduces the risk of non-payment, whilst the loan provides funds more rapidly, thereby reducing liquidity risks for the exporter and allowing it to undertake more trade.

A variety of techniques and structures exist which have the effect of loans extended to the exporter. For example, as a common means of providing working capital financing where L/Cs are being used, an L/C structure can be set up as per an import L/C but with a 'negotiable' clause. Figure 5 shows how such a negotiable L/C works.

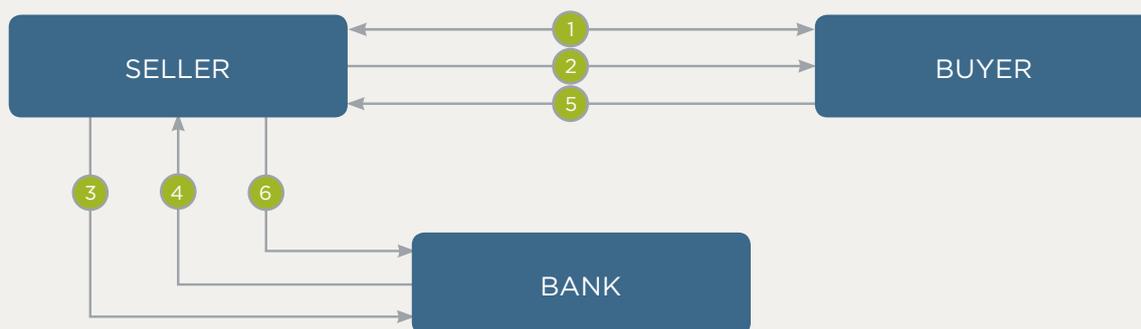
FIGURE 5
Transaction process flow for a negotiable L/C



1. L/C structure set up as per import L/C
 - L/C needs to have a “negotiable” clause (i.e. an assurance from the issuing bank that it will reimburse anyone under the terms and conditions of the L/C who “negotiates” against conforming documents)
 - Hence, negotiating bank usually not named in the L/C
2. Exporter presents documents to the negotiating bank as per the terms and conditions of the L/C
3. Negotiating bank checks the documentation and, if compliant, advances cash to the exporter
The “negotiation” is effectively the purchase of documents from the exporter at a discount
4. Negotiating bank presents the documents to the issuing bank
5. Issuing bank checks the documents and, if compliant, arranges payment to the negotiating bank

Other common export loan arrangements include discounted L/Cs, forfaiting and factoring, and supply chain finance. Figure 6 shows how a typical invoice discounting structure works. The main function of this group of instruments is pre-financing and ensures liquidity for producing the goods to be exported.

FIGURE 6
Transaction process flow for invoice discounting



1. Seller and buyer agree contract of sale
2. Seller raises an invoice and sends it to the buyer
3. A copy is also sent to the bank
4. Bank approves the invoice and advances cash to the seller at a discount to the value of the invoice
5. Seller collects payment from the buyer
6. Seller repays the bank

1.2.4. Loans for Import

Techniques and structures are available by which a bank advances a loan to an importer based around an L/C structure. One typical structure is a clean import loan, in which the bank advances cash to the importer on presentation of supplier invoices and evidence of shipment. This is so that the importer can pay for the goods, typically to cover the period between receiving the goods and selling them on. Another structure allows the bank to release goods to the importer under trust receipts, which means the importer can use the goods immediately while the bank retains ownership until the importer settles the loan. In both of these cases the loan is secured against the goods being imported. Figure 7 shows how a loan against import works.

FIGURE 7
Transaction process flow for a loan against import

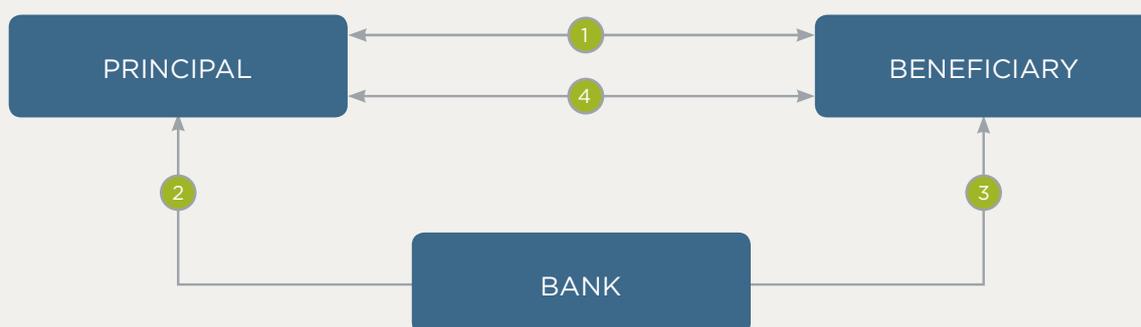


1. L/C or documentary collection structure set up
2. Exporter ships goods to importer
3. Exporter issues documents and sends them to the issuing bank
4. Issuing bank releases goods to the importer under trust receipts
5. Importer repays bank
6. Issuing bank transfer ownership of goods to the importer

1.2.5. Performance guarantees & performance standby letters of credit

Performance guarantees are a common way of guaranteeing contracts. They guarantee a seller's obligations to deliver and perform according to the contract, to act to mitigate any distrust between parties and to reduce cash outlay in situations where cash deposits are required. A standby L/C is written by a bank on behalf of a client and is used as a 'payment of last resort' should the client fail to fulfil a contractual obligation to a third party. Guarantees typically remain undrawn, unless an exporter fails to deliver or the importer defaults. They are most commonly used where the commercial relationship extends into the medium or long term, such as arrangements including services beyond delivery. Figure 8 shows how a performance guarantee works.

FIGURE 8
Transaction process flow for a performance guarantee



1. Principal and beneficiary agree contract of sale
 2. Principal requests a performance guarantee
 3. Bank issues performance guarantee on behalf of the principal in favour of beneficiary
 - Can also be structured as an L/C
 4. Principal is exporter: guarantees the exporter's obligations to deliver and perform according to the contract
 - Principal is importer: guarantees the importer's payment for goods or services provided under the terms of the contract
 - Issued and delivered on behalf of principal at contract signing or before delivery
4. Exporter ships goods to importer; importer pays exporter

1.3. OVERVIEW OF MEDIUM AND LONG-TERM ECA-BACKED TRADE FINANCE PRODUCTS

A new feature of this year's Trade Register is the inclusion of medium-term and long-term products backed by ECAs. These types of loans can come in many forms and can be used to finance a wide range of transactions. These medium and long-term products differ considerably from short-term trade finance products, both in design and risk characteristics. The key structural differences are as follows:

- **Tenor:** while we observe tenors in terms of months for short-term products, medium and long-term products usually have a tenor of five to 20 years.
- **ECA coverage:** For the purposes of the Trade Register, we have only included those medium and long-term transactions where an ECA has provided either a guarantee (where the coverage is 100%) or insurance (where most parts of the exposure are being protected, typically between 95% and 99%) to the bank. The type of protection can also vary, for example the ECA could cover the commercial risk or the political risk or both.
- **Idiosyncratic risk:** each medium or long-term transaction is typically large, long-dated, highly counterparty and country specific and consequently managed on an individual basis rather than on a more portfolio basis as with short-term products.

One feature of ECA-backed transactions is that the protection provided by the ECA not only extends to principal payments, but also to interest payments due under the transaction. For example, in the event of default, the ECA also covers the missed interest payments. Likewise, it is often the case that ECA backed medium or long-term loans will only make these repayments in line with the original amortisation profile of the transaction, although they may choose to offer a lump-sum payment.

1.4. OVERVIEW OF BASEL III TREATMENT FOR TRADE FINANCE

The Basel III regulations are a global regulatory framework laid out by the Bank for International Settlements, which define standards for financial institutions in terms of capital adequacy, stress testing and liquidity risk. The requirements that the regulations impose on banks are likely to have a significant effect on trade finance through three main channels, (i) increased capital requirements; (ii) reduced balance sheet capacity; and (iii) more stringent liquidity requirements.

1.4.1. Increased capital requirements

The amount of capital that banks will need to hold against their exposures will increase in a number of areas under Basel III:

- **Capital for FI counterparty risk:** One area that the Basel III regulations seek to address is the interconnected and interdependent nature of relationships between FIs and their greater sensitivity to the economy. To achieve this, banks will be required to apply a multiplier to the Asset Value Correlation (AVC) for exposures to large regulated financial institutions and unregulated financial institutions. As a result, they will hold more capital against these exposures than under earlier rules. For trade finance this is significant because many L/Cs, such as confirmed L/Cs, result in bank-to-bank exposures and so will attract relatively more capital.

- Across-the-board increases in capital and improvements in its quality: The overall amount of high quality⁷ capital held by many banks, such as retained earnings and paid-in capital, was found to be inadequate during the crisis. However, under Basel III, banks will need to hold more high quality capital.
- Minimum capital requirement due to cap on leverage: The minimum amount of capital that must be held against any exposure is set at 3% (on or off balance sheet). For most instruments, the capital requirement will be above this regulatory minimum. However, the capital requirement for short-term off balance sheet trade finance instruments, such as L/Cs, will typically be lower than the regulatory minimum. This could potentially dramatically increase the amount of capital required for short-term off balance sheet trade finance instruments.

1.4.2. Liquidity requirements

Requirements for the liquidity of FIs have also been strengthened by the Basel III regulations through the introduction of the Liquidity Coverage Ratio (LCR) and the Net Stable Funding Ratio (NSFR).

The LCR is a measure designed to ensure that a bank can still meet all its obligations, such as making payments and allowing cash withdrawals, for at least 30 days, even if its normal sources of funding are cut off or if there is a run on the bank. Banks are expected to hold a part of their assets in the form of cash and securities, like government bonds, that are easily convertible into cash. For contingent obligations stemming from trade finance instruments, a low run-off rate of 5% or less is suggested by the Basel Committee and might be a good benchmark before the final decisions are made by the national authorities. For medium and long-term ECA loans, the mitigation factor of 10% to 40% on the off-balance sheet commitments introduced in January 2013, will also have to be confirmed.

The NSFR attempts to ensure that the maturity of assets and the liabilities funding them are well matched in order to enhance stability. The NSFR is based on prescribed assumptions on the liquidity characteristics of various balance sheet items. It requires that 85% of short-term lending to SMEs and 50% of short-term lending to corporates must be funded by long-term liabilities. This means that short-term on balance sheet trade finance instruments, such as invoice finance, will become more expensive to fund, since long-term funding usually costs more than short-term funding. There are no proposals as yet for off balance sheet exposures like L/Cs, which are left to the national authorities.

Based on its evaluation of the impact of Basel II and III on trade finance in the context of low income countries, the Basel Committee decided to modify the capital treatment of trade finance in two areas: (i) the exemption of issued, as well as confirmed, trade related L/Cs from the one-year maturity floor; and (ii) a reduction of the capital charge levied against trade loans to countries with low sovereign debt ratings. While these revisions should definitely support trade finance and soften the impact on emerging market trade flows, they are expected to remain modest in impact compared with the implications of increased capital and funding costs on global trade flows as per the current Basel regulatory proposals.

2. METHODOLOGY RATIONALE

In order to provide consistency in year-on-year analysis, the 2013 Trade Register report examines a similar set of short-term products to those included within last year's report, specifically:

- Import L/Cs
- Export confirmed L/Cs
- Loans for import: corporate risk
- Loans for export: bank risk and corporate risk
- Performance guarantees

This year's data set builds on the data of five short-term instruments gathered for the Trade Register in previous years, as well as covering all transactions carried out between 2008 and 2011.

Last year's report showed aggregated default and loss figures by product, demonstrating a low rate of write-offs on short-term trade finance products in the Trade Register. This year's report confirms the low risk nature of short-term trade finance products but also seeks to derive proxies of key Basel parameters, specifically:

- Probability of default (PD)
- Exposure at default (EAD)
- Loss given default (LGD)
- Maturity (M)

The nature of the data currently available in the Trade Register means that it is not possible to estimate parameters which are perfectly aligned with Basel methodology. However the analysis provides a strong picture of trade finance instruments' risks. Furthermore, applying a PD, EAD, LGD, M framework enables a calculation of a proxy expected loss rate ($EL = PD \times EAD \times LGD$) at the transaction level.

Further analysis has also been carried out around the other potential drivers of risk in trade finance transactions:

Countries and state of the economy: these can be grouped according to factors such as level of economic development, growth or recession, and imposition of currency controls. This enables an assessment of how risk changes due to macroeconomic and geopolitical factors.

Years: examining these metrics over time enables an assessment of how risk varies with economic cyclicity and the volatility of risk more generally.

Banks: risk metrics are assessed across banks to help identify whether trade finance instruments are consistently low risk across banks or whether reported levels of risk are due to idiosyncratic, operational factors of individual banks.

An important addition to the 2013 report is more detail on the trade finance products in scope and a deeper assessment of how Basel III will be implemented in the case of trade finance products. The aim is to ensure the report is also valuable to those readers who may be less familiar with the issues being addressed.

2.1. ASSESSMENT OF DATA AND LIMITATIONS

It is important to note that the data is supplied by banks and used on a best efforts basis. Sometimes specific analyses cannot be undertaken due to a lack of relevant data or due to limited sample sizes. Although significant efforts have also been undertaken to clean the data, neither the ICC Banking Commission nor the authors accept any liability for the quality of the underlying data.

2.1.1. Short-term trade finance data

The Trade Register contains approximately 15.5 million transactions from 21 participant banks for the period 2005 to 2011. As in last year's report, we focus on the transactions carried out since 2008, which total around 11.5 million from 2008 to 2011. This is due to the lower number of participating banks in the earlier years and the difficulties balancing the banks' need for anonymity with the requisite level of analytical rigour. We also exclude shipping finance from the data set, due to an immaterial sample size for meaningful analysis. For the in-scope years, the sample is subsequently cleaned to remove outliers and increase the data robustness. Outliers were addressed individually and discussed with data providers where needed and data that were not reported systematically, such as missing exposure amounts, transaction counts and default data, were omitted.

Additionally, in order to base individual risk metric estimates on the fullest possible dataset, we have included all cases where the required information is available to calculate a given metric, even if other information needed for other metrics is not present. For example, some Trade Register entries do not include information on whether the transactions defaulted and are therefore omitted from default rate calculations, but do have the year-end and cumulative exposure, which allows us to calculate the implied maturity. As a result and as a reflection of inconsistently populated items, sample sets for each metric are not perfectly aligned. Although this precludes a direct mapping of 'like-for-like' across the various metrics, it ensures that there is a material sample for each cut of the analysis and the impact of these samples is not considered material. This also ensures that filtering down to only the fully populated submissions does not compromise the anonymity and confidentiality of participant banks' data⁸.

Consequently, the filtered sample size varies by cut and by metric. For default rates, we observe approximately 8.1 million transactions, whereas considerably fewer transactions are observed for LGD⁹. We reconcile the sample size used in this year's report with last year's in the appendix.

The average deal size remains approximately constant after the filters are applied, as do country and product distributions, providing comfort that the sample after cleaning remains representative. The maturity of around three months is as expected for short-term products. Please refer to the appendix for a detailed assessment of selection bias.

11.5 million
Transactions
2008-11
For short-term
trade finance

15,000
Transactions-years
2006-11
For medium and
long-term export
finance

2.1.2. Medium and long-term ECA-backed trade finance data

For the first time in 2012, the ICC Trade Register has collected data on medium and long-term trade finance products, specifically transactions with ECA backing. The data has been provided by 10 banks and covers the period from 2006 to 2011, containing approximately 15,000 transaction-years¹⁰. The smaller sample size reflects the fact that there are inherently fewer such transactions and that fewer banks have submitted data.

It is important to note the potential impact of how we define medium and long-term products. As we limit the sample to ECA-backed transactions, we naturally observe better recoveries than would be expected for those transactions without ECA backing. However, this also excludes transactions that are covered by multi-lateral development banks (MDBs) and private insurance. The former are excluded due to the lack of formalised guarantees and the latter are excluded as often only political risk is covered. Also, a benefit of limiting the dataset to ECA-backed transactions is their high degree of standardisation and better availability of data.

However, given the restriction ECA-backed exposures and the fact that fewer banks have provided data, the results are exposed to the risk of being less representative than the short-term trade finance data and may make them more sensitive to outliers and idiosyncratic events. Consequently, the analysis of the medium and long-term data provides early indications of the risk characteristics of these transactions.

To build a full view of medium and long-term instruments, these other transactions may be added to future editions of the Trade Register.

As with the short-term data, we have sought to maximise the use of the data and have therefore used different samples for the different analyses based on data availability.

3. ANALYSIS OF SHORT-TERM TRADE FINANCE PRODUCTS

In analysing the Trade Register data for short-term trade finance products, our aim is to examine whether there is evidence that trade finance instruments are comparatively low risk products. We have broken down the overall question into a set of more directly observable questions on the hypothesised main characteristics of trade finance products:

- Low default rate
- Short economic maturity¹¹
- Low conversion rate
- Low defaulted transaction-level economic loss rate
- Low overall expected loss

The challenges of data gathering make it difficult to definitively prove all of these hypotheses. However, the data available provides a strong foundation for assessing the probability of default and maturity and we are able to make some descriptive and inferred solutions for other hypotheses.

8,133,031

Total transactions
2008-11

1,746

Number defaulted
2008-11

0.021%

Percentage defaulted
2008-11

3.1. TRADE FINANCE INSTRUMENTS HAVE A LOW DEFAULT RATE

Examining the default rate, the Trade Register provides strong evidence that short-term trade finance products do indeed have a low likelihood of default. Across 2008-2011, we observe the following 8.1 million transactions (see the appendix for reconciliation with last year's sample).

The data shows that across nearly 8.1 million short-term trade finance transactions, fewer than 1,800 defaulted. This equates to an approximate 0.02% default rate on a transaction basis. Furthermore, the likelihood of default is consistently low across products, with transaction default rates of 0.035% or less for all.

FIGURE 9

Transaction numbers and default levels by product, 2008-11

TOTAL 2008-11	# TRANSACTIONS	# DEFAULTED	% DEFAULTED
Import L/Cs	1,492,447	299	0.020%
Export Confirmed L/Cs	293,313	47	0.016%
Loans for Import	1,912,118	299	0.016%
Loans for Export: Bank risk	1,085,758	319	0.029%
Loans for Export: Corporate risk	2,739,475	574	0.021%
Performance Guarantees	609,920	208	0.034%
Total	8,133,031	1,746	0.021%

We can also view this on an exposure basis with regard to the methodology in the 2011 report, as shown in figure 10. This exposure-weighted default rate reflects potential differences in the default rates between larger and smaller transactions.

The fact that the exposure-weighted default rates are higher for most products reflects the fact that the average size of defaulting exposures is larger than for non-defaulting exposures. They were on average twice as large as non-defaulting exposures, particularly in the case of export confirmed L/Cs.

The lower exposure-weighted default rate for Performance Guarantees reflects the fact that defaulting exposures are around 30% of the size of non-defaulting exposures.

FIGURE 10
Exposure and default levels by product, 2008-11

TOTAL 2008-11	EXPOSURE (USD MM)	DEFAULTED EXPOSURE (USD MM)	EXPOSURE- WEIGHTED DEFAULT RATE
Import L/Cs	873,339	429	0.049%
Export Confirmed L/Cs	228,118	156	0.068%
Loans for Import	628,615	281	0.045%
Loans for Export: Bank risk	435,222	167	0.038%
Loans for Export: Corporate risk	540,043	196	0.036%
Performance Guarantees	627,769	66	0.010%
Total	3,333,106	1,296	0.039%

These are not directly comparable to the results of the previous report due to a different data cleaning approach (detailed in Appendix A), an adjusted product grouping and different in-scope years, but it shows the impact of the shift to a more Basel consistent transaction based approach in this year's report.

