
Trade finance as a financial asset: Risks and mitigants for non-bank investors

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Abstract With a global volume estimated at US\$18 trillion in 2014, trade finance plays a critical role in international finance and in the domestic finance of both advanced and emerging economies. Trade finance is a significant business line for many banks and an area of growing interest for non-bank financial players as well. As such, the need for effective and adaptive risk management — while always in existence — has grown in importance. This paper presents an overview of the trade finance market and the common instruments used to finance trade. Through a description of Federated's Composite for its Project and Trade Finance investment strategy, many of the risks inherent in trade finance are presented along with risk management practices that have shown some success in measuring, monitoring and mitigating them.

Keywords: *international trade, trade finance, credit risk, structural risk, macro risks*

INTRODUCTION

With a global volume estimated at US\$18 trillion in 2014, trade finance plays a critical role in international finance and in the domestic finance of both advanced and emerging economies. Trade finance is a significant business line for many banks and an area of growing interest for non-bank financial players as well. As such, the need for effective and adaptive risk management — while always in existence — has grown in importance.

Trade finance refers to the short-term financing of international trade which supports and enhances the physical flow of goods and services. By mitigating the risk of non-payment and accelerating receivables, trade finance allows exporters to trade more confidently. For importers, trade finance can mitigate supply and delivery risk and allow for extended credit. Through these mechanisms, trade finance is a bridge between exporters and importers, providing financial products that help cross-border trade.

By supporting international commerce, trade finance plays a key role in the economic development of emerging economies. The contributions of trade finance stem from its potential to aid developing economies in increasing trading activities with benefits accruing to both the public and private sectors. A healthy and growing export sector can allow for judicious taxation, the proceeds of which can fund improvements in a country's physical and human infrastructure and for implementing social policies targeted at improving the wellbeing of its citizens.¹ While a growing export tax-base does not necessarily imply wise or prudent policies on the part of a nation's government, without sufficient tax revenue, good policies — where they exist — would be that much harder to implement. In the same vein, by supporting exports the private sector can benefit and this can make possible job growth and real wage increases within the export sector of an economy. As with the caveats applied to public sector policies, however, the linkage between increased private sector wealth and rising living standards for a nation's workers is not guaranteed, but the opportunities to raise living standards are greatly enhanced by robust export growth. For example, Beck *et al.*² analysed the data surveyed by the Asian Development Bank (ADB) during 2012 and found that the availability of trade finance positively impacts economic growth and job

creation and noted that an increase of 5 per cent in the availability of trade finance could result in an increase of 2 per cent in both production and employment.³

Through a virtuous cycle created by improved cross-border trade, increases in exports can also improve a country's position in the international capital markets and allow for improved access to both public and private sector credit terms. Through the avenues of improved public and private sector finances, trade finance, by providing a crucial support to international trade, can be viewed as a mechanism of economic development which can contribute to a country's sustainable socio-economic prosperity. The converse of the virtuous cycle is the drag on trade and economic development that a slowdown or stifling of trade finance can result in. While the causes and impacts of trade finance credit reductions during the recent developed-world credit crisis are still being studied, it seems that lenders' balance sheet stresses did result in considerably higher trade finance spreads and the reduced availability of funds for trade finance deals and that this adversely impacted trade flows and emerging market economies.^{4,5}

Providers and instruments of trade finance

Commercial banks have traditionally been the dominant institutional provider of external trade finance. While exact measures vary due to data issues, common estimates put bank-intermediated transactions at up to 40 per cent of the total trade finance market.⁵ This is reflected in Table 1, which presents the market share of trade finance agreements for the year 2008.

Trade finance has historically presented a good risk-return trade-off to investors. The Berne Union is an entity that represents the 50 or so private and public insurers that specialise in insuring trade deals. In 2014 the members of the Berne Union covered about US\$1.8 trillion in trade finance transactions. Their default and recovery history is published each year in an annual report.⁶ Table 2 shows trade finance default data that indicate extremely low default rates. It is also important to note that, on average, defaulted trade finance deals have a recovery rate of around 60 per cent. The high recovery rate is largely the result of trade finance deals being well collateralised by the goods underlying the transactions.