On average, the transaction-level default rate across products is 0.021%. This compares favourably to other forms of lending. The chart below shows the transaction-level default rates by product against the observed one-year customer default rates for corporates rated by Moody's.

FIGURE 11
Transaction-level default rates by product versus
Moody's one year default rate, 2008-11

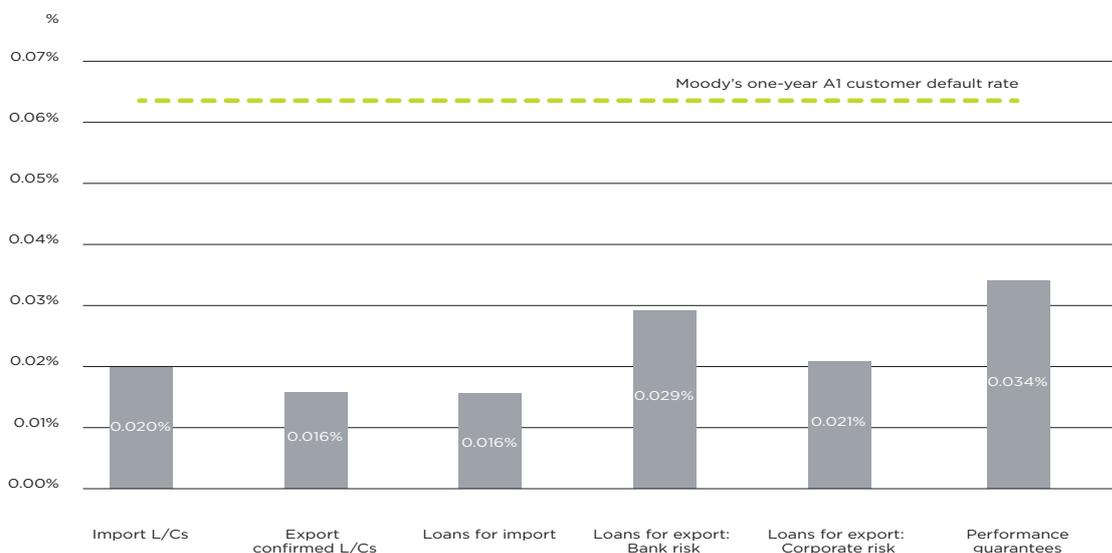


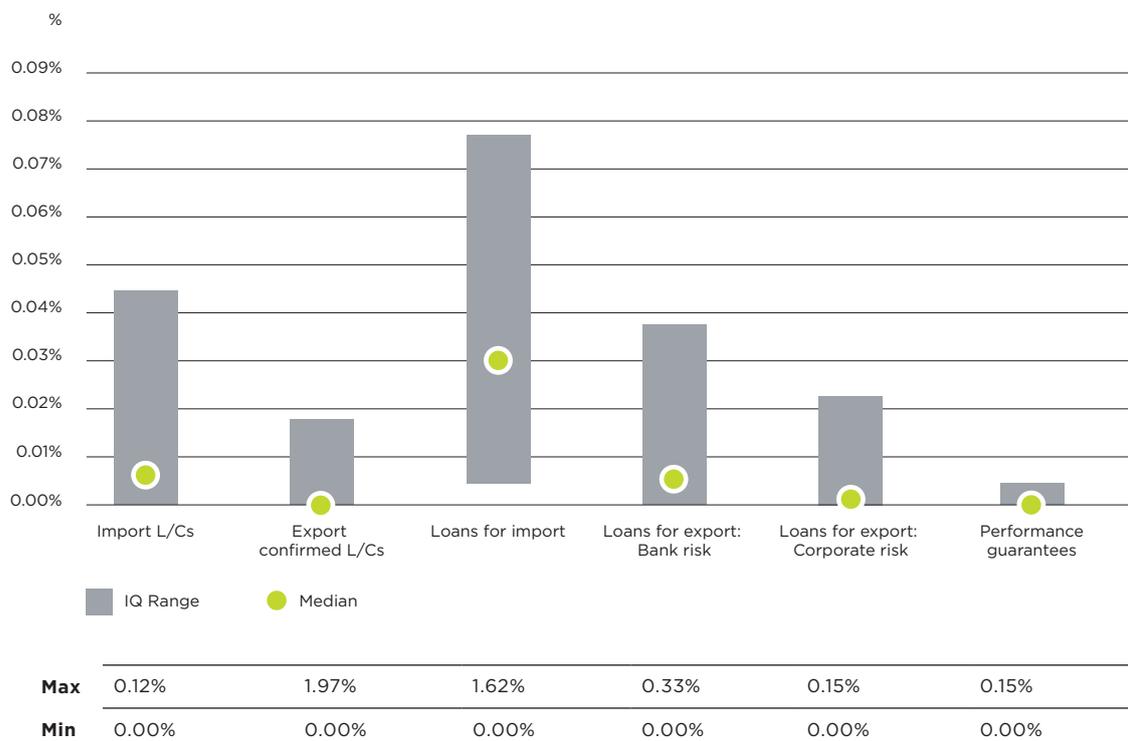
Figure 11 shows the average trade finance instruments' default rate lies below the average observed one-year default rate for A1 rated counterparties between 1983 and 2011^{12,13}. We have made this comparison as we feel it provides a sense of the relative default risk on these products versus typical one-year default rates on corporate exposures. Across the entire Moody's rated universe between 2008 and 2011 the observed default rate was 2.41%^{14,15} even though it should be noted that the methodologies are quite different.

3.1.1. Variability of default rates across banks

These results are aggregated across banks, regions and through 2008 year-end to 2011 year-end. It is also important to assess the variability of default rates across these categories, as prudent risk management seeks to provide against tail risks, not average default rates, and adjustments to solvency requirements would only be appropriate if risk is consistently low across banks, as opposed to being driven by firm or country specifics. This analysis is also useful to better understand the drivers of default rates on short-term trade finance products across the market.

Firstly, we examine variance across banks. Figure 12 shows the median and interquartile range of default rates across banks for each product, plus the observed minimum and maximum default rates.

FIGURE 12
 Variance in transaction-level default rates across banks by product, 2008-11

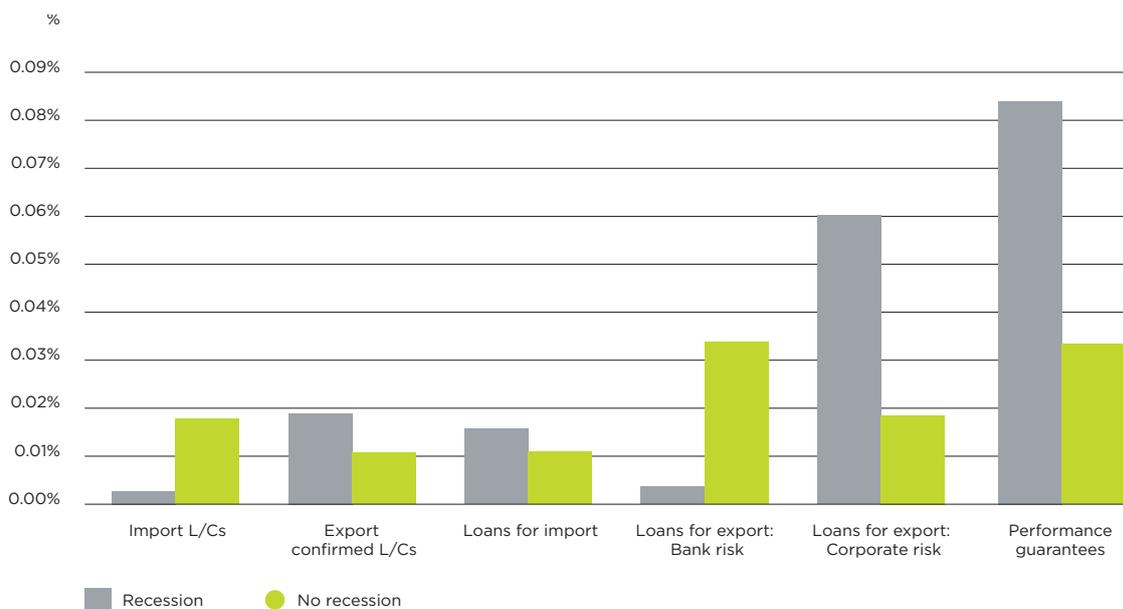


As figure 12 demonstrates, the vast majority of banks are clustered between 0% and 0.1% default rates across all products. Furthermore, the interquartile ranges are small, indicating that the variability in default rates is extremely low. We observe some high maximum figures within the sample, but these are not the same bank across products and specific countries drive the higher default rates in specific years. Therefore, we would hypothesise that the cause of these outliers is specific to the counterparty in each case, rather than due to consistent bank operational failures.

3.1.2. Variability of default rates across the economic cycle

Another potentially important driver of default behaviour for trade finance products is macroeconomic trends. First, we compare transactions where the counterparty is located in a country in recession¹⁶ to those in a country experiencing positive growth. Figure 13 compares this across products.

FIGURE 13
Proportion of transactions defaulting for growing countries versus countries in recession, 2008-11



For a majority of products the default rate for countries in recession is higher, as might be expected¹⁷. As a country experiences recession, counterparties within it become less liquid and so the likelihood of late or non-payment of loans increases, as does the likelihood of them failing to fulfil their obligations on L/C or guarantee covered transactions.

Another way to infer whether macro-economic development impacts default characteristics is provided by a time series analysis. Indeed we observe higher default rates in 2008-2009 compared with 2010-2011 as the following graph shows. This could be driven by a combination of negative GDP growth in many countries and difficulties for banks and corporates in accessing short term lending to fulfil trade finance obligations due to the financial turmoil at the time.

FIGURE 14
% of transactions defaulting by product, 2008-11

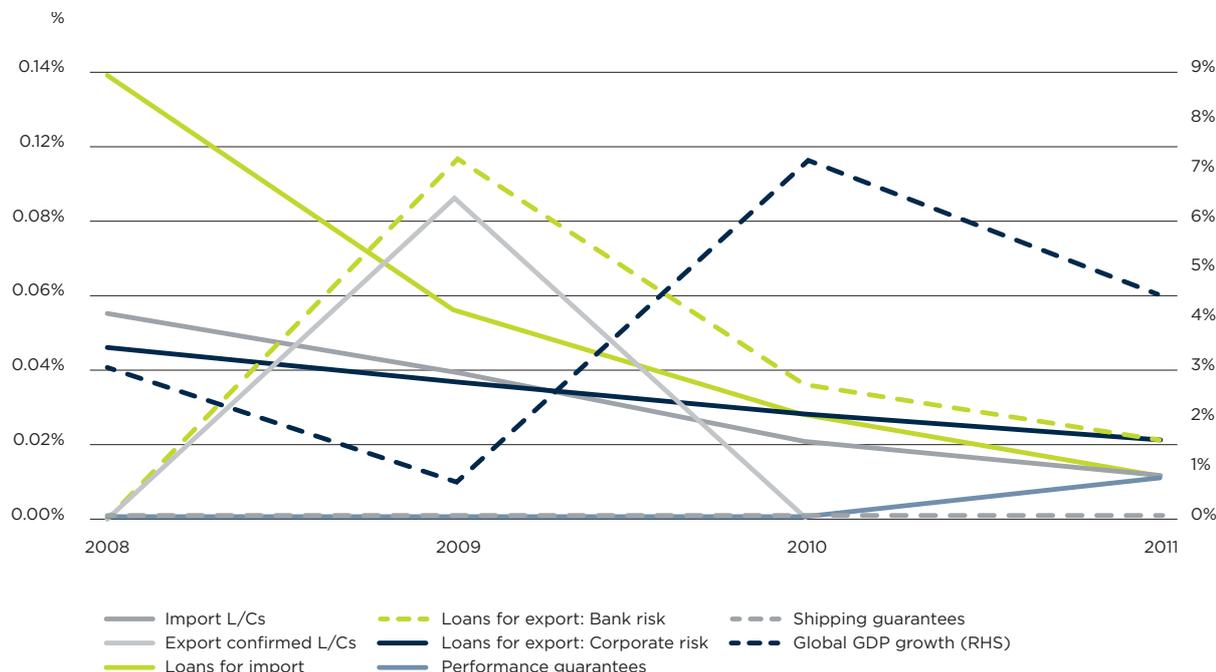


Figure 14 highlights some interesting trends. Export confirmed L/Cs and loans for export (bank risk) appear strongly negatively correlated to GDP growth. This means that, as growth slows down, the likelihood of default increases. In both instances, the issuing bank is facing off against another bank instead of a corporate. Considered against the backdrop of 2008-2009 credit markets, it seems plausible that the increased default rates were driven by an inability of these counterparty banks to access short-term lending in order to pay trade finance obligations and so late or non-payments increased¹⁸.

It is also noticeable that default rates on products where the importer is the counterparty steadily declined throughout the observed period. It is difficult to determine the cause of this from the data, although country effects may be at play again. However, it could have been caused by factors such as increased selectivity by banks, in which corporates experienced higher than expected losses in 2008 as macroeconomic conditions deteriorated.

Overall, we believe the variance in default rates is likely to have been driven by a combination of macro and micro factors:

- On the macro side, growth, and more specifically recession, appears a key driver of default rates. In addition, although not observed, we would also expect the level of economic development to play a role, likely due to associated institutions, such as robustness of legal system, border controls, economic policy.
- On the micro side, bank operations, which are being put under stress more than under “normal” economic conditions, might be a factor. However, there are also indications of banks being increasingly selective when issuing products in stress scenarios. Also, as increased scrutiny is being applied in a stress situation, it seems likely that specific counterparties are the driving factor, e.g. corporate defaults.

Regardless of the above, overall default rates are extremely low for short-term trade finance products. As the time series shows, even in 2008-2009, when stress to counterparties was arguably greatest, the average default rate remained below 0.15% for all products.

3.2. SHORT ECONOMIC MATURITY

The life of a short-term trade finance product is also brief, with products maturing relatively quickly, another facet of their low risk characteristics. Figure 15 shows an “implied maturity”¹⁹ across products, and we observe an average maturity of less than 100 days across products.

FIGURE 15
Implied maturity by product, 2008-11

2008-11	IMPLIED MATURITY (DAYS)
Import L/Cs	80
Export Confirmed L/Cs	70
Loans for Import	110
Loans for Export: Bank risk	140
Loans for Export: Corporate risk	70
Performance Guarantees	110
Total	90

The impact of these short maturities is that, if a customer does default on an obligation to the bank within 12 months, it is unlikely that the specific trade finance product will be outstanding. This lower risk of the exposure being outstanding at default appears in part to have been behind the initial determination of Credit Conversion Factors (CCFs) for documentary L/Cs under Basel I and hence Basel II Standardised and Foundation Internal Ratings-Based (IRB) Approach parameters²⁰.

“The main difficulty with documentary letters of credit (commercial letters of credit in the United States) lies in deciding what allowance, if any, to make for the generally short maturity of these exposures and for the collateral which usually supports them... While the credit risk is in principle equivalent to that of a commercial loan, the short maturity, the partial protection afforded by collateral and the relatively favourable historic loss record suggest that such transactions bear a medium risk in practice.”²¹

We would also note that this relatively short maturity may provide banks with some flexibility should there be a funding crunch since, once the exposure has expired, the bank is under no obligation to provide a subsequent trade finance product, which in turn allows the bank to rapidly reduce its overall exposure. Furthermore, whilst failing to extend a drawn limit during a crisis may trigger a customer default, the connection between not granting a new trade finance product and default seems less immediate, making it more likely that a bank will choose not to approve new products.

3.3. LOW CONVERSION RATE

As noted above in the individual product descriptions, L/Cs (both import and export) and performance guarantees are dependent on an event happening before the bank needs to make a payment to the beneficiary of the product. Not only must the underlying service or transaction happen (which is not always the case) but, in general, documentation needs to be approved by the bank as being compliant. In the case of performance guarantees, the resulting service must be considered to have fallen short of agreed terms²². Only once this has happened does the issuing bank need to make a payment. Once these contingent events have happened and the contingent liability has converted into an exposure, the issuing bank will typically use funds directly from the importers' accounts to make the payment. This means the issuing bank typically only pays out of its own funds where there are insufficient funds in the importers' accounts to meet the claim.

The Trade Register provides two alternate measures of the extent to which products do or do not convert: (i) the number of document sets rejected on first presentation; and (ii) the number of transactions that expire without payment. These figures do not provide an ideal measure of the proportion of transactions that never result in an exposure for the bank²³, but they do provide a potential range for the likely conversion rate on these products. Figure 16 provides an overview on both expiries and rejections.

FIGURE 16
Observed % of expiries and rejections for off balance sheet products, 2008-11

TOTAL 2008-11	EXPIRIES			DOCUMENT REJECTIONS		
	# TRANS-ACTIONS	# EXPIRIES	% EXPIRIES	# TRANS-ACTIONS	# REJECTIONS	% REJECTIONS
Import L/Cs	640,192	128,012	20%	901,394	930,226	103% ²⁴
Export Confirmed L/Cs	65,264	18,970	29%	142,256	76,630	54%
Perf. Guarantees	111,599	93,355	84%	54,635	9	0%
Total	817,055	240,337	29%	1,098,285	1,006,865	92%

As the table illustrates, expiries are highly common on guarantee products, especially for performance guarantees where approximately 85% expire without bank payment (i.e. a claim is only made on around 10% of guarantees). This is understandable and this kind of product is being used to protect against the unexpected lack of performance of the counterparty. We also observe higher levels of expiries for export confirmed L/Cs than import L/Cs. This is probably due to the insulation that the confirming bank provides between the issuing bank and the corporate and its lower likelihood of default.

From a risk measurement perspective, the treatment of cases that never convert to obligations is potentially a matter of "taste". It could be argued that since these cases never become "on balance sheet" they should be used to reduce the exposure at default estimate on trade finance exposures. Alternatively, it could be argued that, in the case of a customer default and presentation of compliant documentation, the exposure is 100% of the amount of the contract. Therefore this low conversion rate does not reduce the "exposure" but rather reduces the likelihood of a default. At this stage we have implicitly adopted the second approach but plan to explore this further with banks and regulators, as well as refine the data captured for future reports. However, what is clear is that this low conversion rate is likely to be a contributing factor to the low observed loss rate on trade finance products.

3.4. LOW DEFAULTED TRANSACTION ECONOMIC LOSS RATE

It should be noted that there are a number of differences between the loss estimates, which we are able to estimate, and Basel LGDs, which is why we do not refer to this as the LGD:

- The figures reported here are based on the average loss experienced only on those trade finance transactions that have defaulted, as opposed to trade finance transactions in existence at the time of a customer default. As discussed below, this is very different from a Basel LGD figure, which is based on customer default definitions, and at this stage it has not been possible to derive a reasonable proxy for this.
- The low number of defaults combined with the fact that data from different banks is not always available or comes in different formats means that the data underpinning these figures is considerably less than that underpinning default rate and maturity estimates. As a result, it is much more sensitive to individual firm results and possible data issues.
- Even where we do have information available, we cannot always observe all recoveries or write-offs, or we can see one but not the other²⁵, so we can't be certain of what the true level of recovery may be. In general, where data has been unavailable, we have made prudent choices. This means that the reported recovery rates here are potentially lower than the actual recovery rate.

To determine the loss rate on defaulted trade finance transactions, we have observed how much of the exposure is recovered following the default of a transaction, prudently assuming the remainder of the defaulted exposure is written off²⁶. As the Basel rules measure the LGD as a percentage of the EAD, we have divided the recovered amount by the amount of defaulted exposure in this year's report.

FIGURE 17
Observed recoveries and write-offs as a % of defaulted exposure across products, 2008-11²⁷

TOTAL 2008-11	% RECOVERED	% WRITTEN-OFF
Import L/Cs	71%	3%
Export Confirmed L/Cs	40%	0%
Loans for Import	45%	65%
Loans for Export - Bank Risk	32%	45%
Loans for Export - Corp. Risk	51%	26%
Performance guarantees	18%	53%
Total	52%	34%

Figure 17 shows that, even in the event of a default, a large proportion of the exposure is typically recovered and that for most products relatively low levels of write-off are required on defaulted transactions. For import L/Cs recoveries are as high as 71%, driven by the ability to seize the collateral associated with the transactions (the L/C structure provides for the banks to use the goods' documentation to identify and seize the collateral). We observe lower recovery rates for guarantees, reflecting the lower levels of protection in terms of recoveries in case of default, as the bank may be required to pay the obligation in full without recourse to any collateral.

As discussed in the appendix, Basel requires that the LGD is calculated on the basis of the economic loss, i.e. the time value of money is included within the calculation. Therefore, if it takes two years to recover money from a defaulted customer, this recovery should be discounted by an appropriate discount rate for two years. There is some debate about the appropriate discount rate to use and it is not our intention to state an opinion on the most appropriate discount rate. Instead we have used a figure of 9%²⁸ in these results and discount reported recoveries for one or two years²⁹.

Basel also requires that the LGD for an exposure should include appropriate direct and indirect costs for recovering an exposure. Naturally the costs incurred will vary from bank to bank and will also vary depending on the complexity of the underlying transaction. There are not many published studies that discuss the level of costs, so we have used a figure of 2% of the defaulting exposure³⁰. The table below adds in these two factors to determine the LGD after discounting and costs.

FIGURE 18
Estimated economic loss rate as a percentage of defaulting exposure after discounting and costs, 2008-11

AS % OF DEFAULTED AMOUNT	RECOVERY RATE	1 - RECOVERY RATE	DISCOUNT ON RECOVERIES + COSTS	DEFAULTED TRANSACTION ECONOMIC LOSS
Import L/Cs	71%	29%	13%	42%
Export Confirmed L/Cs	40%	60%	7%	68%
Loans for Import	45%	55%	9%	64%
Loans for Export - Bank Risk	32%	68%	5%	73%
Loans for Export - Corp. Risk	51%	49%	8%	57%
Performance guarantees	18%	82%	3%	85%
Total	52%	48%	9%	57%

It should be noted that these figures are likely to overestimate the true LGD on these types of product. This is due to the prudent assumptions we have made where data is missing (see appendix) and the difference between this defaulted transaction economic loss estimate and an LGD calculated based on a customer definition of default as described below.

3.4.1. Defaulted transaction economic loss rate vs. Basel LGD

As discussed in more detail in the appendix, Basel rules mean that firms should use a single PD for all exposures to a corporate customer. This means that even though the observed transaction default rate for short-term trade finance products is approximately 0.021%, the PD used when calculating EL and RWAs for each transaction would be the customer PD. Assuming that this was on average the same as the observed one-year default rate for the Moody's rated universe from 1983-2011, this would mean firms would apply an average customer PD of 1.69%³¹.

If this customer PD was combined with the defaulted transaction economic loss rate, this would imply a transaction-level economic loss rate of approximately of 0.96% (i.e. 1.69% x 57%) for trade finance transactions compared with the actual transaction-level economic loss rate on short-term trade finance exposures of 0.012% (i.e. 0.021% x 57%). This difference is due to the difference between using a short-term trade finance specific default rate (which reflects the mechanics of trade finance products and the fact that trade finance products are honoured even where firms default on other products) and a customer default rate.

Irrespective of the default definition used, whether it's customer (as per Basel) or transaction (as used in this year's Trade Register report), the total predicted loss should be the same. So, given that we know the transaction default rate, the defaulted transaction economic loss rate and have an estimate of a typical large customer default rate of 1.69% from Moody's, we can estimate the LGD that would be observed if we were using a customer default definition³². This suggests that a Basel compliant LGD may be less than 5% of the figure in figure 19, although whether the difference in default rates is solely accounted for by LGD (as opposed to EAD or credit conversion factors) is, as noted elsewhere, an area for future exploration.

3.5. LOW OVERALL TRANSACTION-LEVEL LOSS RATES

Under Basel rules, banks calculate an expected loss figure based on the risk parameters of PD, EAD and LGD. We use a similar approach to derive a transaction-level loss rate as a proxy.

FIGURE 19

Estimated transaction-level expected loss for short term trade finance products, 2008-11

TOTAL 2008-11		TRANSACTION WEIGHTED	EXPOSURE WEIGHTED
	DEFAULTED TRANSACTION ECONOMIC LOSS	SPECIFIC TRANSACTION- LEVEL LOSS RATE	SPECIFIC TRANSACTION- LEVEL LOSS RATE
Import L/Cs	42%	0.008%	0.021%
Export Confirmed L/Cs	68%	0.011%	0.046%
Loans for Import	64%	0.010%	0.029%
Loans for Export: Bank risk	73%	0.021%	0.028%
Loans for Export: Corp. risk	57%	0.012%	0.021%
Performance Guarantees	85%	0.029%	0.009%
Total	57%	0.012%	0.022%

The total average and the product-level annual transaction-level loss rates (rightmost column on the table above) compare favourably with the average observed annual credit loss rate for Moody's customers over the same period of 1.49%. We have included the exposure-weighted loss rate as well because many banks report exposure-weighted figures in their Pillar 3 reports and also because the amount of losses are most closely linked to exposure.

4. ANALYSIS OF MEDIUM AND LONG-TERM TRADE FINANCE PRODUCTS

In analysing the Trade Register data for medium and long-term trade finance products, our aim is to examine whether there is evidence that these products also experience relatively low levels of losses. As with the short-term analysis, we have broken down the overall question into a set of more directly observable questions on the hypothesised main characteristics of trade finance products:

- Default rate
- Tenor
- Economic loss
- Overall expected loss

The challenges of data gathering, combined with the fact that this is the first year in which data has been submitted, mean that it is difficult to definitively prove all of these hypotheses. It is important to note that the Trade Register only contains data from 10 banks and at transaction level rather than at customer level. This limits our ability to draw strong inferences at this stage, particularly with regard to economic loss, since the process of analysing many of the defaulted transactions will be incomplete considering we only have six years' data.

In December 2011, the total amount outstanding of ECA-backed MLT loans globally was approximately US\$532 billion³³. The 10 banks that have submitted data already make up a significant share of the market. Naturally, the aim is to increase the representation in future versions of the Trade Register.

4.1. DEFAULT RATES

Default rates are calculated on an annual basis. For the transactions not in default on a banks' book at the start of the year, we observe the number of defaults through the course of the subsequent 12 months. Figure 20 shows banks across four main asset classes: corporate, FI, sovereign and specialised and shows the observed transaction default rates over our sample period.

FIGURE 20
Default rates by asset class, 2006-11

	NUMBER OF TRANSACTION-YEARS	NUMBER OF DEFAULTS	ANNUAL TRANSACTION DEFAULT RATE
Corporate	6,080	41	0.67%
FI	3,785	96	2.54%
Sovereign	3,433	10	0.29%
Specialised	1,413	16	1.13%
Total	14,711	163	1.11%

The 2.54% default for financial institutions appears high. Based on conversations with the banks that had experienced these defaults, this is due to two “events”:

- One specific FI (itself a bank) defaulting with a large number of ECA-backed transactions³⁴ outstanding.
- Introduction of extensive trade sanctions in Iran, knowing that most loans in this country were made with local commercial banks, classified as FIs.

It is difficult to say whether these two events have in some way “biased” our result. On the one hand they do account for most of the defaulted transactions in our data. On the other hand, it is risks such as the imposition of trade restrictions that prompt firms to use ECA-backed trade finance products. It is perhaps worth noting that the political risks usually arise in the country of the importer, not from that of the ECA. In the case of Iran, sanctions frequently prevent banks from recovering their money even though the Iranian banks are willing to pay.

With more data over a longer period it might be possible to assess whether or not the default rate appears stable, or whether the high default rate is just “bad luck”. Likewise, if we had an anonymous customer identifier, we could assess whether or not the transaction default rate may differ significantly from the customer default rate.

Discussions with the banks submitting data also indicated that, in their experience, defaults often occurred on smaller deals. Therefore there is an expectation that the exposure-weighted default rate would be lower. As shown in figure 21, this is the case for most of the asset classes, except for FIs where the transaction default rate and the exposure-weighted default rate are similar.

FIGURE 21
Exposure-weighted default rates by asset class, 2006-11

	ANNUAL TRANSACTION DEFAULT RATE	EXPOSURE (USD MM)	DEFAULTED EXPOSURE (USD MM)	EXPOSURE- WEIGHTED DEFAULT RATE
Corporate	0.67%	90,645	412	0.45%
FI	2.54%	29,689	778	2.62%
Sovereign	0.29%	52,074	31	0.06%
Specialised	1.13%	39,193	20	0.05%
Total	1.11%	211,601	1,240	0.59%

4.2. TENOR

As mentioned, a crucial factor of the risk characteristics of medium and long-term ECA-backed products is their longer tenor at the point of signing. Figure 22 shows this across asset classes.

FIGURE 22
Tenor by asset class, 2006-11

	TENOR (YEARS)
Corporate	9.6
FI	11.8
Sovereign	12.7
Specialised	12.3
Total	11.1

4.3. ECONOMIC LOSS

In estimating economic loss, we could base this, within our data set, solely on the observed recoveries achieved on transactions that default. This would reflect the amount of recoveries between the point of default and the end of 2011, and should include both interest and principal payments. However, the nature of the ECA insurance/guarantee for most transactions (i.e. that the ECA will make repayments in line with the original schedule for the transaction over the remaining maturity of the product), combined with our limited outcome window for defaults (less than six years in general) and the long average tenor of exposures, means that we may miss a significant proportion of recoveries, leading us to underestimate the recoveries or overestimate the LGD.

To see the potential impact of this, consider a simple example:

- Consider a transaction that defaults in 2010 with 95% ECA coverage and exposure of US\$50 million which is due to repay US\$10 million per year over the next five years.
- Under the terms of a typical ECA contract, the ECA would make a payment of US\$9.5 million per year for five years to the bank (as the contracts typically make good payments in line with the original loan, reflecting its amortisation profile³⁵).
- However, in our data we would only have captured recoveries from two years (i.e. 2 x US\$9.5 million = US\$19 million).
- Therefore, in our data, this customer would have an observed recovery rate of 38% (=19/50).
- However, by the end of the original term, we will have received five payments each of US\$9.5 million from the ECA, so the “expected” recovery would be 95% (=47.5/50).

Given that we have included incomplete cases³⁶, and given the nature of the ECA coverage, we expect the observed recoveries to consistently underestimate the eventual recoveries and hence overestimate the eventual LGD. We have therefore also calculated the amount of recoveries that would be expected if the ECA were to make its payments as expected (i.e. we assume that the recoveries reflect the percentage coverage of the ECA insurance).

The “observed” figures in the table below shows the figures we observe on defaulted transactions where we have recovery information, before any consideration of costs and discounting. This is worked out based on the average of recovery rates calculated at a transaction level³⁷. The sample size is smaller than that used in estimating the default rate, as we only observe a limited number of defaults with a known recovery when limiting the recoveries to our six-year data set. In addition to the observed recoveries, we have calculated the “expected” recovery that reflects the coverage level of ECA insurance, which is typically between 95% and 100%. In calculating this we have based the figure on the portfolio of entries in the Trade Register.

FIGURE 23
Observed versus expected average recovery, 2006-11

	EXPOSURE (USD MM) ³⁸	RECOVERIES (USD MM)		RECOVERY RATE (%) ³⁹	
		OBSERVED	EXPECTED ⁴⁰	OBSERVED	EXPECTED
Defaulted transactions	391	321		77%	930,226
Portfolio ⁴¹	211,601		202,992		95%

Even on an observed basis, the recovery rate is relatively high at 77% and the eventual level of recoveries, once transactions have reached the end of their lives, is likely to be even higher. The observed recovery figure includes both the ECA-indemnity payments and actual recoveries. Given the small proportion of the actual recoveries, we have not shared the payments with the ECA on an inverse basis, since the impact would have not been material. With more data on recoveries, that will change in future versions of the model.

The next step is to add discounting and costs to approximate economic loss. As mentioned above, with regard to medium and long-term transactions, the terms of the ECA cover means the ECA repays amounts due in line with the original amortisation schedule⁴² for many transactions. Therefore, discounting has the potential to be a significant driver of the overall economic loss. However, in most instances, this interest can be reclaimed from the ECA and this will typically offset the impact of discounting⁴³. As recoveries reported in the Trade Register should include the interest payments, we have discounted the observed recoveries⁴⁴. However, for the “expected” recoveries, as a simplifying assumption, we have assumed that the discounting effects are fully offset by interest payments from the ECA and therefore, in practice, the time value of money does not reduce the economic recoveries.

For costs, as with short-term, we have assumed these are 2% of the principal outstanding.

The table below compares the resulting recoveries and economic loss rates.

FIGURE 24
Recoveries and Economic Loss Rate, 2006-11

	RECOVERY RATE	1 - RECOVERY RATE	DISCOUNT ON RECOVERIES + COSTS	ECONOMIC LOSS RATE
Observed	77%	23%	9%	32%
Expected ⁴⁵	95%	5%	2%	7%

4.4. EXPECTED LOSS

Having determined the default rate and economic loss, we can use this to estimate the overall expected loss (EL). We lack sufficient information to estimate the EAD, and so conservatively assume 100%⁴⁶. The table below shows the EL, based on both the observed and “expected” economic loss. As discussed above, the observed LGD is based on incomplete recoveries data, so it is likely to overstate the eventual LGD. This means that, given the default rate and the typical level of cover, we would expect an EL that is more closely aligned to the “expected” economic loss below.

Given that many banks report exposure-weighted figures in their Pillar 3 reports and that the amount of losses are most closely linked to exposure-weighted measures, we report the exposure-weighted figures in figure 25.

FIGURE 25
Estimated EL for medium and long-term trade finance products, 2006-11

	TRANSACTION-WEIGHTED			EXPOSURE-WEIGHTED		
	DEFAULT RATE	ECONOMIC LOSS RATE	EL	DEFAULT RATE	ECONOMIC LOSS RATE	EL
Observed	1.11%	31.8%	0.35%	0.59%	27.5%	0.16%
Expected		7.0%	0.08%		6.1%	0.04%

As with the short-term results, the observed EL figures appear to be lower than the EL one would expect for “vanilla” corporate lending, reflecting the benefits of the ECA guarantees/insurance.

5. OTHER RISK TYPES

5.1. LIQUIDITY RISK

Liquidity risk is the risk that a bank is unable to meet its obligations as they arise because of a lack of funds. Banks face structural risks from this perspective as their core function, maturity transformation, involves borrowing short-term (for example, sight deposits) and lending long-term (for example, mortgages and corporate loans). This means that if the short-term borrowing is not rolled over, the bank will soon face funding challenges and ultimately become illiquid. This risk can be ameliorated by having more sources of funding that are long term, assets that are short term or by holding a buffer of cash and other assets readily convertible into cash, such as government bonds.

Trade finance typically has short tenors as demonstrated above. The short terms mean that cash is not tied up for long periods of time, hence liquidity risk overall is relatively smaller than for longer-term instruments. In addition, the tenors of trade finance do not vary much with changing macro-economic conditions. However, Basel III (as discussed in section 1.4) will nevertheless require on balance sheet trade finance products with corporate and SME counterparties to be funded longer term.

5.2. OPERATIONAL RISK

Operational risk is the risk of losses arising from internal processes, people and systems not performing at expected standards, or from external events. Common types of operational risk in trade finance include fraud, processing failures (for example, accepting documents that are not in line with the terms and conditions of the L/C), misconduct (for example, transacting with sanctioned counterparties) and legal and documentation risks (for example, incorrect or incomplete documents).

This type of risk is the most important consideration for trade finance as it is a processing heavy business, often involving complex and extensive documentation. Manual errors are easily committed, so checks need to be put in place to ensure that proper procedures are followed, sometimes requiring more than one person to examine the same document. The role of humans is key and having detail-oriented staff doing the work of processing and systematically introducing checks and balances for critical process steps helps to reduce operational risk.

APPENDICES

APPENDIX A.

SHORT-TERM TRADE FINANCE DATA

DATA CLEANING AND RECONCILIATION WITH 2011 REPORT SAMPLE

Participant banks submit data using a standardised template and definitions, but due to the inherent limitations of management information systems, sometimes data can be unavailable or inaccurate. Furthermore, individual banks naturally operate in different ways with regard to currency or organisational structure, which creates limitations in the feasibility of like-for-like comparison. Therefore, we have used a three-step process to maximise the quality of the sample (although this has reduced the available data): 1) critical evaluation of data quality, identifying outliers, likely data errors etc.; 2) iteration of observed issues with submitting bank; 3) filtering of unresolved issues or likely erroneous data points, including omission of certain years and products.

The precise set of filters used for defining the default rate data sample post-iteration with banks are as follows:

Filter 1: removes rows where either number or exposure of transactions is unknown.

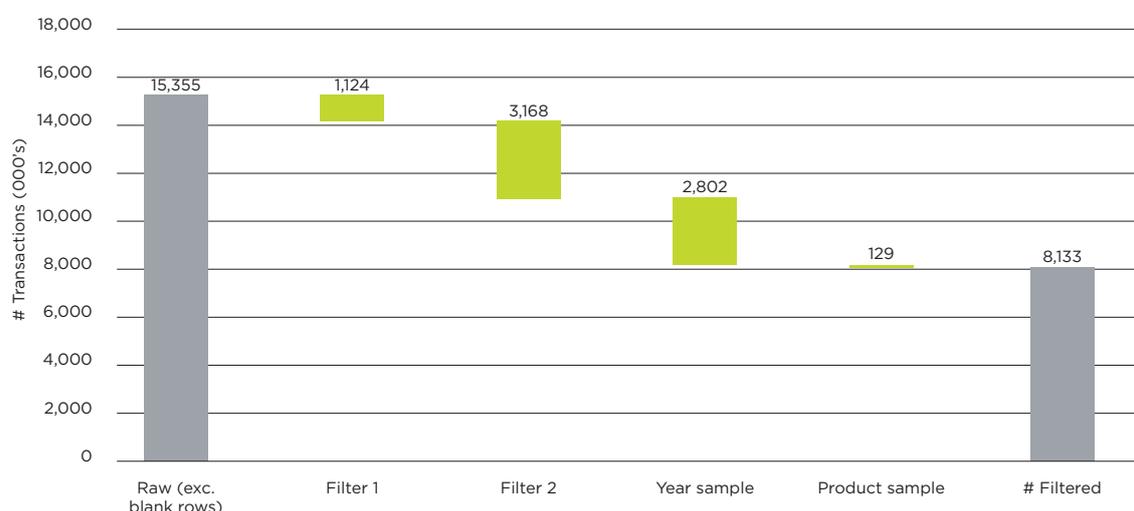
Filter 2: removes rows where the default status is unknown.

Year filter: removes years 2005-2007 due to limited quantity and quality of submissions

Product filter: removes shipping guarantees due to limited quantity of submissions.