Table 1: Trade finance arrangements

Market share of financing arrangements				
Cash in advance 19–22% US\$3–3.5 trillion	Bank trade finance ^a 35–40% US\$5.5–6.4 trillion	Open account 38–45%, US\$6.0–7.2 trillion		
		ECA guaranteed	Arm's-length non-guaranteed	Intra-firms
US\$15.9 trillion in global merchandise trade (2008 IMF estimate)				

Notes: ^aIt is important to note that the category 'bank trade finance' refers to the bank as the borrower of record. In virtually all cases this is a regional development bank such as Afrexim, which guarantees the loans made to finance trade in their region.

Source: SWIFT (2013) 'Observations on the evolution of trade finance and introduction to the bank payment obligation', Opus Advisory Services International, Toronto, p. 8.

Table 2: Trade finance default data

Product	Transactions	US\$ (000s)	Default (%)	Loss (%)
Loans for export-bank risk (2008–2010)	955,201	355,073,525	0.1733	0.0127
Loans for export-corp risk (2008–2010)	1,009,922	234,398,914	0.2918	0.0167
Loans for import-corp risk (2008–2010)	655,199	389,796,641	0.0597	0.0697
Import L/C (2007–2010)	1,438,291	727,012,390	0.0673	0.0061
Export confirmed L/Cs (2008–2010)	389,129	195,664,331	0.0907	0.0349
Performance guarantees standby L/Cs (2009–2010)	396,059	347,828,425	0.0135	0.0007

Source: SWIFT (2013) 'Observations on the evolution of trade finance and introduction to the bank payment obligation', Opus Advisory Services International, Toronto, p. 11.

The international chamber of commerce (ICC) banking commission compiles trade finance data from the leading 23 banks in this sector. The 2015 edition of the ICC's global survey on trade finance report⁷ provides an obligor view of default rates across products. As illustrated in Table 3, these default rates also suggest a relatively low risk profile for this form of financing.

Despite these low default rates and relatively high recovery rates, commercial banks that specialise in trade finance to developing economies recognise that there are significant risks involved in this form of financing. Political risk, commodity risk, currency risk and production risk are but a few of the many challenges facing a bank when considering a loan for a specific

transaction. Over the years, however, the banks involved in this market have developed systems to manage many of these risks to levels they consider to be acceptable.

Beck *et al.*², however, note that, according to a survey of banks performed by the ADB, US\$1.6 trillion of demand for global trade finance was unmet, with US\$425bn unmet in developing Asia. This seeming imbalance suggests an opportunity for additional players, in addition to the banks, to enter the market. In the recent and prolonged low interest rate environment, non-bank investors have been searching for favourable risk-return opportunities to invest in and the success of the banks in the trade finance market has not gone unnoticed. Trade finance, however, is not for the unsophisticated

Table 3: Obligor default rates

Product	Total # obligors	Total # defaulted obligors	Obligor default rate	Moody's rating for comparable default rate
Export L/C	92,881	36	0.04%	Aaa–Aa
Import L/C	113,026	333	0.29%	Baa
Performance guarantees	181,626	773	0.43%	Baa–Ba
Loans for import/export	145,021	1050	0.72%	Ba

Source: International Chamber of Commerce (2015) 'ICC Trade register', ICC, Paris, p. 49, fig. 36.

or faint-hearted. It often involves the financing of commodity exports from distant countries with opaque accounting and weak institutions that make them prone to corruption and rent-seeking.

Despite the threats posed to investors, several non-bank investors have expanded successfully into trade finance and have developed methods and procedures for assessing and mitigating the risks inherent in trade finance transactions. One such investor are funds and accounts managed by registered advisory subsidiaries of Federated, a mid-sized asset management firm headquartered in Pittsburgh, PA. Through its Project and Trade Finance investment strategy, Federated has successfully charted the global trade finance waters alongside the large international banks that have traditionally dominated this asset class.

The remainder of this paper will present an overview of traditional trade finance products and then describe in some depth Federated's approach to the risk management of trade finance investments. We will conclude with some observations and a discussion of future areas of opportunity in this field as well as avenues for further research.

TRADE FINANCE INSTRUMENTS

Trade finance deals differ from corporate loans in that the loan is made to a specific transaction rather than to the general finances of an obligor. There are several typical trade finance instruments that are commonly in use — pre-export finance loans, borrowing base loans, letters of credit and bank payment obligations — and we concentrate our efforts in this section on them.

- *Pre-export finance loans.* These are loans that allow an exporter of goods to be prepaid for production and sale. This form of trade finance is often useful for paying for factor inputs and other production costs. In this type of financing, the exporter or producer typically has a contract in place with a buyer or importer and receives money from lenders, pledging the goods as collateral with the knowledge and acceptance of the buyer. In general, an offshore collection account is set up where all the payments from the buyers are received. From this offshore collection account, the loan is

serviced and the excess receipts are returned to the borrower (exporter).

In a pre-export finance loan, the lenders are secured by a pledge of the collection account, as well as by assignment of interest in the commercial contract and acknowledgement from the buyer/importer that payments will be made to the collection account.

- *Borrowing base loans.* These are asset-based lending typically used by oil, gas and mineral producers to monetise their production assets. In this type of deal, the borrower creates a reserve asset that is used as collateral for the loan. The lenders have access to the reserve asset through the holding of shares in the company that controls the asset, including all licenses.

The reserve asset is valued by an independent appraisal corporation. The valuation, in turn, becomes the basis for determining the amount of the loan. There are typically stringent loan-to-value ratio restrictions put in place by the lender. Appraisals are made periodically in order to ensure appropriate coverage by the reserved asset. Borrowing base loans often include the additional security of a pledge of receivables under offtake contracts.⁸

- *Letter of credit (L/C).* This is one of the best known trade finance instruments. The L/C is a contract that allows an exporter to reduce the credit risk associated with selling to foreign buyers while also allowing for the delay of payments from buyers/importers to sellers/exporters.

In order to create an L/C there is typically a commercial contract between an exporter and an importer. The importer creates an L/C with its bank (the issuing bank). This document is a guarantee that the issuing bank will be responsible for payment once the importer has satisfied the contractual agreement in terms contained in the shipping documents that are presented by the exporter to its bank (the confirming or advising bank). Once the documents are presented in a satisfactory manner, the L/C is validated and the issuing bank pays the confirming bank, which at the same time pays the exporter (after charging for fee, interests, etc). Thus, with the L/C, the payment risk of the buyer becomes a payment risk of the issuing bank and the confirming bank.

- *Bank payment obligation (BPO).*⁹ Recently, the BPO has emerged as an alternative to the L/C. The BPO has been promoted as an instrument that can reduce the complexity and possible mistakes associated with L/Cs. According to a recent SWIFT educational report,⁹ the BPO is an irrevocable undertaking given by one bank (the obligor) to another bank (the recipient) that payment of a given amount at a pre-specified time will be made after a successful electronic matching of data, according to the ICC Unified Rules for Bank Payment Obligation. The BPO is a technology-independent instrument based on ISO 20022 XML that can be used in any open matching platform. According to the BPO rules, sellers send shipping documents directly to the buyers, accelerating the settlement process compared to the L/C.

We now proceed to describe the most important risks and risk mitigants used in trade finance, based on information provided to us and discussions with Federated.

FEDERATED INVESTORS

Federated is a mid-size US-based asset management firm, founded in 1955, with approximately US\$363bn under management at year-end 2014. Federated operates its investment management business through its registered investment advisory

subsidiary. The majority of invested funds under management (US\$259bn) are money market investments with the remainder split roughly evenly between fixed-income (US\$53bn) and equity (US\$51bn).

In the early 2000s, Federated’s international fixed income team became interested in the investment characteristics of trade finance. In 2005, Federated began to buy individual trade finance deals into some of its international bond funds. The initial deals were closely monitored and performed well through the financial crisis. This led to interest from some of Federated’s domestic bond managers in establishing a portfolio that would allow their funds to invest in a diversified portfolio of trade finance assets. In 2009, Federated began managing a portfolio of investments in accordance with its Project and Trade Finance investment strategy for the intended use of Federated portfolio managers.

Internally, Federated treats trade finance as an illiquid asset and all FTPFF holdings reside in a fund’s illiquid allocation bucket. Even though the assets are considered illiquid, they must be priced daily in order to strike a daily NAV for the investing entities. Recently, FTPFF has been made available to outside investors as an institutional separate account offering.

Over the 60-month period, April 2010–March 2015, FTPFF has had 53 months of positive returns and seven months of negative returns (see Figure 1). Using the