The chart below illustrates how this affects the number of sample transactions:

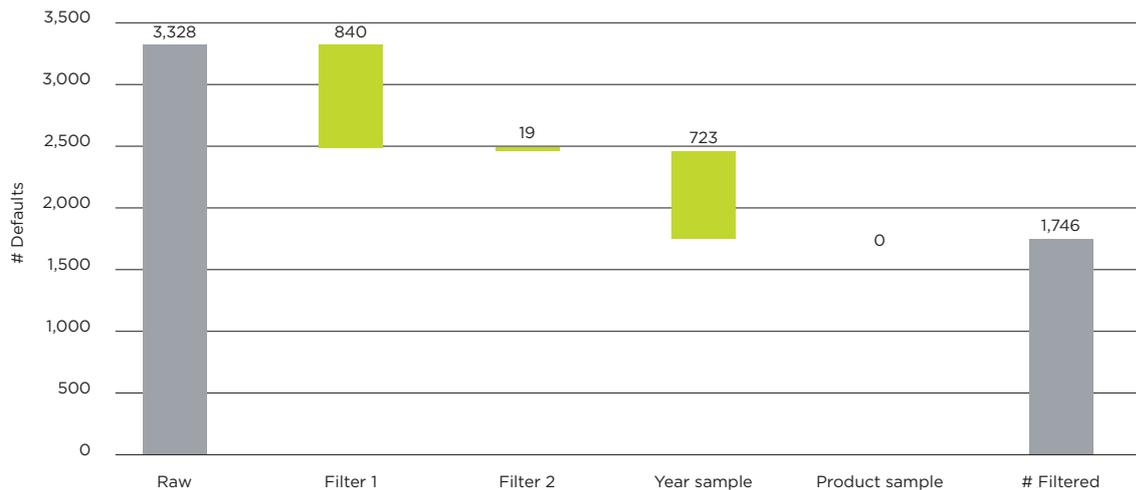
FIGURE 26
Sample filtering for default rate calculation by number of transactions



Initially, there are 15,355K transactions in the raw set of data submissions, of which 8,133K transactions, approximately 53%, remain after filtering. This compares to a final sample size of 4,844K used in the 2011 report.

We can also produce this chart for the number of defaults to see if the filtering approach impacts the calculated default rate. This is shown below.

FIGURE 27
Sample filtering for default rate calculation by number of defaults⁴⁸



After filtering, approximately 52% of the raw number of observed defaults remain. Compared to the 53% for the total number of transactions, this is clearly consistent.

This filtering approach, as mentioned previously, results in a different sample to that used in the 2011 report and, as a result, the measures are not directly comparable. In addition to the filtering, there are some other key differences compared with last year.

Firstly, the product perimeters have been adjusted. For loans for import, bank risk has been included in the 2013 report due to increased availability of data from the 2011 submissions. For performance guarantees, shipping guarantees have been excluded in the 2013 report due to a limited set of submissions once filtering has been applied.

Secondly, the sample used varies across measures, whereas a single sample was used for all measures in 2011. The charts above show the sample used for calculating default rates, but a smaller set was used for recoveries, write-downs and expiries. Whilst a large share of submissions contained sufficiently detailed information on the number of transactions, their exposure and whether they defaulted, fewer contained information relating to what recoveries or write-downs were made against those transactions and how many of the contracts expired. Therefore, for each measure we tried to maximise the included sample. For example, if in a row the write-down exposure was known, but the number of expiries unknown, it would be included for calculating the loss rate, but excluded for calculating the expiry rate.

In this year's report we have also sought to estimate Basel-aligned risk measures, being prudent where data is scarce. As a result, across the various measures laid out in this report, there is variation between the calculations familiar to the business and those required under Basel. A further implication is that the results of this 2013 report and the 2011 report are not directly comparable. The table below summarises the methodology for each measure.

FIGURE 28
Methodology to estimate Basel-aligned risk measures

MEASURE	BUSINESS VIEW	BASEL VIEW	IMPLICATIONS
Default rate	Measured as % of transactions which default	12-month default rate Customer definition of default	Need to annualise observed default rate (e.g. 12-month is ~4 times 3-month default rate)
Maturity	Individual transactions are contractually short	Assumes maturing transactions are replaced Maturity adjustment in RWA reflects rating migration only	Capital requirement is for whole year, assuming portfolio replenishes Some countries allow for lower migration of short-term products
Exposure At Default (EAD)	Non-compliant documentation is rejected Transactions expire without bank obligation	Advanced banks may be able to reflect this	Low conversion rate but further discussion of treatment is required, but may impact capital estimates
Loss Given Default (LGD)	Loss measured only on those trade finance transactions which default Reflects cash recoveries	Measured on customers who default (irrespective of whether trade finance product performs) Cash-flows should be discounted Workout and other costs should be deducted from recoveries Measured as % of exposures which default	Transaction loss rate very different from LGD Discounting has significant impact on medium-/long-term recoveries LGD higher than loss as % of written exposure
Expected Loss (EL)	% of business written over whole year/ per transaction	12-month estimate of losses assuming portfolio remains same	Basel EL higher than business perspective (as is annual not a transaction EL)

By aligning towards Basel measures, some methodological differences have been introduced compared to the 2011 report, specifically:

- Default rates are calculated using number of transactions instead of exposure (although both are reported).
- Losses are calculated as a proportion of defaulted exposure instead of total.
- Recoveries discounted over time and for costs to produce a defaulted transaction economic loss rate.

Where appropriate, the previous methodology has also been applied for reconciliation and to ensure business-consistent understanding of the risk characteristics.

LIMITATIONS OF DATA

As described in the previous sections, efforts have been made to reach a consistent, high quality data set. However, limitations remain and it is important to note these for two reasons:

- To understand where weaknesses exist within the analysis as it stands.
- To identify the steps required in future Trade Registers to improve the data set and facilitate more robust and extensive analysis.

One of the foremost observed limitations is 'unknown' default status, where data submissions do not indicate whether the written transactions are in default or not. In order to be prudent, all these line items have been omitted, which could potentially mean the default rate is being overstated in the report. Likewise, as we do not know the number of underlying customers or customer defaults, we cannot calculate a fully Basel-aligned default rate or LGD.

A further significant limitation is a lack of data on write-downs and recoveries for many of those cases where we do have information on defaulted exposures. In many cases this was indicated as 'unknown', and in others these appeared inconsistent with the size of the original default (for example, more written down than in default). Some of these were resolved through iteration with submitting banks, but ultimately the sample size remained limited and therefore firm conclusions based on the analysis conducted were not feasible.

In addition, year-end balances and cumulative annual transaction/exposure figures were sometimes inconsistent given the characteristics of short-term trade finance products, for example a large balance appearing to be rolled over multiple years. Again, some of these instances were resolved through iteration with providers, but ultimately this constrained the sample size available for calculating the implied maturity.

As part of the 2013 Register, banks were also asked to submit 'life cycle' data, i.e. the observed durations of the in-scope products. However, it was ultimately not possible to use this data and an implied maturity methodology was preferred instead. This was due to a combination of limited responses, extreme outliers and a lack of underlying raw data to determine how duration was calculated and whether the sample was consistent to that used for other measures.

Finally, given that the data in the Trade Register has been supplied by 25 banks on a best efforts basis, it is inevitable that there some inconsistencies in the meaning and capture of information reflecting differences in underlying systems, as well as potentially different ways of looking at trade finance. While we have attempted to adopt approaches that address these potential differences, it is has not been possible to fully align the information captured or neutralise the impact of differences, and it is hoped that further convergence may be achieved in future years.

APPENDIX B. BASEL BACKGROUND INFORMATION

This section of the report is targeted at the business reader who is less familiar with the origins and implications of Basel and seeks to:

Provide an overview and history of the Basel capital standards and introduce key concepts. The aim here is to:

- Introduce readers to the different “versions” of Basel and the issues that regulators have sought to address in each update.
- Provide an insight into some of the aims and thinking underpinning some of the rules.
- Introduce key concepts within the Basel standards.

Describe the Basel credit risk capital rules effecting trade finance. This aim here is to:

- Provide some more detail on how credit risk capital requirements are derived and their link to risk drivers.
- Discuss how these rules differ under different approaches to credit risk capital and their impact on trade finance.

OVERVIEW OF BASEL CAPITAL STANDARDS

The Basel capital standards are a set of internationally agreed standards that over the years have sought to improve the level and quality of capital held by banks, as well as the way in which they assess the amount of capital they require. They are named after the city in Switzerland where the Bank for International Settlements (BIS)⁴⁹ is based.

As part of its work bringing central banks and regulators together, the BIS has formed the Basel Committee on Banking Supervision which provides a forum for regular cooperation on banking supervisory matters with the objective of enhancing the understanding of key supervisory issues and improving the quality of banking supervision worldwide. As part of this work, the committee has over time agreed a number of standards and accords in order to improve the convergence of capital and liquidity standards across countries. These standards (described in more detail below) are:

Basel I – this was an initial step in 1988 to improve the consistency in regulations governing the capital adequacy of banks and to improve the amount of capital held by banks. Whilst initially focused on credit risk, this was subsequently amended in 1996 to further cover market risk⁵⁰ through the Market Risk Amendment to the Capital Accord⁵¹. This provided banks with a choice of using simple rules or banks' own internal models to estimate the capital to hold against market risk exposures.

Basel II – this was a new accord developed with significantly more risk-sensitive requirements. It recognised that Basel I did not adequately reflect the underlying credit risks banks were facing and that other risks (such as operational risk) or products (such as securitisations) were not included within the Basel I accord. It also noted the growing use of credit risk rating approaches amongst banks. This accord was agreed in 2004 with implementation intended to start at the end of 2006 or 2007 (depending upon the approach being adopted).

Basel 2.5 – in response to some of the issues with Basel II identified during the recent crisis, the Basel committee issued a package of documents to strengthen the Basel II accord, addressing in particular certain complex securitisation positions, off balance sheet vehicles and trading book exposures. This package of documents (commonly referred to as Basel 2.5, but strictly speaking improvements to the existing Basel II standards), was issued in July 2009 and came into force from December 2010.

Basel III – whilst the package of documents referred to as Basel 2.5 addressed a number of issues highlighted by the crisis, other issues such as the treatment of liquidity risk or the quality of capital used to ensure capital adequacy took longer to formulate and agree. At the end of 2009, the Basel committee issued the Basel III documents with the intention that they would be phased in between 2013 and 2019.

Given the collaborative nature of the Basel committee and the range of countries involved, there have always been a number of areas within the frameworks where discretion is left to supervisors. This has been done in order to reflect differences in local markets and practices, but potentially runs the risk that capital requirements do not converge as much as hoped and that banks do not operate on a "level playing field". Although the use of national discretion is beneficial, this may undermine one of the original fundamental objectives of the capital accords, which was "that the framework should be fair and have a high degree of consistency in its application to banks in different countries with a view to diminishing an existing source of competitive inequality among international banks."⁵²

Furthermore, the accords are not strictly speaking legally binding (as they are agreements amongst international regulators) and need to be enacted into law in each country before they become binding⁵³. This has a few implications:

- The speed of adoption varies across countries. For example, some emerging markets are not yet covered by the Basel II rules, while in the EU, rules enacting Basel III are still being negotiated at the time of writing. The extent of adoption of the accords varies across countries with, for example, the US only requiring compliance with their version of Basel II for the largest firms.
- As the accords go through the legislative process politicians may make amendments so that the final implementation may not always follow the strict letter of the Basel standards.

This means that, although we have discussed the implications of the Basel capital and liquidity standards in this report, the specific impact may be different in some jurisdictions.

Basel I

Given that the Basel I accord has been superseded by Basel II we will not dwell on the details of Basel I but simply touch upon some of the key concepts it introduced and some of the perceived “shortcomings” that led to the development of Basel II.

However, Basel I did introduce a few key concepts that have, in one form or another, been maintained within both Basel II and Basel III:

Risk weights – in order to reflect the fact that lending to different customers exposes a bank to differing levels of credit risk, each exposure has a different multiplier (risk weight) applied to it in order to produce a Risk Weighted Asset (RWA) amount⁵⁴. For example, under Basel I, an exposure to an OECD bank attracted a 20% multiplier, while a loan to a normal corporate would have attracted a 100% multiplier. Four categories of risk weight were defined (0%, 20%, 50% and 100%) with capital requirements for all exposures in a given category based on the same risk weight.

Target minimum capital ratio – in order to achieve a consistent minimum level of capital, it was agreed that international banks should target an amount of capital equal to at least 8% of RWAs.

Tier 1 and Tier 2 capital – the committee recognised that not all “capital” instruments are of equal benefit in helping a bank avoid insolvency. Thus the constituents of capital were effectively “graded” with, for example, paid-up share capital treated as Tier 1 capital, and subordinated debt treated as Tier 2. In achieving the 8% minimum requirement, banks were required to hold at least 4% of this as Tier 1 capital.

Credit conversion factors – the committee recognised that off balance sheet items, such as commitments and L/Cs, may convert into on balance sheet items and hence expose banks to credit risk, meaning capital should be held to protect against this risk. As a result, they introduced a prescribed set of CCFs intended to reflect the size and likelihood of an off balance sheet exposure becoming an on balance sheet exposure⁵⁵.

Although Basel I had the benefit of being a relatively simple, transparent approach to assessing the amount of capital required by firms, its simplicity prevented it from being closely aligned to the actual risk being taken by banks. Much has been written on this and we mention a couple of examples below, as they provide greater clarity on the origin of some elements in Basel II which impact capital requirements for trade finance instruments under Basel II:

Lack of differentiation amongst corporates:

Any exposure to a corporate, whether to the world’s lowest risk firms or to a highly leveraged commercial real estate transaction in a high-risk country, had the same risk weight.

As a result, when banks looked to enhance return on regulatory capital measures, the incentive was for them to take on riskier transactions. This was given that, for example, leveraged commercial real estate transaction paid a higher margin than the lowest risk firms and also given that banks performance was assessed on the basis of return on capital.

To address this Basel II has tried to align risk weights more closely to the underlying risk of the transaction based on external or bank estimates of credit risk, while at the same time maintaining a prudent approach to solvency assessment.

Treatment of off balance sheet facilities with less than one-year maturity:

Under the CCF rules, off balance sheet transactions with a contractual maturity of less than one year had a 0% conversion factor.

As a result, if an overdraft was set up with a contractual maturity of 364 days, then the off balance sheet elements required no capital, irrespective of whether or not the facility was automatically rolled over/extended on day 365⁵⁶.

To counter this, Basel II requires banks to treat exposures based on their effective maturity (reflecting the bank's willingness and observed behaviour in extending such transactions) and placed a floor in most cases on the maturity of a transaction of one year, which impacts many trade finance transactions.

Basel II

As noted above, given some of the perceived shortcomings within the Basel I accord and improvements in banks' internal risk measurement approaches, it was decided to replace Basel I with an approach which was more risk aligned. In 2004 the Basel II accord was approved⁵⁷ and the the committee made clear that:

"The fundamental objective of the Committee's work to revise the 1988 Accord has been to develop a framework that would further strengthen the soundness and stability of the international banking system while maintaining sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks."⁵⁸

This new capital accord defined a new Framework based on three "pillars":

Pillar 1 - minimum capital requirements. Pillar 1 consists of a set of approaches and rules governing the assessment of the RWAs for credit, operational and market risk. The minimum capital requirement for a bank under Basel II is then defined as 8% of the RWAs and at least half of this capital requirement must be covered by Tier 1 capital.

Pillar 2 - supervisory review process. Under Pillar 2, banks assess the amount of capital that they would need using their own estimates and covering risks, such as interest rate risk in the banking book that are not covered or are poorly reflected by Pillar 1 estimates. Supervisors then review these figures and the risk and capital management of the bank. As a result of this internal assessment and the supervisory review process, the supervisor will indicate to the bank the level of capital they expect them to hold⁵⁹.

Pillar 3 - market discipline. Under Pillar 3, banks are required to publish details of their risk management approach as well as some more composite information on the performance of their models and the breakdown of the capital requirements. The intention of this was to allow the market to better compare risk across banks and "discipline" them through charging higher prices to riskier banks.

Although the capital requirement established under Pillar 2 should in theory be a better reflection of the risks a bank is running, the figures are not published, whereas Pillar 1 figures are. This means it is the RWA amounts produced by the Pillar 1 models that are closely watched by the markets following the crisis and underpin solvency measures, such as the Core Tier 1 ratio.

Following the crisis, the RWAs produced by Pillar 1 approaches are now one of the key binding constraints many firms face⁶⁰. As a result, if there are certain portfolios where the RWAs overstate the relative riskiness, then there is a risk that given return and capital goals, these portfolios or products may be starved of capital, reducing the availability of this product to banks' customers. Given that the RWAs produced under Pillar 1 are a key determinant of required capital for banks, we provide some more detail on the approaches to credit risk measurement later on.

Basel 2.5

In response to the crisis starting in 2007, the Basel committee brought forward three papers to improve the existing Basel II framework, which are collectively referred to by some commentators as Basel 2.5:

Enhancements to the Basel II framework – this document sought to address some of the perceived issues in Pillars 1-3 of the Basel II accord:

Pillar 1 – the approach to assessing the credit risk of securitisation and related exposures was revised.

Pillar 2 – additional guidance to elements under Pillar 2 was provided, covering issues such as firm-wide risk management, stress testing and liquidity risk management.

Pillar 3 – reporting requirements for securitisation and related exposures were revised.

Revisions to the Basel II market risk framework – this document sought to address some of the perceived shortcomings exposed during the crisis by:

- Introducing an incremental risk charge and changing the treatment of securitisation exposures in the trading book⁶¹. This was done as there was a perception that the market risk measurement approach for credit risk of assets in the trading book resulted in lower capital requirements than if they had been treated under the credit risk measurement approach.
- Introducing stressed market risk measures – another issue highlighted through the crisis was that after a period of stable market performance, the market risk capital requirement measures were low, so that when volatility returned banks experienced higher losses than anticipated and had insufficient capital. As a result, the existing market risk capital requirement measures were supplemented with a requirement to calculate the figures based on information from a stressed period.
- Guidelines for computing capital for incremental risk in the trading book – this provided further details around the incremental risk charge to cover default and migration risk of credit risk assets in the trading book.

The changes proposed through these documents do not have a significant direct impact⁶² on the risk measurement for trade finance products so they are not discussed further.

Basel III

In the wake of the financial crisis, the Bank for International Settlements put forward a set of reforms (Basel III) to increase the resilience of banks and to lay out measures for managing liquidity risk. Broadly, Basel III covers the following six areas:

1. **Tier 1 capital requirements.** Basel III sets out stricter rules governing acceptable forms of capital to ensure banks are in a better position to absorb losses on both a “going concern” and “gone concern” basis. As a result, Tier 1 capital is to become mostly common shares and retained earnings (Common Equity Tier 1 or CET1). There will be limited recognition of deferred tax assets, minority interests, pension assets/liabilities, unrealised gains/losses, mortgage servicing rights and unconsolidated investments in financial institutions. Instead, there will be a 250% risk weighting on the portion of these items not deducted from CET1. The minimum CET1 ratio is set at 7% (including a conservation buffer), with a minimum Tier 1 ratio of 8.5% (including the conservation buffer) and a total capital requirement of up to 10.5% (also including the conservation buffer).
 2. **Risk coverage.** There are additional capital requirements for counterparty credit risk exposures arising from derivatives, repurchase agreements and securities financing, as well as capital incentives to move over-the-counter (OTC) derivative exposures to central counterparties (CCPs) and exchanges. The additional capital comes in the form of:
 - a. A credit valuation adjustment (CVA) capital charge for mark to market losses associated with the decrease in creditworthiness of a counterparty
 - b. An increase in counterparty credit risk charges for trades with other financial institutions through a change in the asset value correlation (AVC) parameter
 - c. Use of stressed expected positive exposure (EPE)
 - d. New charges for wrong way risk
- Banks are, however, incentivised to move OTC derivatives to CCPs through a 2% risk weighting on CCP exposures.
3. **Cyclicality.** Basel III is also intended to be a counter-cyclical framework to encourage banks to build up their capital buffers during good times. As such, a capital conservation buffer of 2.5% is required, together with an additional countercyclical Tier 1 buffer of 0% to 2.5% to be determined by national regulators based on overall ratio of credit to GDP. Forward-looking provisioning will be required to capture actual losses and reduce pro-cyclicality.
 4. **Liquidity.** A 30-day LCR must be reported at the group level in a single currency, but must be monitored in all significant currencies where aggregate liabilities are greater than 5% of total liabilities. A NSFR must be reported for longer-term structural liquidity. In addition to these ratios, there is also a defined set of monitoring metrics to assist supervisors in identifying bank or system-wide trends, funding concentration and maturity profiles.