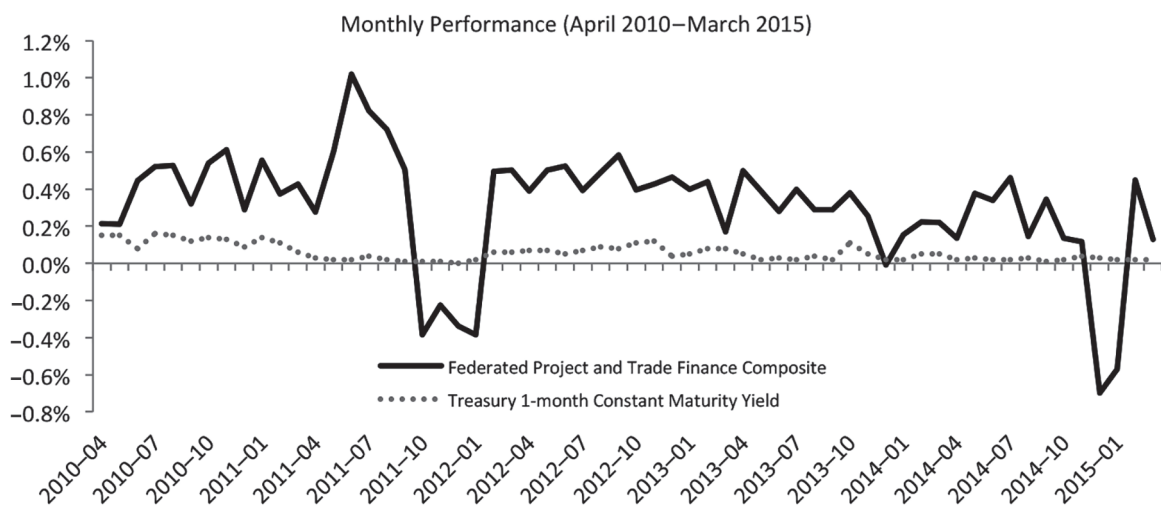


Figure 1: Fund monthly performance
Source: Federated Investors, Board of Governors of the Federal Reserve System.

US Treasury 1-month constant-maturity yield as a proxy for the risk-free rate, the fund outperformed the risk-free asset in 48 of the 60 months and, on average, had superior returns over this period and an annualised Sharpe ratio of 3.41.

An independent pricing agent that specialises in loan assets prices each Project and Trade Finance investment strategy position daily as a Level 2 or Level 3 asset. Level 1 assets are those for which direct observation of liquid market quotes is possible. Level 2 assets are priced on a 'mark to model basis' and depend on directly observable prices of 'similar' transactions. Level 3 assets are those for which neither direct nor comparable (similar) market price quotes are available.

During periods of increased risk and general market volatility, especially in commodities, banks require wider margins to compensate for perceived risk. These deals are generally the most observable price point and provide a basis for valuation of Level 2 and 3 assets. For example, consider the situation where a one-year deal for the export of iron ore is priced at par with a spread of 300 bps over LIBOR on Monday and a similar par deal is subsequently priced at 400 bps over LIBOR on Tuesday. This would cause the valuation used for pricing the first deal to decline to compensate for the wider margin currently observed in the market, but with no fundamental change in the outlook for the performance of the asset itself. The two periods of negative returns experienced by the Project and Trade Finance investment strategy composite were largely the result of this type of effect, whereby commercial banks holding trade finance assets at historical cost began to charge higher spreads on new deals, creating a knock-on effect in the valuation of existing assets regardless of their actual performance.

Trade finance risk management at Federated

Investors that engage in trade finance confront a variety of risks that can adversely impact their performance. These risks can be broadly categorised as credit risk, market risk, liquidity risk and operational risk. This section will briefly describe each of these risks, focusing on areas that are either unique to, or are more significant in, trade finance deals and how Federated attempts to manage these risks.

Credit risk

Credit risk is the risk that the counterparty to a transaction is unable or unwilling to make good on its obligations. Traditional credit risk analysis is focused on counterparty's obligation to make financial payment. Trade finance deals, however, are often also dependent on counterparty's ability and willingness to make physical delivery. The risk that physical delivery is not made is considered a form of *performance risk*. The success of some trade finance deals also depends on the actual production of the physical commodity underlying the transaction. The ability and willingness of a counterparty to successfully produce this commodity is often treated distinctly from performance risk and is called *production risk*.

At Federated, credit risk analysis begins with a macro-level assessment of the country risk associated with the transaction. Sovereign credit ratings from the major rating agencies are reviewed as independent and internal country credit and economic analysis. A similar sector-level risk analysis is also performed where the current state and outlook for the relevant industrial sectors are examined. The relative importance to a sovereign of a particular industry sector or, in some cases, individual firms is also taken into consideration in order to estimate the level of implicit support that might exist for an obligor or market.

Federated uses limits as one way to manage credit risk as well as to encourage diversification in its Project and Trade Finance investment strategy (see Tables 4–7). Geographically, there are limits on the percentage of the overall strategy that can be invested in any one of four regions (see Table 4). Investments are also subject to per-country limits that depend on the specific sovereign rating of the country (Table 5). While the sovereign rating limits do not constrain the overall credit quality directly, they do increase the number of countries that would have to

Table 4: Regional limits on portfolio allocation

Asia	35.0%
Eastern Europe	40.0%
LATAM	25.0%
MEA	32.5%
Other	0.0%

Source: Federated Investors.

Table 5: Sovereign rating limits on portfolio allocation

A- to AAA	17.5%
BBB- to BBB+	15.0%
BB- to BB+	12.5%
B- to B+	10.0%
Not rated to CCC+	5.0%

Source: Federated Investors.

be invested in at lower credit qualities (eg a fund or account in which the strategy is utilized could be fully invested in only six countries with an A- rating, but would have to be invested in 20 CCC+ countries). To further encourage diversification, limits are also set by the industrial sector (see Table 6). Limits are also placed on the underlying transaction security types to further enhance credit risk protection (see Table 7).

To measure and manage performance risk, Federated begins with S&P Capital IQ ratings, a review of independent technical reports and credit analysis, and in-depth Q&A (questions and answers) on the credit with the mandated lead arranger (MLA) credit team.¹⁰

The MLA will also have an agent bank (usually a wholly owned subsidiary operating in the country in which the deal is originated) which is responsible for monitoring the deal locally and for the control of the collateral pledged to the transaction. The MLA credit team is comprised of Federated's London-based trade finance team responsible for the relationship with the originating bank. This team researches the performance of the deals which the MLA has

Table 6: Sector limits on portfolio allocation

Basic industry	32.5%
Consumer non-cyclical	20.0%
Energy	40.0%
Financial	17.5%
Supranational	10.0%
Other	20.0%

Source: Federated Investors.

Table 7: Transaction security limits on portfolio allocation

Secured	No limit
Enhanced	No limit
Documentary	40%
Clean	20%

Source: Federated Investors.

originated in the past and how the bank has dealt with stressed situations. If the banks investing in the deals provide stress scenarios, these are used as baselines and stressed further where deemed appropriate.

Meetings are held with the senior management of the borrowers at which in-depth discussions on all aspects of the business are conducted. Similar interviews are held on a regular (monthly, quarterly, and more frequently when required) basis throughout the life of the transaction. If concerns arise, these are brought to the attention of the senior management of the borrowers immediately and an appropriate response is discussed.

To have a clear understanding of the production risks faced by a potential transaction and to further flesh out the risk analysis, Federated employs Porter's five forces as a framework to assess the capability of a borrower to produce profitably to meet contracts and repay debt. This holistic view of the borrowing firm analyses the level of competition within an industry and derives five forces that determine the competitive intensity and therefore attractiveness of an industry, where attractiveness refers to the overall industry profitability. Porter's five forces include: the threat of substitute products or services, the threat of established rivals, and the threat of new entrants, the bargaining power of suppliers and the bargaining power of customers (see Figure 2). This type of analysis requires a blending of quantitative and qualitative analysis and requires a great deal of bespoke research on the part of Federated's Project and Trade Finance investment strategy analysts. Experience in analysing trends and assessing threats and competitive advantage is invaluable in developing an accurate assessment of the risks faced by a firm using this framework.

Market risk

Market risk is the risk that changes in market factors can adversely affect the value of a transaction. Most international fixed income bond funds are exposed to two primary types of market risk — interest rate risk and foreign exchange risk. Interest rate risk is primarily the risk that rising interest rates will reduce the present value of future interest and principal payments while foreign exchange risk is related to the possibility that an adverse change in foreign exchange rates can reduce the value of those

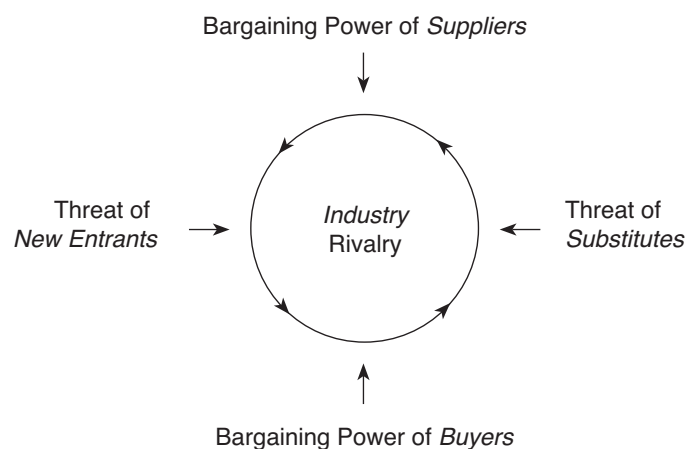


Figure 2: Porter's five forces
Source: Federated Investors.

payments when they are translated back into the base currency of the fund. In the case of trade finance, it is possible to reduce market risk exposure greatly due to the structure of many of the deals.