5. **Leverage.** To contain build-up of excessive leverage and to introduce additional safeguards against attempts to “game” risk-based requirements and reduce model risk, a leverage ratio has also been introduced. This stipulates that the minimum amount of capital must be at least 3% of total exposures, both on and off balance sheet.
6. **Global Systemically Important Financial Institutions (G-SIFIs).** On top of the above requirements, the largest and most complex FIs will have to hold 1% to 2.5% more capital based on the risk they pose to the global financial system. Those facing the 2.5% surcharge could be made to hold an extra 1% of capital as a disincentive to increase their systemic importance any further.

Among these, the need for increased capital for FI exposures, the liquidity requirements and the leverage ratio have the greatest potential impact on trade finance. A detailed analysis of their impact is beyond the scope of this current report.

CREDIT RISK RWAs UNDER BASEL II AND III AND IMPLICATIONS FOR TRADE FINANCE

Pillar 1 credit risk RWAs

The key concept underpinning the Basel credit risk rules is that banks should have a large enough buffer of capital and reserves to be able to withstand an unusually high level of credit losses or write-offs due to customer defaults without becoming technically insolvent. Given this, the question is how to assess the likely losses in an extreme scenario and what might impact this. In determining how much capital and reserves a bank needs, Basel committee have sought in Basel II, as in Basel I, to ensure that the rules should reflect the key drivers of credit losses on banks' portfolios in severe economic circumstances, namely:

The type of counterparty – because certain types of customer, such as retail customers, are typically expected to be less risky than other types of customers, such as corporate customers, the RWAs depend upon the broad type of customer (or asset class, as Basel calls them) within which the customer falls.

The default rates of the customers to whom the bank lends – even within asset classes customers can expose the bank to differing levels of risk. Therefore, the RWAs should depend on the underlying riskiness of customers, i.e. the likelihood that they default (or PD).

How much customers will owe the bank when they default – clearly where banks have lent more money to customers, all else being equal, this should require more capital. As with Basel I, the amount of exposure that is likely to be outstanding at the point of default (or EAD) reflects how much a customer has currently borrowed, how much a bank has committed to lend them in the future and how likely a customer is to draw on any commitments.

The extent to which losses might be mitigated through collateral or guarantees – where a bank has a claim on collateral or has some form of guarantee of repayment if a customer were to default, then all else being equal, its losses should be lower. Therefore, the use of credit risk mitigation is recognised by the RWA, either through reducing the amount which is assumed to be lost when a customer defaults (or LGD), or through treating the exposure as an exposure to the guarantor.

Maturity of the exposure – all else being equal, the longer the maturity of an exposure, the more chance a customer has of defaulting. Or, if it doesn't default, the greater the impact on the value of the loan if its credit quality deteriorates. This means, the RWAs also reflect the effective maturity (EM) of the exposures the bank has.

Cycle sensitivity of the banks customers – the more sensitive customer default rates, EADs or LGDs are to the cycle, the higher the likely level of losses will be in a recession relative to “normal” loss levels, and hence the greater the amount of capital which will be required to maintain solvency. Thus the Basel rules reflect how sensitive the portfolio of a bank is to the cycle. This in turn reflects a number of drivers:

- The type of counterparty – for example retail customers are considered to be less sensitive to the state of the economy than banks.
- The PD of a counterparty⁶³ – firms that are more risky on a stand-alone basis are therefore, all else being equal, considered to be relatively less sensitive to the economic cycle.
- The size of a corporate counterparty – because small businesses are considered to be more susceptible than large firms to company-specific issues. such as the default of a key customer or the loss of a key individual, they are considered to be less sensitive to the state of the economy.
- The type of product for retail customers – the loss rates for mortgages are considered to be more sensitive to the state of the economy (and in particular property values) than other retail products such as credit cards or unsecured loans.

Given that regulators were seeking to define a set of rules for estimating credit risk capital requirements that would be as broadly applicable as possible, the committee has allowed a number of approaches for estimating credit risk RWAs to reflect the differing levels of risk measurement and management sophistication of banks⁶⁴:

Standardised approach – this can be thought of as a somewhat more sophisticated version of Basel I rules, with exposures placed in different broad risk buckets which reflect the drivers above and use external ratings to measure customer riskiness (where available).

Internal Ratings Based (IRB) approach – where banks have a history of successfully using internal rating models to assess the credit risk of its customers, they are allowed to use these models in determining the credit risk requirement for their exposures (provided the bank’s models, controls etc. have been approved by regulators). Under this IRB approach, the RWAs for an exposure are based on a set of regulatory specified functions⁶⁵ that are fed with the bank’s estimates of key credit risk parameters. This function takes as inputs:

- Customer PD – this is the probability that a counterparty defaults on any exposure to a bank within 12 months (Basel rules require the “long-run average of one-year default rates for borrowers”⁶⁶).
- EAD – this is the amount the customer will owe the bank on a given transaction at the point of default.
- LGD – this is the economic loss which a bank is expected to incur on a transaction when a customer defaults, reflecting any credit risk mitigation.
- EM – this is remaining maturity in years of an exposure.
- Cycle sensitivity of the customer – this is determined by asset class (i.e. customer or product type), but for banks and corporates also reflects firm size and PD.

Within the IRB approach, there are two different levels of sophistication available, reflecting the ability of the bank to measure key risk parameters:

Foundation IRB approach – under these rules, banks with a history of using rating models can use its own estimates of PDs in the RWA functions. Thus the inputs to the IRB RWA functions for firms using the Foundation IRB approach are determined as follows:

- PD: the bank uses its own inputs
- EAD: the bank uses regulator specified CCFs
- LGD: the bank uses regulator specified figures that also reflect the benefits of some collateral types
- EM: the bank uses a figure of 2.5 years, unless the regulator asks them to calculate the EM
- Cycle sensitivity: the cycle sensitivity, referred to in IRB approaches as the correlation, is defined based on formulae which reflect the asset class, firm size and firm PD

Advanced IRB – banks that in addition to having a history of ratings of the default risk, have a successful history of using their own internal estimates for the exposure at default of exposures and the loss given default, can use these estimates in the IRB functions. Thus the inputs to the IRB RWA functions for firms using the Foundation IRB approach are determined as follows:

- PD: the bank uses its own estimates of customer PDs
- EAD: the bank uses its own estimates of CCFs
- LGD: the bank uses its own estimates of LGD
- EM: the bank calculates the cash-flow weighted remaining maturity
- Cycle sensitivity: the cycle sensitivity, referred to in IRB approaches as the correlation, is defined based on formulae which reflect the asset class, firm size and firm PD

Comparison of different approaches under Basel II and III

Thus, for the corporate and bank exposures that arise through trade finance products, the key inputs⁶⁷ for the RWA calculation under the three different approaches are defined as follows:

FIGURE 29

Comparison of different approaches under Basel I, II and III

	STANDARDISED	FOUNDATION IRB	ADVANCED IRB
PD	External rating or unrated	Internal model	Internal model
EAD	Regulatory CCFs	Regulatory CCFs	Internal model
LGD	Substitution	Regulator parameter and formulae	Internal model
Effective Maturity	Different RWA for some short-term exposures	Fixed at 2.5 years or calculation as per AIRB	Internal calculation floored at 1 year

It should be noted that the Basel committee has sought to put the IRB framework into parameters in such a way that it provides a mild incentive to adopt a more risk-sensitive risk measurement and management approach⁶⁸. However, in reality, the RWAs produced by the formulae for foundation IRB banks are in fact broadly aligned with the RWAs of rated corporates under the standardised approach⁶⁹. This is likely because regulators have tried to avoid introducing competitive imbalances, while seeking to encourage improvements in risk management. Given this aim, we have sought to describe the potential implications of the RWA functions for standardised, foundation IRB and advanced IRB banks.

However, we would note that, although there may be some differences across different approaches within the Basel framework, regulators have generally highlighted that it is inevitable that in a set of rules covering as large a range of products, portfolios and geographies as that covered by Basel II and III, there will be some segments which will look better under one approach and some which will look better under another approach. In general, across a whole bank, the expectation is that winners and losers will balance out. This means that, in order to ascertain why their internal capital estimates may differ from those of their peers, the comparison below is worth understanding for trade finance professionals, but it is not necessarily the case that a misalignment should lead to changes.

Probability of Default

Under the standardised approach, the default risk characteristics of a trade finance counterparty (a bank or corporate customer) are recognised through the assigned external rating (if one is assigned)⁷⁰. If an issuing bank is unrated, then the RWA% is 50%, whereas if the importer is an unrated sovereign, corporate or bank customer does not have an external rating, then the RWA% is 100%. Foundation or advanced IRB banks are meant to use their own internal default rate estimates in determining the RWAs for a customer.

There has long been some debate in credit risk management about whether or not portfolios of customers can be less risky than the sovereign of the country in which they operate. Those that feel that a sovereign in a country is, in practice, less risky than any customer in it point to:

- The ability of a government to print money to meet its commitments (assuming they are denominated in the local currency);
- The ability of a government to increase taxes to meet its commitments;
- The ability of a government to expropriate assets if it so desires (and hence to meet obligations);
- The fact that if a sovereign defaults, then there are typically serious repercussions for individuals and companies in that country.

If the sovereign is considered less risky than individuals or companies, then it naturally follows that the RWA% for a corporate and bank exposure should be higher than for an exposure to the sovereign, i.e. the sovereign RWA% should form a “floor” for corporates and banks etc. The Basel Committee concluded in writing the Basel II rules that for standardised exposures there should be such a “sovereign floor”⁷¹.

- Given that trade finance products are often used in countries where the sovereign is unrated, this effectively meant many such exposures could not have a risk weight of less than 100%.
- However, in October 2011, recognising the importance of trade finance to low income countries, “to make access to trade finance instruments easier and less expensive for low income countries, the Committee agreed to waive the sovereign floor for short-term self-liquidating letters of credit”⁷² for claims on the issuing bank.

Although there is no explicit sovereign floor required under the IRB approaches (as there is under the standardised approaches), many banks’ internal rating systems would, in practice, apply a sovereign floor to the customer PD for most corporate or bank counterparties for the reasons outlined above⁷³.

Exposure at Default

The EAD for on balance sheet exposure, not subject to netting agreements, cannot be lower than the current balance (even if some exposure is expected to be repaid prior to default⁷⁴) whether measured under standardised, foundation IRB, or advanced IRB.

Under the standardised approach, as under Basel I, off balance sheet exposures are converted to exposure equivalents based on a series of CCFs. These CCFs are intended to reflect the likelihood of an off balance sheet position to become on balance sheet. The CCF for short-term self-liquidating trade L/Cs were reviewed by the Basel committee during 2011⁷⁵, however it was concluded that the CCF should remain at 20%⁷⁶.

Banks adopting a foundation IRB approach use broadly the same set of regulatory CCFs as under the standardised approach⁷⁷. Therefore there will be little difference between the CCFs on trade finance products between firms using a standardised approach and a foundation IRB approach.

However, firms with permission to use an advanced IRB approach can derive their own estimates of CCFs for off balance sheet exposures, including trade finance instruments. This is with the exception of “direct credit substitutes”, such as general guarantees of indebtedness (including standby L/Cs serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptances)⁷⁸. Given advanced IRB banks can use EAD figures based on their own experience and internal estimates, this may (subject to approval of the model by the regulator) allow for greater recognition of any differences in experienced drawdown behaviour for trade finance products (although this could produce lower or higher values than foundation IRB).

From an EAD perspective, it is unclear whether there will necessarily be any significant impact on RWAs of a bank adopting a standardised, foundation or advanced IRB parameters.

Loss Given Default

Where a bank using the standardised approach uses credit risk mitigation techniques, such as collateral or guarantees, the RWA can sometimes be reduced to reflect the existence of these mitigants. However, in terms of collateral and under the standardised approach, banks can only recognise the benefits of financial collateral, such as cash, gold or bonds⁷⁹. This means that even though many trade finance transactions are collateralised by the underlying goods being shipped, the risk mitigation benefits of this collateral are not recognised and the RWA% is equivalent to that of an “unsecured” exposure⁸⁰.

Under the foundation IRB approach a slightly broader range of collateral can be recognised than under the standardised approach. However, although beyond purchased receivables, there is no explicit LGD parameter for trade finance type products, which we would therefore expect to be typically treated as being senior unsecured⁸¹. Where a foundation IRB bank is unsecured, Basel prescribes the LGD parameter to be based on whether or not the bank is senior (in which case a 45% LGD must be used) or subordinated (in which case an LGD of 75% must be used).

For banks using an advanced IRB approach, there are no explicit restrictions on the type of collateral that can be recognised. This means that, in theory, if the issuing bank is generating benefit in reduced losses from trade finance exposures due to their collateralised nature, then an advanced IRB bank can reflect this in its LGD estimates. However, it is increasingly the case that any reduction in LGD needs to be backed by robust evidence of the better recovery experience of these exposures. Given the low default nature of trade finance portfolios this can be challenging.

However, there is one key element that means that, all else being equal, we would expect the LGD estimates for trade finance products to produce a lower LGD figure than under foundation IRB:

- Basel requires IRB banks to use a customer level definition of default, which treats all exposures as being in default if the customer is in default on any material obligation⁸².
- Therefore, even if a customer makes its payments on their trade finance exposures, if they default on another exposure to the bank, the trade finance exposures should be counted as being in default.

- In the scenario where a customer is in default overall but repays its trade finance exposure, this should then count as a high level of recovery on trade finance exposures to defaulted customers.
- An advanced IRB bank can recognise this whereas a foundation IRB bank is restricted to using regulatory LGD parameters.

If the hypothesis that counterparties are more likely to repay their trade finance exposure is right (and anecdotal evidence suggests this may be the case), then we would expect banks using an advanced IRB approach.

Effective Maturity

Under the standardised approach, a lower set of risk weights may be used for exposures to banks where the original maturity of the transaction was less than three months. As a result, the exposure to the issuing bank on some trade finance transactions may have lower risk weights for the confirming bank⁸³. However, in line with the committee's broader approach to ensure that maturity effects reflect bank behaviour, this short-term treatment is only permitted where the bank is not expected to roll over the facility⁸⁴.

For foundation IRB banks, the EM of the exposure is fixed at 2.5 years, unless the regulator requires use of the advanced IRB calculation approach⁸⁵. For firms using the advanced IRB approach the EM is based on the timing of remaining cash flows for a transaction⁸⁶. In reality for a L/C, the EM is typically equal to the nominal maturity of the L/C.

However, for most products there is a one-year floor applied to the EM, although regulators may remove this floor for certain products if they feel the products "are not part of a bank's ongoing financing of an obligor"⁸⁷. In 2011, following further review of the treatment of trade finance products, the committee proposed the following approach to EM:

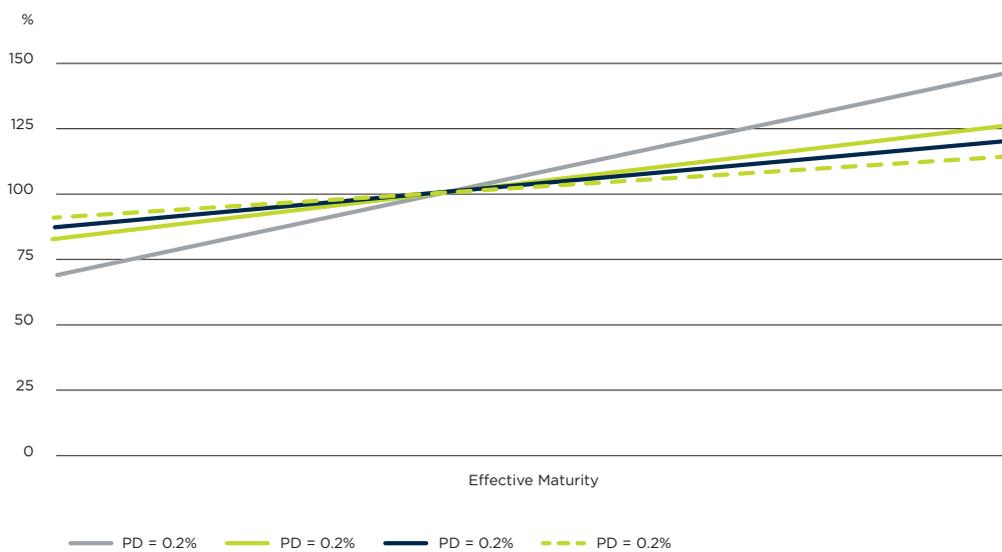
"It has been argued that the one-year maturity floor under the AIRB is also inappropriate for short-term self-liquidating trade finance instruments given their average tenor of well below one year. The Committee agreed, therefore, to base the calculation on the EM for transactions with a maturity of less than one year. It believes that this should become the rule rather than an item left to national discretion.

The Committee further agreed to include, in the revised treatment, issued as well as confirmed L/Cs that are short-term (i.e. have a maturity below one year) and self-liquidating. Other trade finance transactions which are not L/Cs can continue to be exempted from the one-year floor, subject to national discretion."⁸⁸

Thus, the short-term nature of some trade finance products has now been more fully recognised within the Basel framework, although other products remain subject to national discretion.

The impact of EM within the Basel IRB RWA formulae is to increase the RWAs for exposures with longer maturity and to decrease it for those with shorter maturity. In addition, the impact of the EM on RWAs varies with the customer's underlying PD because the expectation is that more capital is required to cover downgrades of better-rated customers⁸⁹. As a result, the impact of maturity is greater for low PD customers, as shown below:

FIGURE 30
Impact of Maturity on RWA as proportion of RWA for 1-year facility⁹⁰



Given the impact of maturity and the ability of advanced IRB banks to use a figure of lower than 2.5 years (and in some cases use EM figures below one year), the EM and short-term nature of many trade finance instruments should therefore, all else being equal, produce lower capital requirements for an advanced IRB banks than would be allowed under foundation IRB.

ESTIMATION APPROACH AND ASSUMPTIONS

Given the extent of leeway which the IRB approaches afford banks in determining their own inputs to the RWA formulae, the Basel II text includes a number of additional requirements around the estimation of these parameters in order to ensure these parameter estimates are appropriate. As noted above, these requirements have been left broadly untouched in Basel 2.5 and Basel III⁹¹. For each of the parameters used in the IRB RWA functions, the requirements have some implications for their estimation on trade finance transactions. Thus this section aims to describe:

- Some of the requirements for Basel II and III RWA parameter estimation;
- How we have derived the PD, EAD, LGD and maturity parameters for trade finance instruments based on the Trade Register data;
- Some of the adjustments and assumptions which have been required;
- Indications of potential future enhancements to the analysis

As such, it is aimed at a slightly more technical audience, although it should also be useful for those who want to understand some more of the detail behind the results in this year's report.