Federated manages the interest rate risk of its Project and Trade Finance investment strategy primarily through limits on the weighted average maturity (maximum 24 months) and effective duration (maximum one year) of a portfolio. As trade finance is dominated by short-maturity, floating-rate commitments, direct interest rate risk is inherently low. The impact of changing interest rates on the financial health of counterparties — an indirect risk — is left unhedged. Given the short-term nature of the obligations and the monitoring and due diligence that accompanies a deal, however, this indirect risk is considered low as well.

Foreign exchange risk is minimal as virtually all elements of the transactions invested in are denominated in US dollars. There is no currency mismatch as the goods being financed trade in US dollars and the buyer pays in US dollars. Interestingly, in situations where the local currency in the borrower's country of origin comes under pressure, the hard currency earned by a trade transaction becomes even more valuable. Local governments tend to make significant efforts to insure the performance of deals which bring hard currency into their country.

Liquidity risk

The primary form of liquidity risk relating to trade finance is the risk that a fund or account managed in accordance with the strategy will not have the ability to meet investor redemptions. There is generally little or no secondary market for trade finance deals and liquidation of existing deals prior to maturity can prove difficult and, if possible, costly.

Neither internal (ie investments by other Federated funds) nor external investors in Federated's Project and Trade Finance Investment strategy face lock-up provisions. All investors are, however, strongly advised about the relative illiquidity of the asset class and their investment. Internal investments in Federated's Project and Trade Finance investment strategy are formally defined as illiquid and are held in the investing fund's illiquidity allocation bucket, which typically range from 10 to 15 per cent of assets. While these measures do not guarantee that redemption requests will not come from either internal or external investors, they do help in ameliorating liquidity risk.¹¹

Given the illiquid nature of the assets held in Federated's Project and Trade Finance investment strategy, it may take an extended period of time to fund a liquidation or redemption request. For example, it may take up to 31 days to return cash to the investor. Trade finance assets held in the strategy's portfolio make interest and principal payments either monthly or quarterly and are self-liquidating with an

average maturity of 15 months. In addition, in the event of extreme market stress where it is impossible to sell assets, investors may receive investments held in the portfolio in-kind. It should be noted that in the 3 years Federated's Project and Trade Finance strategy has been available to outside investors, investors have been able to receive cash with little need to sell assets.

While Federated's Project and Trade Finance investment strategy was not in place during the global financial crisis of 2008–2009, other funds or accounts managed in accordance with other investment strategies were invested in trade finance and did experience redemptions. This experience can provide some insight into the behaviour of these assets during stressed market conditions.

During the global financial crisis, although Federated considered trade finance to be an illiquid asset, liquidity was surprisingly available for trade finance deals when compared to most other fixed income asset classes. Banks that were already participating in existing deals and were familiar with their performance became buyers of the portions held by Federated. All of the sales done by Federated of trade finance deals during this period were completed at or above their mark-to-market price and were all sold to banks who held the asset.

Federated's experience during the 2008–2009 period suggests that investing alongside large well-vetted banks helps mitigate a certain amount of the liquidity risk inherent in trade finance deals. It also, however, raises the question of why banks were willing to buy trade finance assets during the crisis when liquidity in so many other markets disappeared. One possible explanation is that, to the banks involved, the trade finance deals were a very transparent asset in comparison to other assets. Investors in trade finance deals typically receive information on the performance of deals directly from the agent bank monitoring the deal on the ground. In some cases, updates are delivered as frequently as twice a day. Even the highest rated and most liquid corporate bonds and loans, not to mention mortgage-related and some securitised products, were far more opaque.

Liquidity was also maintained for new trade finance deals, although in a somewhat diminished state. The relatively short maturity of the asset class allowed banks to adjust the credit quality of their

holdings more quickly by tightening standards and requiring more robust security packages on new deals while existing deals matured and left their balance sheets. While global merchandise trade declined from approximately US\$16 trillion in 2007 to US\$12 trillion in 2009, it never stopped, and approximately 90 per cent of these deals required financing of some kind.