We start by discussing the implications of the Basel II definition of default for PD and LGD estimates.

Definition of default

The starting point for estimating internal parameters for the IRB approach is the definition of default, which is prescribed within the Basel rules in order to enhance comparability across firms. Within the Basel framework, a default is deemed to have occurred when one of two events has happened⁹²:

- The bank considers the counterparty unlikely to repay in full. Indications of when this has happened would, for example, include: the bank putting the counterparty on non-accrual status; the bank writing-off some of the exposure or raising a provision; the bank or the counterparty applying for bankruptcy.
- The counterparty is more than 90 days past due on any material exposure – this is intended to act as a “back-stop” to the other definition of default although many firms have found that a portion of customers may well accidentally breach this trigger.

Under the Basel rules, all transactions for a customer should be treated as being in default when a single (material) transaction is in default⁹³. This means that if an importer was to enter default due to missed payments on a term loan for example, then any outstanding trade finance facilities and other facilities should, for Basel purposes, automatically be treated as being in default, irrespective of whether or not they subsequently repay the exposure.

This means that for an IRB bank offering trade finance products, where they have a broader relationship with the importer than just the trade finance product, they need to use a default definition (and hence PD) which reflects the likelihood of default on any product.

An advanced IRB bank can in theory reflect the subsequent repayment of the trade finance exposure within its LGD framework⁹⁴. For example, if 50% of the time customers who defaulted with existing trade finance products repaid these products fully (leading to zero loss), and the rest of the time the exposure entered the same workout process as other exposures, the LGD would be 50% lower than on other exposures⁹⁵.

However, because foundation IRB banks use regulatory prescribed LGDs that do not contain a specific treatment of trade finance products, trade finance products are treated as senior unsecured and receive an LGD of 45%, even if a large percentage of the trade finance exposures actually fully repay.

Thus, the customer level definition of default for corporate and bank exposures may be problematic for trade finance instruments given banks' experiences that many importers continue to pay their trade finance obligations even where they are in Basel default on their other obligations⁹⁶. The potential for banks to recognise the lower loss rate for trade transactions under the advanced IRB approach may impact the committee's desire to maintain “sufficient consistency that capital adequacy regulation will not be a significant source of competitive inequality among internationally active banks”⁹⁷. However, in the absence of evidence to demonstrate the lower loss rate on trade finance products, the need to be prudent in setting capital requirements means that it may not be appropriate to amend the foundation IRB LGD parameters.

In order to definitively prove whether banks' anecdotal evidence that customers in broader difficulty repay on trade finance products, one would need information about whether a customer default has occurred, the set of trade finance instruments in existence at the point of default and information of recoveries on these exposures and other exposures. The Trade Register does not currently capture this level of information.

However, as shown through the comparison between the trade finance specific default rates and banks' corporate default rates reported in their Pillar 3 reports, it does appear that the default rate on trade finance products may be substantially lower than those on corporate portfolios in aggregate, suggesting the LGD on trade finance products might indeed be lower. Unfortunately this evidence is not conclusive as there may be other effects driving this lower default rate. It may be the case that only inherently lower risk customers are involved in international trade and therefore use trade finance products. If only the firms rated externally with the equivalent of an A rating used trade finance products, then the actual observed trade finance default rates would be broadly in line with default rates on other products (and hence LGDs would be no lower than normal either). However, it seems unlikely that there are that many A-rated companies in the world (especially given the range of countries where trade finance products are used).

Probability of Default

Under the Basel IRB approach the PD used in the RWA must be the "long-run average of one-year default rates for borrowers"⁹⁸, and furthermore "separate exposures to the same borrower must be assigned to the same borrower grade, irrespective of any differences in the nature of each specific transaction"⁹⁹. These requirements have a couple of implications for trade finance exposures:

- In estimating RWAs for trade finance exposures, a one-year PD must be used, irrespective of the short-term nature of many trade finance transactions. This may seem unfair given that many trade finance transactions have a maturity of three months or less, and hence the probability that the customer defaults within three months is roughly a quarter of the probability that it defaults within 12 months. For firms adopting the advanced IRB approach (and some firms on foundation IRB), this issue may be addressed through the EM treatment (where this is allowed and where a one-year floor is not imposed). However, firms on foundation IRB may not be able to reflect this treatment¹⁰⁰ and, as a result, may require more capital than an advanced IRB bank for the same exposure.
- Where firms have a broader relationship with a customer than just trade finance exposures, the need to use a single rating for all exposures to the customer means they must use PD estimates for the trade finance exposures that reflect the broader risk of customer default. As discussed above, if in line with anecdotal evidence, customers continue to repay their trade finance obligations even where in default on other exposures, then this may be punitive for foundation IRB firms relative to advanced IRB firms.

The rules also have a couple of implications for the derivation of PD/default rate estimates from Trade Register data, which are described further below:

- We need to estimate an equivalent one-year default rate from the short-term trade finance data.
- The default rate should be based on customer level information about default.
- Our estimates should represent a long-run average (if possible).

Customer level default rate

As noted above, for Basel II RWA purposes, the default rate should be based on the number of customers defaulting within a period divided by the total number of customers in the portfolio. However, the Trade Register provides information at an aggregate level based on the number of transactions and the number of defaulting transactions. That means that, if the average number of trade finance products used by defaulting customers is different to that average number used by non-defaulting customers, the derived default rate might be wrong. To see the potential impact, we return to the simple example in the box below.

By making the adjustment for maturity, we have accounted for one source of difference in an average number of transactions per customer¹⁰¹. However, there may also be other issues that cause the number of transactions per customer to systematically differ between defaulting and non-defaulting firms:

- Given the commonly observed phenomenon that larger firms typically default less frequently than smaller firms, then if larger firms use more trade finance products¹⁰², the non-defaulting firms may have on average more products in our observations, leading us to underestimate the default rate.

FIGURE 31
Impact of different number of transactions for defaulting and non-defaulting cases

- A bank has 10,000 customers who need to import goods every quarter
- Suppose that in each quarter 1% of the L/Cs default
- Suppose that customers who default only require 1 L/C per quarter but that customers who don't default use two L/Cs per quarter
- Looking at this on a transaction basis, one would have:

	CUSTOMERS AT START OF PERIOD	OPENED L/Cs	DEFAULTED CUSTOMERS	DEFAULTED L/Cs
January-March	10,000	19,606	100	100
April-June	9,900	19,506	99	99
July-September	9,801	19,407	98	98
October-December	9,703	19,309	97	97
Total	10,000	77,828	394	394

Under the reporting within the Trade Register, this would appear as:

- 77,828 L/Cs in the year
- 394 L/Cs defaulting

The transaction default rate calculated from this information would be 0.51%

- However, as trade finance products are designed to protect the exporter from the credit risk of the importer, they may be required more frequently for riskier customers¹⁰³. Therefore, if exporters are able to differentiate between riskier and less risky customers, such as a large well-known maker of engines compared with a small unknown maker, then defaulting customers should have been asked for trade finance products more frequently, meaning that the numbers might overstate the default rate.
- At this stage we do not have data from the participating banks on the customer default rates or on whether there are systematic differences in the number of transactions used by defaulting and non-defaulting customers, although anecdotally some of the banks have indicated that they expect non-defaulting customers to use more trade finance products, suggesting the customer default rate may be higher. The feasibility of providing this information for next year's report is currently being discussed.
- A second potential source of difference between the customer default rate and the observed transaction default rate on trade finance products is driven by the risk mitigation benefit of the short maturity of many trade finance products and the fact that they do not in general represent ongoing financing of the customer (in the way that a money transmission account or overdraft does).
- Because many trade finance products are short term in nature, the bank is in a better position to assess whether the customer is likely to default over the lifetime of the product. For example, it is easier to determine who will default within the next than months than who will default within the next five years.
- As trade finance products are not part of the ongoing financing of customers, banks are not contractually obliged to provide a product or to "roll it over". Therefore, where a bank considers a customer to be unlikely to pay within life of the trade finance product, they may choose not to produce the product. For example, if a bank thinks the customer is likely default within three months, it may choose not to extend a three-month L/C.
- Even though customers may default, given the nature of the trade finance product one might expect to observe fewer customers with trade finance products in existence at the time of default and hence a lower observed default rate on trade finance products.

However, it is not easy to estimate the impact of this on our estimates of annualised trade finance customer default rates.

Deriving a long-run average default rate

Basel rules require that where firms use their own PD models (i.e. for firms using IRB approaches) the PD should be a "long-run average of one-year default rates for borrowers". Although there is no explicit definition within the Basel II text of how this long-run average should be calculated¹⁰⁴, the UK FSA has, for example indicated, that "the IRB requirement is for the PD to be the average of long run default rates – what the average default rate is expected to be over a representative mix of good and bad economic periods"¹⁰⁵.

This means that, in estimating a long-run average default rate, consideration should be given to whether or not the data in the Trade Register database provides a representative mix of good and bad years. This is challenging, as in order to be sure of using a figure which reflects a representative mix, we would ideally not only adjust for the ratio of good and bad periods in our data, but also whether the good and bad periods are particularly good or bad. Given that the primary focus of this document is on updating the Trade Register analysis, we have not undertaken a detailed analysis of the periods under consideration (although anecdotally the current economic period is considered severe, even if some countries are not “technically” in recession).

Instead, for this year’s analysis we have sought to illustrate the potential impact of a relatively high-level adjustment to the ratio of good periods and bad periods. In doing this we have drawn on a World Bank paper¹⁰⁶ that estimates the lengths of periods of contraction and expansion in OECD countries and a number of emerging markets using data from 1980 to 2006¹⁰⁷. This paper reported the following durations for expansions and contractions in a range of 23 emerging economies and 12 OECD countries¹⁰⁸:

FIGURE 32
Tenor by asset class, 2006-11

	MEAN DURATION (QUARTERS)	
	CONTRACTION	EXPANSION
Emerging Economies (23) ¹⁰⁹	4.0	17.3
OECD (12) ¹¹⁰	3.6	23.8

Based on these high-level results, the ratio of expansionary periods to recessions would be approximately 4.3:1 and 6.6:1 for emerging economies and OECD economies respectively¹¹¹. Applying the country and regional level figures reported in the World Bank paper to the cleaned Trade Register data from 2008 to 2011¹¹², this would suggest that the typical ratio of expansionary periods to recessionary periods should be around 6.1.

The observed ratio in our data of between 4.3:1 and 5.8:1¹¹³ suggests that, in line with expectations, the figure derived from 2008 to 2011 are “over-weight” recessionary periods, suggesting the default rates shown in the report may be somewhat conservative than a through-the-cycle long-run average¹¹⁴.

Exposure at Default

Many trade finance products differ from other financial products such as term loans or overdrafts because at a portfolio level the amount of exposure that will be drawn when customers default is a function of two drivers¹¹⁵:

The percentage of products that will be drawn or claimed at default – whereas with a loan the amount of money has already been paid by the bank, for some trade finance products, the bank may not actually need to make a payment:

L/Cs - there is no obligation for an issuing or confirming bank to pay a L/C if the documentation is not correct. Based on information in the Trade Register more than 50% of L/Cs are rejected at first presentation, as they do not have appropriate documentation at that point. As a result, as shown above, approximately 20% of L/Cs actually expire without being paid.

Loans for import and export – here it depends on whether it is a loan or a facility that can be drawn. Receivables finance, for example, is typically a facility that is drawn upon presentation of acceptable invoices. Other structures such as a clean loan for import could be similar to an unsecured term loan.

Performance guarantees – the customer may have satisfactorily performed the task covered by the guarantee prior to default. And even if they have not fulfilled their obligations, a claim on the guarantee may not be made, although given the guarantee was requested by the beneficiary of the guarantee, claims would be expected. This is why, as shown above, approximately 85% of performance guarantees expire without a claim being made.

The percentage of the nominal amount which will be drawn or claimed – in the event that the trade finance product is drawn, then the proportion of the limit which will be drawn will vary by the type of product:

L/Cs and loans for import and export – this will typically be the full amount of the L/C.

Performance guarantees – for performance guarantees, if a claim is made then the claim will not necessarily be for the full amount guaranteed.

Therefore, when a customer enters default, it is possible that the trade finance product converts into an exposure, and even if the bank does need to make a payment, it may not necessarily be for the full written amount of the product.

Where an exposure is on balance sheet, then for foundation and advanced IRB banks, the EAD cannot be less than the currently drawn amount. For foundation IRB banks, off balance sheet items use regulatory specified CCFs that are broadly the same as those specified for standardised firms¹¹⁶.

However, firms with permission to use an advanced IRB approach can derive their own estimates of CCFs for off balance sheet exposures, including trade finance instruments. This is with the exception of “direct credit substitutes, such as general guarantees of indebtedness (including standby letters of credit serving as financial guarantees for loans and securities) and acceptances (including endorsements with the character of acceptances)”¹¹⁷.

In estimating the CCFs (or EAD) for trade finance exposures, firms need to comply with a number of Basel requirements:

- The Basel RWA formulae seek to estimate the total losses which will be experienced due to firms defaulting in a severe downturn, and if the firms change how they use products as they approach default (or defaulting firms behave differently to other firms), then it will be important to derive parameters based on the defaulting firms¹¹⁸.
- For example, if defaulting firms have a greater tendency to provide correct documents (and hence the proportion of products which expire unpaid for defaulting firms is lower), then the EAD estimate should reflect this¹¹⁹. Therefore, while at an aggregate level a large proportion of trade finance products expire without being paid, the behaviour on defaulting firms needs to be examined separately.
- Likewise, in estimating the amount that will be drawn at the point of default (where the product is one that will not in practice be fully drawn), this estimate should be based on defaulted firms.
- Estimates of EAD should be appropriate for a downturn if this is worse than normal circumstances. As noted above, the RWA formulae require downturn EADs as an input. It is not clear whether or how cyclical EAD would be expected to be.

- For example, the proportion of exposures expiring unpaid would be lower or higher in a recession. On the one hand firms may be more careful about completing documentation in order to ensure they are paid under the L/C¹²⁰. But on the other hand, in more severe economic circumstances, firms may move to default more quickly, and may therefore not have sufficient time to submit documentation prior to default.
- For some products, such as L/Cs, the drawn amount will continue to be the full amount so will not be cyclical. However, for others where the drawn amount is not typically 100% of the exposure, this may be cyclical.

Although the Trade Register allows analysis of the proportion of transactions rejected on first presentation of the documents, as well as the proportion that expire without being paid at an aggregate level, we cannot derive an estimate of the EAD or CCF at this stage because:

- It is not possible to observe these parameters on defaulted firms specifically (which would be required when determining for Basel purposes).
- From discussions with participating banks, these two measures do not necessarily provide the ideal way of assessing of the proportion of trade finance products that convert. This is because the former may underestimate the conversion rate¹²¹, whilst the latter may not capture all cases where banks do not make payments on the product.
- Even if these figures provided a good measure of the proportion of exposures that convert, for some products an estimate of the percentage of the limit drawn at default would need to be determined.

In order to derive appropriate figures in future reports, additional information would be needed. Likewise the most appropriate treatment of cases that do not convert would need to be discussed with regulators in order to ensure a possible aligned perspective.

Loss Given Default

As noted above, firms using the foundation IRB approach base their LGD estimates on the parameters specified by regulators. Although these do permit the recognition of guarantees and some forms of collateral (primarily financial collateral, but also purchased receivables), in reality very little of the collateral backing trade finance transactions will be recognised. Likewise, given the anecdotal evidence that firms pay their trade finance exposures even where they are in default on other exposures, the LGD for unsecured exposures within the foundation rules may fail to adequately reflect the proportion of customers who fully repay on trade finance exposures, although this may in part be reflected through the CCF for some products.

As mentioned above, advanced IRB banks may be able to address both of these issues through their estimation approach, if they have sufficient data available. For advanced IRB firms, the Basel II rules enforce a few requirements, in particular “the definition of loss used in estimating LGD is economic loss. When measuring economic loss, all relevant factors should be taken into account. This must include material discount effects and material direct and indirect costs associated with collecting on the exposure. Banks must not simply measure the loss recorded in accounting records...”¹²².

In estimating the LGD, banks need to:

Discount the recoveries – the requirement to use economic loss is intended to reflect the time value of money (i.e. the fact that banks may prefer to recover 90% of the exposure today rather than 100% of the exposure in 10 years). In reality, for short-term trade finance products, as shown above, the time to recover appears to be relatively short, so discounting is unlikely to change the conclusions significantly. For medium-term trade finance exposures, this discounting effect would have more of an impact on economic loss, were it not for the fact that the ECA guarantees typically cover interest due on the loan (in proportion to the coverage level). Thus the discounting/time value of money effect is typically covered by these payments.

Determine an appropriate discount rate – while there appears to be a degree of consensus amongst banks about certain aspects of the Basel framework, such as how to build a PD model, banks have adopted a variety of different discount rates for LGD purposes. For example, some use the bank's weighted average cost of capital, while others use a CAPM-style approach to determine an appropriate discount rate.

Include a measure of indirect costs within the estimate – given that firms with higher default rates will probably require more people in the workout department etc., the intention is that the costs of these and other areas related to the management of defaulted assets should be covered within the LGD estimate. In general these costs are not included within the write-offs for accounting purposes, so they need to be added to the write-off amounts or deducted from the recovery amount. As noted above, we have used a value of 2%, although indications from the banks supplying data to the Trade Register are that they typically experience lower recovery costs than this.

Derive appropriate downturn LGD estimates – banks have adopted a few different approaches for estimating the impact of downturns on recovery rates and hence on LGDs:

- Applying stresses to key drivers – where firms haven't had data from a downturn period or feel that what they have is insufficient, some have chosen to apply expert adjustments to the data they do have to derive a figure.
- Experience in a downturn period – a starting point for many firms has been to use the average LGD from downturn periods as their downturn LGD.
- Deriving relationships to macro-economic drivers – where firms have a time series of information, some firms have established a relationship between macro-economic factors and LGDs (or key drivers of LGD such as unsecured recovery rates and collateral prices). The benefit this brings is that it also allows the downturn LGD "model" to be used within stress testing exercises and potentially allows firms to extract from the specifics of the experienced downturn.

Given the limited number of recovery and write-off observations in the Trade Register data, we have not attempted to determine a downturn adjustment to the loss estimates at this stage.

There are a couple of other issues that need to be considered when determining LGD. Firstly, given the specific nature of the RWA formulae, the LGD is expressed as a percentage of the EAD, i.e. as a proportion of the defaulting amounts rather than of the whole portfolio. Secondly, the LGD should be based on the “default-weighted average”¹²³ (where each defaulted exposure has equal “weight”) rather than an “exposure-weighted average” (where the impact if a default on the average is based on the amount of the defaulted exposure). Unfortunately we only have aggregated data for individual banks and are therefore unable to derive a default-weighted figure at this stage.

Sensitivity of recoveries to treatment of “missing” data

In order to estimate losses on defaulted cases, we need to know the amount of exposure which defaulted, the amount of exposure that was recovered or written-off and the timing of recoveries. As well as this, we would ideally have information on completed workout cases so that all the defaulting exposure has either been recovered or written off. However, historically this information has not always been captured and, in addition, as firms often work out exposures for defaulted customers on an aggregate basis, systems do not always enable firms to explicitly link recoveries or write-offs to a specific transaction. As a result, the amount of information that participating banks have been able to provide varies:

Lack of defaulted exposure information – in some cases, while we may know the number of defaults in a year, we do not necessarily know the amount of exposure which defaulted, so we cannot estimate a loss rate and have had to exclude the observations.