Operational risk

Trade finance deals can be complex, involving a significant amount of documentation and legal review. The securing of creditor rights is critical and arrangements regarding the securing of payments and collateral can be very involved and extend across geographic and jurisdictional boundaries. There is, therefore, a lot of room for error, if the deals are not structured and monitored properly.

In order to handle and minimise the room for error due to the complexity of each deal, Federated conducts detailed due diligence. Non-bank investors, however, are typically minority creditors in trade finance deals and are constrained by scale and scope restrictions relative to large, multinational banks. The role of the lead bank, or banks, in monitoring the transaction and in crafting and guiding the legal and administrative process is therefore crucial. The non-bank creditor must choose its bank partner(s) carefully and then be diligent about ensuring that the monitoring function is performed effectively.

As operational risk management issues can be complex and interrelated, the following attempts to disentangle some of these issues. Topics that might stretch across several risk dimensions are discussed separately for the sake of exposition.

The first major type of operational risk relevant to trade finance deals is related to the *eligibility* of the proposed financing arrangement. For example, for US-domiciled investment products, adherence to the Office of Foreign Assets Control (OFAC) regulations is critical. OFAC, part of the US Department of the Treasury, administers and enforces economic and trade sanctions. OFAC acts under Presidential national emergency powers, as well as the authority granted by specific legislation, to impose controls on transactions and freeze assets under US jurisdiction. Many of the sanctions are

based on United Nations and other international mandates, are multilateral in scope and involve close cooperation with allied governments.

The second major operational risk relevant to trade finance deals is known as *structure risk*. Structure risk can be further broken down into *counterparty risk*, *agent risk*, *legal risk*, *payment risk* and *damage/loss of goods and quality/quantity risks*. While some of these risks (eg counterparty risk) might appear to be more appropriately handled under other risk management efforts (eg credit risk) there are certain aspects of these risks that should properly be considered a form of operational risks. An example of this could be the reliability and timeliness of the information provided by the borrower on which the risk assessment is made and the ability to gather accurate information from the borrower to measure and manage the risk throughout the life of the deal.

Federated feels that a very good way to clearly understand and mitigate the operational risk aspects of *counterparty risk* is by creating long-term relationships with top banks who are leaders in the field of trade finance. This enables the Federated's Project and Trade Finance investment strategy analysts and portfolio managers to observe and assess the quality of information provided in deals over time and to assess the banks' behaviour in terms of holding borrower's senior management accountable across a range of environments — good and bad. It also allows Federated to assess the banks' commitment to a particular deal in terms of the resources, monetary and non-monetary, allocated. This process involves a qualitative assessment and benefits from an experienced knowledge base. Given the importance of the banks' monitoring role in these transactions, an accurate assessment of counterparty risk, from an operational risk perspective, is highly valuable.

To manage *agent risk*, Federated verifies that all the transactions have agency teams from top banks, which Federated views as reliable, and have extensive and appropriate experience and resources.¹² *Legal risk* is largely handled through the use of outside counsel and by careful selection of the controlling legal venue. All deals for Federated's Project and Trade Finance investment strategy are governed by either US or UK law, which Federated feels affords an appropriate level of creditor rights as well as a stable means of exercising those rights.

An important way in which *payment risk* is mitigated in deals for Federated's Project and Trade Finance investment strategy through the use of offshore collection and debt service payment accounts. The use of these facilities is explicitly stated in the repayment terms of the deal agreement, along with provisions for the topping-up of the accounts to meet future payments. By keeping the funds offshore, the ability of a borrower, or a related government entity, to access these funds is legally eliminated.

To manage the *risk of damage or loss of goods and quality and quantity risk*, independent inspection and valuation of collateral are carried out by pre-approved collateral monitoring agents before every transaction. Management of collateral during the transaction is reported periodically. It is also typical to require the transactions to be over-collateralised and to have the shipping insurance in place on every contract.

Putting it all together: Estimation of expected default rate, recovery rate and excess returns

Federated uses the results of its analysis of the various risk factors relevant to a transaction to estimate the expected excess returns in a deal based on the associated margin, probability of default and recovery rate. The framework for doing so, and a simple illustrative example follow.

$$EER = M - PD * (1 - RR) \quad (1)$$

Where EER and M represent the expected excess return and the margin, respectively. PD stands for the probability of default and RR for the recovery rate. The margin is the blended annual margin over LIBOR during the life of the transaction, including upfront fees. The probability of default is derived from a credit analysis of the obligor. A minimum of three years of quarterly financial data is used along with projections where available. The sector the obligor operates in is considered. Agency software is used as part of the analysis. Recovery rate estimates are derived from an analysis of the transaction structure and documentation.