No information available beyond defaulted exposure – in some cases although defaulted exposure over the year is reported, no recoveries or write-offs are reported, so we have excluded these as we do not feel we know the outcome of these defaults.

Incomplete cases – in some cases, banks have only been able to provide information on recoveries on defaults in the year of the default but not in subsequent years. In these cases we have assumed the recoveries in that year as the best estimate of the total eventual recoveries. This is a prudent approach, as we would expect recoveries on defaults that happen later in the year to occur in the next calendar year, and the impact of changing this assumption on the recovery rate can be seen in the table below.

Only write-offs reported – where this is the case, in our base estimates, we have assumed that there were zero recoveries, which is likely a prudent assumption¹²⁴. The impact on the recovery rate of assuming that banks recovered everything that was not written off is shown in the table below.

Multi-year data – some firms have reported defaulted exposure during the year, as well as recoveries, write-offs and defaulted exposures at year-end. This has allowed the development of losses to be followed, except for minor differences due to exchange rate effects. Given a long enough or stable time series of data, the total recoveries divided by the total defaulting exposure would provide a reasonable estimate of the recovery rate. However, as noted above, there are some cases in our dataset where the sum of recoveries and write-offs across multiple years does not equal the total defaulting exposure and in some cases exceeds it¹²⁵. In our core approach we have again only recognised reported recoveries, even if there are still incomplete cases. This means capping maximum recoveries at the total defaulted exposure in a year. The impact of an alternative assumption is shown in the table below.

FIGURE 33

Sensitivity of recovery rate to treatment of incomplete cases and unknown recoveries

	CURRENT APPROACH	INCOMPLETE CASES ¹²⁶	WRITE-OFF ONLY CASES ¹²⁷	MULTI-YEAR CASES ¹²⁸	ALL THREE EFFECTS
Import L/Cs	71%	71%	72%	93%	94%
Export Confirmed L/Cs	40%	40%	40%	40%	40%
Loans for Import	45%	45%	49%	30%	34%
Loans for Export: Bank risk	32%	33%	43%	32%	44%
Loans for Export: Corporate risk	51%	55%	52%	58%	63%
Performance Guarantees	18%	19%	32%	18%	33%
Overall	52%	53%	55%	56%	61%

FIGURE 34

Sensitivity of defaulted transaction economic loss to treatment of incomplete cases and unknown recoveries

	CURRENT APPROACH	INCOMPLETE CASES	WRITE-OFF ONLY CASES	MULTI-YEAR CASES	ALL THREE EFFECTS
Import L/Cs	42%	42%	41%	23%	22%
Export Confirmed L/Cs	68%	68%	68%	68%	68%
Loans for Import	64%	64%	60%	77%	73%
Loans for Export: Bank risk	73%	72%	63%	73%	62%
Loans for Export: Corporate risk	57%	53%	55%	51%	46%
Performance Guarantees	85%	84%	73%	85%	71%
Overall	57%	56%	54%	54%	50%

It can be seen from the tables above that the transaction recovery rates (and hence the estimated transaction economic loss rates) are, at this stage, very sensitive to the quality of the data and the need to apply treatments to address missing or unknown information. Furthermore, given the relatively limited sample of data, specific results can be sensitive to the particular instances where data is available, for example for example the recovery rates for performance guarantees are very sensitive to the results of a firm with particularly high levels of write-offs.

In order to address these issues and enhance the accuracy of the estimates, it will be necessary to address some of the gaps in the available information.

Sensitivity of results to discount rate choice

As noted above, there is a lack of consistency amongst banks globally on the appropriate discount rate to use when estimating LGD, although there is often a high degree of convergence within specific countries potentially reflecting national regulatory preferences¹²⁹. Discussions with the participating banks also indicated that they use a variety of approaches and levels. Some of them use differentiated discount rates for different products or regions, while others use the effective interest rate. With regard to levels, those that reported discount rate figures indicated a range of between 4% and 11%.

Given this lack of consensus, while we have used a figure of 9% for the results above, we have shown the impact of different discount rates, ranging from 5% to 13%, in the table below.

FIGURE 35
Sensitivity of defaulted transaction economic loss to discount rate

	5%	7%	9%	11%	13%
Import L/Cs	38%	40%	42%	44%	46%
Export Confirmed L/Cs	65%	67%	68%	69%	70%
Loans for Import	61%	62%	64%	65%	66%
Loans for Export: Bank risk	71%	72%	73%	73%	74%
Loans for Export: Corporate risk	54%	56%	57%	58%	59%
Performance Guarantees	85%	85%	85%	86%	86%
Overall	54%	56%	57%	59%	60%

On those products with high recovery rates, the defaulted transaction economic loss is relatively sensitive to the assumed discount rate, increasing by close to 1% for each additional 1% in the discount rate. This sensitivity is to be expected given that we have assumed that recoveries occur either after one or two years and we would also expect the results to be sensitive to the assumed amount of time required to recover.

Maturity

Under the advanced IRB approach, banks are typically expected to estimate the EM of their exposures as an input to the RWA calculation. This EM is calculated based on the contractual timing of remaining cash-flows, with a floor for most exposures of one year and a maximum of five years (for RWA purposes)¹³⁰. For non-interest bearing “bullet” products, such as import L/Cs and export confirmed L/Cs, the EM is in fact equal to the remaining maturity of the transaction.

The data in the Trade Register is provided at an aggregated level and hence it is not possible to directly measure the maturity of each of the transactions. However, we have been able to derive an estimate from the data that has been provided, as it contains both the total value of transactions undertaken in a year and the value of transactions still outstanding at the year-end¹³¹. The ratio of value at year-end to the total value through the year provides a measure of the average maturity of the products, subject to certain assumptions, as illustrated in the box below.

FIGURE 36

Example of estimating average maturity from balance figures

- A bank has 10,000 customers who need to import goods every quarter
- Each customer requires one letter of credit per quarter, starting at the beginning of the period, with each L/C having a value of US\$500,000
- Ignoring defaults (in order to make the example simpler¹³²), one would have:

	OPENED L/CS	VALUE OF OPENED L/CS (US\$ MILLIONS)	VALUE OF L/CS AT PERIOD END	DEFAULTED L/CS
January-March	10,000	5	5	100
April-June	10,000	5	5	99
July-September	10,000	5	5	98
October-December	10,000	5	5	97
Total over year	40,000	20	5	394

Under the reporting within the Trade Register, this would appear as:

- 40,000 L/Cs in the year, with value of US\$20 million
- At the end of the year, there will be 10,000 L/Cs in place, with a value of US\$5 million
- Dividing the value of transactions at year-end by the total value during the year provides an estimate of the maturity of 0.25 years.
- If however the average maturity was six months, then the figures would be

	OPENED L/CS	VALUE OF OPENED L/CS (US\$ MILLIONS)	VALUE OF L/CS AT PERIOD END	DEFAULTED L/CS
January-March	10,000	5	5	100
April-June	10,000	5	10	99
July-September	10,000	5	10	98
October-December	10,000	5	10	97
Total over year	40,000	20	10	394

Under the reporting within the Trade Register, this would appear as:

- 40,000 L/Cs in the year, with value of US\$20 millions
- At the end of the year, there will be 10,000 L/Cs in place, with a value of US\$10 millions
- Dividing the value of transactions at year-end by the total value during the year provides an estimate of the maturity of 0.5 years.

There are a few assumptions implicit within this approach, although they are considered to be broadly reasonable:

- Transactions occur evenly over the year – it is possible to construct scenarios where the observed ratio of value of transactions outstanding at year-end to the total value of transactions during the year is similar to the observed ratio, but where the real maturity is much longer. However, if there aren't pronounced skews in when products are taken out (i.e. roughly 1/12th of the total number of transactions are started in each month), then, subject to the other assumptions, longer dated transactions would be reflected in the calculation (as they would be outstanding at year end).
- Trade finance products written at different points during the year do not have markedly different maturities¹³³.
- There is no particular skew in terms of average size of trade finance products that are in existence at year-end.

In general, there is no reason to believe that any of the above assumptions are unreasonable, so we believe the approach provides a reasonable approximation of the underlying maturity of the products. For L/Cs, this is also supported by:

- The results reported last year, based on four snapshots of SWIFT trade data for L/Cs, which showed that based on these four snapshots the majority of cases had maturity of less than 90 days.
- Some summary data submitted by some of the contributing banks which showed similar maturities for L/Cs¹³⁴.

APPENDIX C.

ENDNOTES

- 1 This is the exposure-weighted economic loss rather than the transaction-weighted figure
- 2 For example value imports and exports of middle market corporates in Germany, France, Italy, UK growing significantly stronger than overall trade; source: country import/export statistics
- 3 World Trade Organization
- 4 Economist Intelligence Unit
- 5 The exporter could ship the goods and await payment upon delivery (or sometime thereafter), but this does expose them to the risk of non-payment (which might require an extra equity cushion) and a risk around timing of payments.
- 6 This is a collective term for a range of instruments, which are backed by the underlying L/Cs.
- 7 People often refer to the quality of capital or to its ability to “absorb” losses.
- 8 It should be noted that participating banks only provide data by product, country and year and that no bank has access to another bank’s data.
- 9 This is as expected given the low default rates observed in the data coupled with the fact that many banks around the world face significant challenges in capturing LGD data.
- 10 Given the multi-year tenor of these products, an individual transaction can potentially appear in multiple years – each occurrence is referred to as a “transaction-year”
- 11 Basel uses ‘effective maturity’, which is a cash-flow weighted time duration measure, which we are unable to derive from the dataset. As such we have used a concept of ‘economic maturity’ based on turnover – see footnote 20.
- 12 This is based on Exhibit 31 of Moody’s (2012)
- 13 Over the same period used for deriving the Trade finance parameters (2008-2011), the average observed annual issuer-weighted corporate default rates for Aa, A or Baa rated customers were 0.14%, 0.22% and 0.36% respectively. We have not reported the figures at a more granular level over this period as the limited time frame and sample size for Moody’s produces some non-monotonic results across grades.
- 14 Based on Exhibit 31 in Moody’s (2012)
- 15 One challenge in undertaking this comparison is that corporates who are externally rated by the likes of Moody’s Investor Services tend to be larger, and hence might be expected to have somewhat lower default rates than the typical users of Trade Finance products, who tend to be SMEs. Robust sources of country-level default rates are not readily available (and trying to extract relevant information from banks’ Pillar 3 reports is challenging). However, in our experience, the typical default rate for SMEs tend to more than twice as high as those for the broad externally rated population (the ratio depends upon the specific definition of small and medium sized firms as well as the geographical and sectoral split of a portfolio).
- 16 In defining a recession we have use a technical definition of two quarters of negative GDP growth where quarterly data available, and a year of negative GDP growth for the small number of countries where quarterly data was unavailable. Given that the Trade Register data is only provided on a yearly basis, we have classified the whole year as being in recession if a recession occurred during the year.
- 17 As this is an aggregated figure, some cyclical effects may be masked (or exaggerated) by structural differences in default rates across countries interacting with the specific set of countries affected by the crisis. For example, if India and China have higher long-run average default rates than say the US, then the default rate for recession years in our data may be lower than for non-recession years because India and China did not report a year-on-year reduction in GDP across this period, whereas the US did. In order to address potential structural differences in default rates across countries, we would need to determine country specific default rates in recessions and non-recessions, and then compare these using a fixed weighting on each country. However, we have not done this at this stage, as it would require granular analysis of the data, which might introduce “noise” due to increased sparseness of data.
- 18 Moody’s (2011) also reports a peak in 2009 in default rates for Financial Institutions rated by them.
- 19 This is calculated as the number of transactions on the balance sheet at the year-end / the number of transactions during the year. Some of the implicit assumptions within this calculation are described in the appendix. However, it does appear broadly consistent with the results from SWIFT in last year’s report that close to 90% of letters of credit expire within 90 days. In addition, as this report was being finalised some banks provided information on the actual maturities of their products, but there was insufficient time to analyse this fully and investigate differences for this year’s report.

- 20 When discussing CCFs under the standardised approach, Basel II indicates that “The current framework will be retained for calculating the credit exposure of off-balance-sheet transactions under the standardised approach, with a few exceptions...” §42 BCBS (2001)
- 21 §26, BCBS (1986). Whilst this refers to a precursor of the Basel I text, the Basel I text explicitly references this document when discussing Credit Conversion Factors (the part where emphasis has been added refers to this previous quote) “The Committee believes that it is of great importance that all off-balance-sheet activity should be caught within the capital adequacy framework... The approach that has been agreed, which is on the same lines as that described in the Committee’s report on the supervisory treatment of off-balance-sheet exposures issued to banks in March 1986, is comprehensive in that all categories of off-balance-sheet engagements, including recent innovations, will be converted to credit risk equivalents by multiplying the nominal principal amounts by a credit conversion factor, the resulting amounts then being weighted according to the nature of the counterparty.” §42 BCBS (1988)
- 22 Discussion with the participating banks has highlighted that for performance guarantees, even if the service / product has not been satisfactory, the beneficiary of the guarantee will often not make a claim against the underlying guarantee but rather will use the performance guarantee in negotiating with the guaranteed party. Thus even where the service is not performed, the bank liability may not convert.
- 23 From discussions with participating banks: the former may underestimate the conversion rate as even if documents are rejected on first presentation, provided that compliant documents are presented within the timeframes specified in the contract, the bank will need to make a payment; the latter may not capture all cases where banks do not make payments under the product.
- 24 Percentage of rejections >100% due to data from two providers.
- 25 The ICC and participating banks are discussing the feasibility of further enhancing the information in the Trade Register with a view to improving the analysis for future reports.
- 26 This assumption may be unduly prudent for a number of reasons: where a customer defaults just before the year-end, even if the whole exposure is expected to be recovered, no recoveries may have been reported in the Trade Register data (not all contributing banks are able to trace recoveries across years); for cases defaulting earlier in the year, it is possible that some cases may have only collected some of the exposure with the rest expected to be recovered in due course; some exposures are not paid out even after default (due to non-compliant documentation or a claim never being made), but not all firms report these as 0 loss cases (or 100% recovery cases) so this may further reduce observed recoveries below their true level. However, in the absence of data we have in this year’s report chosen to be prudent. An analysis of the impact of alternative assumptions on these loss rate estimates can be found in the appendix.
- 27 The fact that the amount written off and the amount recovered to not sum to 100% reflects two issues. Firstly for most products, the sum is less than 100% reflecting the fact that some workouts may be incomplete or data may only be available for write-offs and recoveries that occurred on accounts that default in that year. Secondly, the data provided by some banks carries over from one year to the next, meaning that across the 5 year period for which we are using data, it is possible on individual products for individual banks to observe total write-offs + recoveries which are greater than the total exposure entering default during this period, producing anomalous results as for loans for import. At this stage we do not have the data required to address this issue in full, so have imposed a constraint that ensures the cumulative recoveries or write-offs across the years for a given product for a given bank are not greater than the cumulative defaulted exposure.
- 28 Discussion with some of the banks supplying data to the Trade Register suggested that they used a range of discount rates: some firms indicated that they were using country or product specific discount rates (including the Effective Interest Rate in some cases), whilst those who reported figures indicated values of between 4% and 10.5%. We have used 9% as the UK FSA have indicated that they have yet to see evidence to suggest another rate may be appropriate for a downturn. However, as noted our use of the 9% discount rate is not intended as an endorsement of this figure, but rather it is a publicly established benchmark, and we report the impact on the results of alternative discount rates in the appendix.
- 29 Within the Trade Register, recovery and write-off information is reported in a few different ways: some firms report only the recoveries in the year of default, in which case we discount the reported recoveries over one year; other firms only report write-offs in the year, and here we assume 0 recoveries and discount over one year; finally, some firms report the recoveries in each calendar year and report the amount which remains on the balance sheet at the year end (i.e. is carried over to the next year’s potential recoveries), and for these cases we have prudently chosen to discount recoveries over two years.
- 30 This is higher than 1% figure reported by Araten et al. (2004). From work with banks we have seen a range of figures used, however they rarely are higher than approximately 2% per year of the exposure amount for corporate exposures. Likewise, discussions with some of the banks contributing to the Trade Register indicated that figures used varied from under 30bp for the largest exposures to up to 2% of the exposure. Thus we have used 2% of EAD as a prudent figure for costs.
- 31 Exhibit 31 in Moody’s (2012).

- 32 Transaction-level default rate x defaulted transaction economic loss rate = Customer default rate x customer LGD
 $0.021\% \times 57\% = 1.69\% \times \text{customer LGD}$
Customer LGD = $57\% \times (0.021\% / 1.69\%)$
- 33 Berne Union
- 34 As the medium-/long-term trade finance information in the Trade Register is captured on individual trade finance products, it is possible for a single customer to have multiple different tranches of debt outstanding. If the number of transactions per defaulting customer is different to the number per non-defaulting customer, then this may cause the annual transaction default rate to be a poor proxy of the annual customer default rate. Furthermore, as data is provided on an anonymous basis we do not know whether this same customer may have appeared in multiple banks' data, which may further distort the picture.
- 35 For the purposes of this simple example we have ignored the effects of discounting and the fact that under the contract interest payments are also covered.
- 36 An alternative to including incomplete cases would be to exclude them when determining the economic loss, but this would severely restrict the amount of data. Another alternative would be to look at the cumulative recovery rate vs. time since default and then "extrapolate" to an eventual recovery rate. This requires assessing the recoveries each year post-default and the final observations might be susceptible to "noise" as they would be based on few observations given the limited number of defaults and cases with the required information. This may though be explored in future reports.
- 37 In contrast to the figures for the short-term products, as we have transaction level data rather than aggregated data, we are not restricted to calculating an exposure-weighted figure, and have instead calculated a transaction-weighted figure (i.e. each transaction has equal weight irrespective of its size). However, we are still not able to calculate a customer LGD.
- 38 The reason why we only have 391 MM USD of defaulted exposure here vs. 1,240 MM USD reported in Table 9, is that we do not have recoveries information available for all cases.
- 39 This is the average recovery rate per transaction and hence is not just equal to the recoveries divided by the total exposure (which would be the exposure weighted average recovery rate). The exposure weighted recovery rate on defaulted transactions would have been 82% ($=321 / 391$).
- 40 This is based on the average level of ECA coverage in the portfolio, which as mentioned elsewhere, is typically between 95% and 100%.
- 41 Figures in this row are based on the overall portfolio of transactions in the Trade Register, irrespective of whether they default or not, and hence are the same as the Total figure in Table 9 above.
- 42 When a counterparty defaults on a transaction, the bank will enter a settlement negotiation with the ECA to determine repayments. The ECA can then fulfil its obligation to settle the defaulted amount either as a lump sum, or following the original payment schedule. The latter can run through to the original expiry of the transaction, and therefore would, all else being equal, be more severely impacted by discounting, unless the ECA includes indemnification of the interest.
- 43 This depends upon the discount rate that is used in calculating economic losses. However, given that ECAs are typically very highly rated, if the policy is expected to be upheld, then the appropriate discount rate would likely be close to risk-free, which would be lower than the interest payments due under the original transaction terms. In addition, we understand that most ECAs indemnify contractual interest to the banks – i.e. cost of funds plus profit margin.
- 44 In doing so we have used the US 1-year interest rate given the considerations re: the high quality of the ECAs and hence the low risk nature of these cash-flows. In order to include a margin of prudence, we have used the highest interest rate between 1992 and 2011, which was 7.32%. The sensitivity of results to this choice will be further examined in future reports. A T bond reference rate may also be used for the covered portion but not the uncovered one.
- 45 Figures in this row are based on the overall portfolio of transactions in the Trade Register, irrespective of whether they default or not. Recoveries, and hence economic loss are based on the average level of ECA coverage in the portfolio, which as mentioned elsewhere is typically between 95% and 100%, and the assumptions that: the ECA will not default on or dispute the contract; the ECA contract covers missed interest payments which are sufficient to offset discounting effects.
- 46 As the exposures are typically amortising, it might be expected that some exposure will be repaid prior to default. We would note that some countries (such as those of the EU) require the EAD for on balance sheet items to be greater than or equal to the current balance.
- 47 This is the exposure-weighted economic loss rather than the transaction-weighted figure
- 48 The 19 defaults that are excluded under Filter 2, i.e. because the default status is unknown, reflect cases where the amount of exposure defaulting is known or the number of defaults is known, but we do not have both pieces of information.
- 49 The BIS is an international financial organization whose aim is to serve central banks in their pursuit of monetary and financial stability and to foster international cooperation in those areas (as well as acting as a bank for central banks)

- 50 This can be thought of as the risk that the value of traded instruments such as equities may change in value resulting in a bank recording a loss. We do not dwell on market risk requirements in the discussions below given capital requirements for Trade Finance products are primarily driven by credit risk.
- 51 BCBS (1996)
- 52 §3, BCBS (1988)
- 53 Thus whilst some people will refer to Basel others may refer to national rules (such as BIPRU in the UK) or in the case of the EU the directive or regulation which sets EU standards (such as the Capital Requirements Directive 3)
- 54 This is also referred to as weighted risk assets. Basel documents also sometimes refer to the Risk Weight for an exposure which is the percentage representing the weighting applied to the exposure. We will refer to these as RWA% to distinguish them from the RWA amount.
- 55 “The framework takes account of the credit risk on off-balance-sheet exposures by applying credit conversion factors to the different types of off-balance-sheet instrument or transaction... They are derived from the estimated size and likely occurrence of the credit exposure, as well as the relative degree of credit risk as identified in the Committee’s paper “The management of banks’ off-balance sheet exposures: a supervisory perspective” issued in March 1986” Annex 3, BCBS (1988)
- 56 In early proposals for the Basel 2 rules, the committee explicitly referenced this issue indicating that “Under the current Accord, commitments with original maturity of up to one year, or those which can be unconditionally cancelled at any time, do not have capital requirements... This treatment was designed to reflect the fact that the longer the maturity of the commitment, the greater the probability of a drawdown and/or a deterioration in the credit quality of the borrower.
- This approach has been circumvented largely by banks that structure commitments with a term of 365 days or less, and roll such commitments over. Given that even short-term commitments entail some risk, the Committee is proposing a credit conversion factor of 20%, which would principally apply to business commitments.” §25-26 BCBS (1999)
- 57 Some further refinements were incorporated in 2006 and thus we refer to this document below.
- 58 §4 BCBS (2006)
- 59 It should be noted that the Pillar 1 rules were always intended to be minimum requirements, as stated in the Basel 2 documents (emphasis is that in the original document): “It should be stressed that the revised Framework is designed to establish minimum levels of capital for internationally active banks. As under the 1988 Accord, national authorities will be free to adopt arrangements that set higher levels of minimum capital. ... More generally, under the second pillar, supervisors should expect banks to operate above minimum regulatory capital levels.”, §9, BCBS (2006)
- 60 Prior to the crisis and the further tightening of allowed capital and required levels of capital under Basel 3, banks often perceived internal capital estimates to be a more binding constraints and more sophisticated banks allocated capital based on internal capital requirement estimates.
- 61 Conceptually the Basel standards distinguish between exposures in the “banking book” (typically exposures held to maturity such as Trade finance products and term loans) and exposures in the “trading book” (typically those assets which are held with a view to being traded).
- 62 Of course requirements to enhance risk management and stress testing may well have impacted banks’ approaches but they do not directly affect the Risk Weighted Assets requirements for Trade Finance exposures.
- 63 For corporate and bank customers, the expectation is that the better customers will generally default only when the economy hits a very severe patch. Thus the relative default rates of low PD firms during a recession are typically much higher than would be the case for riskier customers. Thus all else being equal more capital is needed for these customers.
- 64 In addition there are specific rules governing treatment of securitisation exposures, as well as a range of options for measuring operational risk and market risks.
- 65 The idea underpinning the IRB rules when they were developed for Basel 2 was that a bank could be considered to be appropriately capitalized if it had enough capital and reserves to cover losses in an extreme economic downturn. These functions therefore translate a set of inputs into an estimate of the potential losses in an extreme downturn and hence a capital requirement and RWAs.
- 66 §447 BCBS (2006)
- 67 As cycle sensitivity is embedded within the RWA figures for Standardised exposures and as Foundation IRB and Advanced IRB use the same parameters, we do not compare these issues here.
- 68 For banks using the Standardised approach, given the lower degree of sophistication in risk measurement which this represented, the overall Risk Weighted Asset numbers were deliberately set to be more prudent than those under the Internal Ratings Based approaches “The Committee believes it is important to reiterate its objectives regarding the overall level of minimum capital requirements. These are to broadly maintain the aggregate level of such requirements, while also providing incentives to adopt the more advanced risk-sensitive approaches of the revised Framework.” §14, BCBS (2006)

- 69 However, most of the importers using Trade Finance products will not be externally rated, so will be subject to a 100% risk weighting if a bank is using the Standardised approach. Because the Foundation IRB approach is risk-sensitive, if a Foundation IRB bank has a rating for the importer, then whether they are at a competitive advantage or not (in terms of capital requirements) will depend upon the PD for the underlying importer.
- 70 For exposures to banks, there are actually two different approaches available: in the first approach the RWA depends upon the sovereign rating of the country of the issuing bank; in the second approach, the RWA depends upon the issuing bank's rating. It is up to a regulator as to which approach should be adopted by the confirming banks that it regulates.
- 71 "No claim on an unrated bank may receive a risk weight lower than that applied to claims on its sovereign of incorporation", §60, BCBS (2006). A similar rule applied for corporate exposures (§66 BCBS 206)
- 72 BCBS (2011)
- 73 Because firms are expected to adopt internal ratings across most rating classes at the same time, most of the sovereigns may well be rated. Thus the issue of "flooring" RWAs at the level of an unrated sovereign which was an issue under the Standardized approach, and which was addressed in BCBS (2011) would likely not be as acute for IRB firms.
- 74 In explaining this approach, the UK FSA has for example indicated (emphasis is that of the UK FSA) "More specifically, the IRB standards do not allow firms to anticipate reductions in exposures between the observation date and the default date, even if there is good reason to believe these will take place. This is because not allowing reductions is considered to be a sufficient proxy for the lack of a capital requirement on the new facilities assumed to come onto a firm's balance sheet over the run-off period of the existing ones." (UK FSA (2007a)).
- 75 BCBS (2011)
- 76 Other trade finance products have not been altered and have CCFs ranging from 50% for performance bonds to 100% for standby letters of credit
- 77 "The types of instruments and the CCFs applied to them are the same as those in the standardised approach, as outlined in paragraphs 82 to 89 with the exception of commitments, Note Issuance Facilities (NIFs) and Revolving Underwriting Facilities (RUFs)." §311, BCBS (2006). These facilities get a CCF of 75% for IRB RWA purposes.
- 78 §83(i) of BCBS (2006). This is the rule for Standardised (and hence Foundation) CCFs, but §316 BCBS (2006) indicates that Advanced firms can only use their own estimates "provided the exposure is not subject to a CCF of 100% in the foundation approach". There are some other exposure types where a CCF of 100% is required but they are not considered relevant for this paper, so are not mentioned.
- 79 If an exposure is backed by real estate, which is not relevant in the case of most trade finance transactions, then it is assigned to a different asset class with different RWA%. The list of eligible collateral under Basel II is broader than those recognised under Basel I (although Basel 2.5 and III left the list untouched).
- 80 From a prudential perspective, it may be argued that if an importer does default on a trade finance transaction, it presumably was unable to use the underlying collateral or sell it in order to pay the issuing bank, meaning the collateral likely has low value (i.e. the very fact that the importer has defaulted may imply the collateral is not worth much). Given that regulators are seeking to be prudent when setting capital requirements, if the collateral is likely to have low value in the event of the importer's default then it may not be appropriate to recognise its mitigating effects.
- 81 As with the Standardized approach, the range of recognised collateral is relatively narrow and would not cover many of the moveable goods which underpin international trade.
- 82 We provide more detail on this below
- 83 If a short-term external rating exists for a specific corporate or bank exposure, then a different set of risk weightings may be used (see BCBS (2006) §103-106 for example). However this will rarely be the case for short-term trade finance exposures.
- 84 "Supervisors should ensure that claims with (contractual) original maturity under 3 months which are expected to be rolled over (i.e. where the effective maturity is longer than 3 months) do not qualify for this preferential treatment for capital adequacy purposes" §62 BCBS (2006)
- 85 The other exception is for repos that are entered with a 0.5 year maturity (§318 of BCBS (2006)).
- 86 We do not show the calculation here, but is effectively the cash-flow-weighted average time to receipt of cash-flows
- 87 §322, BCBS (2006). The overriding concern of the regulators has been to ensure that transactions where there is a relationship pressure to continue financing the counterparty should not be treated as being short-term in nature.
- 88 BCBS (2011)

- 89 “Economically, maturity adjustments may also be explained as a consequence of mark-to-market (MtM) valuation of credits. Loans with high PDs have a lower market value today than loans with low PDs with the same face value, as investors take into account the Expected Loss, as well as different risk-adjusted discount factors. The maturity effect would relate to potential down-grades and loss of market value of loans. Maturity effects are stronger with low PDs than high PDs: intuition tells that low PD borrowers have, so to speak, more “potential” and more room for down-gradings than high PD borrowers. Consistent with these considerations, the Basel maturity adjustments are a function of both maturity and PD, and they are higher (in relative terms) for low PD than for high PD borrowers” BCBS (2005)
- 90 From this chart it can be seen that a 2.5 year effective maturity vs. using a 1 maturity increases the RWAs by approximately 15% and 45% depending upon the underlying customer rating. Likewise using an effective maturity of 0.25 years if permitted would reduce RWAs by up to approximately 25%
- 91 “A significant innovation of the revised Framework is the greater use of assessments of risk provided by banks’ internal systems as inputs to capital calculations. In taking this step, the Committee is also putting forward a detailed set of minimum requirements designed to ensure the integrity of these internal risk assessments. ... Each supervisor will develop a set of review procedures for ensuring that banks’ systems and controls are adequate to serve as the basis for the capital calculations. ... The Committee expects national supervisors will focus on compliance with the minimum requirements as a means of ensuring the overall integrity of a bank’s ability to provide prudential inputs to the capital calculations and not as an end in itself.” §6 BCBS (2006)
- 92 See §452-7 BCBS (2006) for the specific rules
- 93 For retail customers, Basel II allows banks to use a product level definition of default as in certain markets there is strong evidence that default on one product does not automatically lead to default on all products.
- 94 Given the limited number of trade finance defaults, and possible historical data collection issues, not all firms will find it easy to demonstrate the low loss nature of the transactions and hence may be unable to reflect the improved recovery within their LGD estimates.
- 95 This is because the LGD would equal $50\% \times 0 + 50\% \times \text{normal LGD}$.
- 96 This is true for all products where repayment is expected despite a customer-level default.
- 97 §4 BCBS (2006)
- 98 §447 BCBS (2006)
- 99 §397 BCBS (2006). This paragraph does allow for two exceptions: “Firstly, in the case of country transfer risk, where a bank may assign different borrower grades depending on whether the facility is denominated in local or foreign currency. Secondly, when the treatment of associated guarantees to a facility may be reflected in an adjusted borrower grade. In either case, separate exposures may result in multiple grades for the same borrower.”
- 100 Confirming banks adopting the Standardized approach may be allowed to use a preferential risk weight for the exposure to the issuing banks
- 101 In our example above, the 100 customer defaulting in Q1 would have had only 1 LC each, those in Q2 would have had an L/C in Q1 and in Q2 etc. so that the average number of L/Cs per default would be -2 vs. 4 for non-defaults.
- 102 For a given level of turnover, one might expect firms to require a similar number of L/Cs, and given larger firms have larger turnover, it may be reasonable to assume that all else being equal they may use more L/Cs. Furthermore, larger firms might also be more likely to use a global supply chain (as opposed to a domestic supply chain), meaning they may be asked for L/Cs more frequently.
- 103 From the Trade Register it is possible for some cases to calculate the number of trade finance products held for customers where there was a write-off. The average number of products for customers where there was a write-off was approximately 2.3, but we cannot unfortunately see this same information for non-defaulting customers.
- 104 There are though for example requirements that “Irrespective of whether a bank is using external, internal, or pooled data sources, or a combination of the three, for its PD estimation, the length of the underlying historical observation period used must be at least five years for at least one source. If the available observation period spans a longer period for any source, and this data are relevant and material, this longer period must be used.” §463 BCBS (2006)
- 105 §11 UK FSA (2007b). The emphasis has been added here.
- 106 Calderón, Fuentes (2010). It should be noted that there are a number of different approaches to dating economic cycles, and the results from this paper have been chosen as it covers a range of economies, rather than as an endorsement of one approach to cycle dating or another.
- 107 Unfortunately the authors do not include China because despite collecting data for China they “could not register an output contraction within the sample period of our data”. In addition, this uses quarterly data whereas the Trade Register data is available on an annual basis. As this calculation is provided for illustrative purposes only, these issues are not considered unduly problematic at this stage.

- 108 See "Table 1: Characterizing classical cycles (Quarterly data 1980-2006Q2)" in Calderón, Fuentes (2010).
- 109 Includes: Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Ecuador, Hong Kong, India, Indonesia, South Korea, Malaysia, Mexico, Paraguay, Peru, Philippines, Singapore, South Africa, Taiwan, Thailand, Turkey, Uruguay and Venezuela
- 110 Includes: Australia, Canada, France, Germany, Italy, Japan, New Zealand, Portugal, Spain, Sweden, United Kingdom and United States
- 111 For the Emerging Economies more granular data is provided which shows a much wider range than implied by this (with a minimum value of 1.1 and a maximum value of -20 for Colombia (and 10 for India)).
- 112 In applying the figures from the paper we have used the more composite results presented by the authors. As the paper only reports figures for 23 individual countries, we have mapped other countries to the most appropriate region if they are not named, except for China where we have used the same ratio as for India (i.e. a ratio of 10, even though in theory the figure for China may be higher given the lack of transactions). As this is for illustrative purposes, where figures for individual countries were unavailable, we have used the reported figures for Latin America and Asia, or the Emerging Economies figure for non-OECD countries in other regions.
- 113 The former figure is based on weighting recessionary and expansion years by the value of transactions in the Trade Register and the latter figure is based on weighting the year based on the number of transactions in the Trade Register.
- 114 We could in theory adjust the figures for this effect but have not done so in this year's report.
- 115 In estimating EAD, there is no requirement to split the estimation in this way (i.e. by splitting it into two separate components), however we believe that where data permits, it may be beneficial to do so in order to ensure that there is clarity on what is being measured and why the CCF may not be 100% on certain factors. Unfortunately, at this stage the ICC Trade Register does not allow the two components to be split out.
- 116 The difference is for commitments, Note Issuance Facilities and Revolving Underwriting Facilities where a 75% CCF is used.
- 117 §83(i) of BCBS (2006). This is the rule for Standardized (and hence Foundation) CCFs, but §316 BCBS (2006) indicates that Advanced firms can only use their own estimates "provided the exposure is not subject to a CCF of 100% in the foundation approach". There are some other exposure types where a CCF of 100% is required but they are not considered relevant for this paper, so are not mentioned.
- 118 To see this, consider overdraft products. In general, as firms approach default they may try to draw on their available limit in order to avoid default, and hence their drawdown on the available limit may be higher than other firms. Therefore estimating additional drawdowns on the whole population would risk underestimating the actual exposure at default for defaulting firms.
- 119 Note this is just an example rather than an ex ante expectation - if anything one might expect that firms who default may be less "organised" and therefore more likely to fail to provide appropriate documentation.
- 120 In addition, in a recession firms there may be more firms defaulting who are generally better organized, and hence more likely to have completed documentation appropriately.
- 121 Even if documents are rejected on first presentation, provided that compliant documents are presented within the timeframes specified in the contract, the bank may need to make a payment.
- 122 §460, BCBS (2006)
- 123 Basel rules require that (emphasis added), "A bank must estimate an LGD for each facility that aims to reflect economic downturn conditions where necessary to capture the relevant risks. This LGD cannot be less than the long-run default-weighted average loss rate given default calculated based on the average economic loss of all observed defaults within the data source for that type of facility. In addition, a bank must take into account the potential for the LGD of the facility to be higher than the default-weighted average during a period when credit losses are substantially higher than average." §468, BCBS (2006).
- 124 It might well be the case that recoveries are subsequently made or even that the difference between write-offs and defaulted exposures is equal to the recoveries.
- 125 This suggests that either there are substantial write-offs from prior years being carried forward, or there are significant write-offs or recoveries yet to be realised.
- 126 In this treatment it is assumed that the ratio of recoveries to write-offs on outstanding exposure is the same as that on exposure which has been recovered or written off. So for example if defaulted exposure is 200, recoveries are 60 and write-offs are 40, then we assume that on the remaining exposure of 100 (=200 - 60-40), the recovery rate is the same as for the 100 already completed (i.e. 60%). This would imply a recovery rate of 60% vs. 30% (=60/200) under our current approach.
- 127 In this treatment it is assumed that recoveries are equal to the defaulted amount minus the exposure. So for example if we have defaulted exposure of 200 and write-offs of 80, then the recoveries would be 120, to produce a recovery rate of 60%, compared to a recovery rate of 0% in our current approach.

- 128 In this treatment we allocate defaulted exposure in a year based on the observed ratio of recoveries and write-offs. So for example if defaulted exposure was 200 and we had reported recoveries of 180 and reported write-offs of 120, then we have estimated recoveries as 120 ($=200 \times 180 / (180+120)$), to produce an estimated recovery rate of 60%, compared to an estimated recovery rate of 90% ($=180/200$) under the current approach (this is broadly speaking what has happened with the Loans for Import figures). However this does not always “reduce” the observed recovery rate – for example, if defaulted exposure was 200, reported recoveries were 60 and reported write-offs were 40, then the result would be a recovery rate of approximately 60% vs. 30% under our current approach (this is broadly what has happened for the Import L/C figures).
- 129 For example, in a draft paper on wholesale LGD to the Credit Risk Standing group (which is a forum for discussion of credit risk issues between the FSA and the UK banks), the FSA has indicated that “firms should assume that we would not approve any discount rates for downturn LGD below 9% for UK assets”. It is understood that this reflects a potential downturn discount rate if a future downturn was a high-interest rate downturn.
- 130 The specific formula can be found at §320 of BCBS (2006).
- 131 The two fields used from the Trade Register in deriving this are “Total cumulative exposure (USD) per product type for calendar year” and “Total exposure (USD) per product type as at balance sheet”
- 132 In reality, given the low default rates in our data, the impact of ignoring defaults is minimal. For example, with the 6% default rate used in the earlier example, the impact would be to change the estimate of average maturity from 0.25 years to 0.24 years.
- 133 For example, if trade finance products were generally written to mature before the end of the calendar year, then this might result in us underestimating the maturity as the year-end snapshot would not have a representative proportion of products.
- 134 We have not had the opportunity to review and discuss these results with the banks in detail and would note that whilst there was generally good alignment in the different measures of Import and Export Confirmed L/Cs, there was significant variability in the results reported for Loans for Import and Loans for Export.

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