An example of this framework for a loan to ABC Corp is given in Table 8.

Table 8: Hypothetical loan to ABC Corp

Variable	(%)	Explanation
All in margin over LIBOR (M)	3.5	
Probability of default (PD)	1.6	
Recovery rate (RR)		
Secured transaction	80	
Adjustment for collateral	5	Pledge over the contract between ABC and XYZ covers the life of the deal. Offtake contracts only cover current debt service
Country	-10	Indonesia scores 5
Sector	5	Agricultural product is top 5 export for Indonesia
Documentation and MLA	0	ABC has been in Indonesia since 19XX
	-5	Purchase is from XYZ who cannot commit to retaining exposure. ABC is significant target client for MLA
	0	Collateral is subject to local law
Total recovery rate	75	
Expected excess return (EER)	$= 3.5\% - 1.6\% \times (100\% - 75\%) = 3.1\%$	

Source: Federated Investors.

CONCLUSIONS

With a global volume estimated at US\$18 trillion in 2014, trade finance plays a critical role in international finance and in the domestic finance of both advanced and emerging economies. Trade finance is a significant business line for many banks and is an area of growing interest for non-bank financial players as well. Trade finance, critical and attractive as it is, however, is not for the unsophisticated or faint-hearted. There are many risks faced by investors in trade finance that could seem quite daunting to the novice in this arena.

Through the description of Federated's Project Trade Finance investment strategy, many of the risks inherent in trade finance are presented along with risk management practices that have shown some success in measuring, monitoring and mitigating them. The authors' hope is that other investors can gain some insight from these observations and thereby become a more effective — and successful — contributing player in this space.

References and notes

- 1 Here we are assuming that governments and institutions that support economic growth are present. This support can include, among other important things, ensuring an income distribution that contributes to sustainable socio-economic
- 2 Beck, S., Shinozaki, S., Ferino, M., Zhang, Q. and Mangampat, E. (2013) 'Asian Development Bank, trade finance survey: major findings', *ADB Briefs*, No 11, March.
- 3 These authors found that the worldwide unmet demand (lending and guarantees) in trade finance was about US\$1.6 trillion. According to the ADB's survey, in 2011 the respondent banks mentioned that US\$4.6 trillion were requested and that 35 per cent of it (US\$1.6 trillion) was rejected.
- 4 See https://www.wto.org/english/thewto_e/coher_e/challenges_e.htm.
- 5 Committee on the Global Financial System (2014).
- 6 See <http://www.berneunion.org>.
- 7 International Chamber of Commerce (2015) 'Rethinking trade & finance', available at: <http://www.iccwbo.org/Products-and-Services/Trade-facilitation/ICC-Global-Survey-on-Trade-Finance/> (accessed 15th September, 2015).
- 8 The offtake contract is an agreement by which a buyer agrees to buy in the future the products from a producer at preset prices and quantities.

This type of contract is widely used in mining, before the construction phase. This helps the mining companies to improve their financial costs by ensuring the future demand of their production.

- 9 For a detailed treatment of BPOs we refer the reader to SWIFT (2013) 'Observations on the evolution of trade finance and introduction to the bank payment obligation', Education Report, Opus Advisory Services International, Toronto.
- 10 MLA refers to the bank originating the transaction.
- 11 The mix of internal and external investment might raise additional concerns for outside investors if they believed that internal investors would be given priority access to information regarding the strategy, particularly during periods of market stress or information regarding relevant operational risk events. This could, in theory, increase external investors' liquidity

risk as internal investors could liquidate ahead of them. Standard insider trading rules are designed to reduce this type of risk and to provide investors with legal remedies if such a situation arose. An additional safeguard for external investors who remain concerned about this risk exposure is the use of a separate account. In a separate account structure, the investor can specify liquidity requirements, as well as require daily pricing. Currently, Federated requires a minimum investment of \$100 million to establish a separate account as this the minimum needed to maintain the diversification standards of the strategy.

- 12 The agent bank is usually a wholly owned subsidiary of the MLA operating as a local bank in the country of origin. The agent bank is responsible for monitoring the deal on a daily basis and is responsible for the collateral pledged to the transaction.