



Financial shocks and trade finance: Evidence from Korea[☆]



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HIGHLIGHTS

- We assess the effects of financial shocks on trade finance availability.
- For this, we use two novel measures of bank-intermediated trade finance in Korea.
- The effects are generally negative and last for at least three months.

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ABSTRACT

Using two novel measures of bank-intermediated trade finance in Korea, this paper empirically assesses the effects of financial shocks on the availability of trade finance and finds that these effects are generally negative and last for at least three months, implying significant delays and losses for traders.

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1. Introduction

Products of trade finance are traditionally perceived as more secure than other financial products such as standard credit lines or working capital loans. They have a short maturity (generally up to 180 days) and are highly collateralized in that credit is provided against traded goods whose value can be calculated and secured (Chauffour and Farole, 2009). However, with the collapse of world

trade starting to be felt as a result of the global financial crisis, Pascal Lamy, the director-general of the World Trade Organization, warned on November 12, 2008, that “the market for trade finance has severely deteriorated over the last six months” (WTO, 2008). This paper investigates the effects of financial shocks on trade finance.

It is well known that there are no reliable data on trade finance (IMF, 2003; Chauffour and Farole, 2009). For instance, Amiti and Weinstein (2011) point out that the usual proxies for trade finance often used in the literature, such as trade credit or short-term credit, are not appropriate measures.² In contrast to previous studies, we use two direct measures of bank-intermediated trade finance in Korea: foreign trade loans extended by commercial

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² Trade credit, an accounting term, is a direct extension of credit between parties. When a firm receives an order for goods or services that are to be paid later or in advance, the firm records it in the accounts receivable or payable section of its balance sheet.

banks and documentary bills they purchase. Using these measures, we implement a vector autoregression (VAR) model to empirically assess the effects of financial shocks on the supply of trade finance.

2. Bank-intermediated trade finance

There are two bank-intermediated instruments of trade finance based on the period during which goods are shipped: foreign trade loans and documentary bills. Both are typical bank-intermediated instruments not only in Korea but also in other countries.³ In a narrow sense, trade finance in Korea is usually referred to as an extension of loans to exporters before shipments (Song, 1999). Such loans are called foreign trade loans. During the pre-shipment of goods, commercial banks may extend these loans to exporters so that they have sufficient working capital. Because these loans can be extended based only on a letter of credit (LC) issued to exporters or on the past export performance of exporters, they can be distinguished from general bank loans.

Another bank-intermediated instrument in trade finance is the documentary bill, which is purchased by banks after exporters ship goods. Importers' banks issue LC to exporters to ensure that exporters are paid when they submit required documents (e.g., invoices and bills of lading) as stipulated on LC to their banks. After shipping goods, exporters can ask their banks to accept documentary bills attached to LC, which is referred to as "negotiation", to receive payments before importers pay the bill. That is, LC represents the conditional bank undertaking of payments on behalf of importers such that issuing banks make payments upon the presentation of stipulated documents (LC at sight) or at a later specified date (usance LC). Documentary collection such as documents against payment (D/P) and documents against acceptance (D/A) is another instrument during the post-shipment period that involves documentary bills. When an exporter ships goods on a documentary collection basis, it draws a draft (bill of exchange) on the importer for the total amount due, attaches the draft to shipping documents, and submits it to its bank for collection from the importer. Here, unlike in the case of LC, a bank acts as just an agent for the exporter and assumes no payment responsibility. Exporters often ask their banks to simply accept bills and make payments in advance of the collection process.

3. Empirical methodology and data

We employ the following unconstrained VAR model and analyze the impulse response to assess how a shock to financial variables affects trade finance:

$$x_t = c + \sum_{i=1}^p \Phi_i x_{t-i} + \varepsilon_t, \quad t = 1, 2, \dots, T$$

where i and t denote the number of lags and time, respectively; $x_t = (x_{1t}, x_{2t}, \dots, x_{mt})'$ is an $m \times 1$ vector of endogenous variables; Φ_i is an $m \times m$ coefficient matrix; and ε_t is a vector of white noise.

The model has four variables: trade finance, domestic and global credit availability, and country risk. We choose these particular financial variables based on the following observations: Auboin and Meier-Ewert (2003) provide two important implications of the financial crises in the 1990s for emerging markets. First, the exchange rate became extremely volatile during the crises and exacerbated the economic fundamentals, worsening the problem of capital flight. Second, short-term trade finance facilities were

scarce during the crises, making cross-border transactions difficult for traders. Similarly, liquidity shortages and the general reassessment of risks in the economy are considered to be the main causes of the deterioration in trade finance during the recent global financial crisis (Auboin, 2009). Given the above discussion, we choose exchange rate volatility and domestic and global liquidity constraints as the key factors influencing trade finance conditions.

As discussed earlier, we use foreign trade loans and documentary bills as measures of trade finance. It is likely that an increase in exports increases the demand for trade finance and vice versa. Because we are interested mainly in the supply side of trade finance in response to shocks in the financial market, we control for the demand side of trade finance. For this, we follow Love et al. (2007) and use the ratio of foreign trade loans or documentary bills to a 12-month rolling sum of exports, which is denoted as TFLOAN and TFBILL, respectively.^{4,5}

We use the TED spread as a proxy for the global liquidity constraint in response to a shock to the global banking system or perceived credit risk in the global financial market (Bijapur, 2010). The TED spread is the difference between the yield on three-month US Treasury bills and the three-month Eurodollar deposit rate. By analogy with the global credit condition, we introduce a domestic counterpart. We use the spread between the three-year Korean treasury yield and the three-year corporate bond rate (AA-rate) in Korea, which we refer to the "Korean spread" (KSPRD) from this point forward. The increase in the TED spread (Korean spread) indicates the shortage of global (domestic) credit availability.

We use exchange rate volatility as a proxy for weak economic fundamentals or country risk. We define exchange rate volatility as the standard deviation of the bilateral daily nominal exchange rate between the Korean Won and the US dollar, divided by the period average (FXSTD). Here the higher the exchange rate volatility, the higher the country risk is.

The Bank of Korea keeps track of the monthly balance of foreign trade loans extended by commercial banks, and the Financial Supervisory Service of Korea records the quarterly balance of documentary bills bought by them. Data on foreign trade loans are available from 1980m1 and those on documentary bills from 1999Q1. However, due to data availability of KSPRD, first-differencing, lag structure, and a policy change in 1998, we estimate the VAR model over the period of 1999m1–2010m12 for foreign trade loans and 2001Q1–2010Q4 for documentary bills, respectively.⁶ We obtained monthly data on the TED spread, the exchange rate, and the Korean spread from the Bank of Korea and those on exports from the Korea International Trade Association.

4. Results

The results of various unit-root tests such as Augmented Dickey–Fuller, Dickey–Fuller GLS, and NG–Perron indicate that all the variables except for TFLOAN and TFBILL are stationary. Therefore, we first-difference them to attain stationarity.⁷ The Akaike

⁴ Love et al. (2007) examine the effects of financial crises on the extension of trade credit between parties. In the analysis, they scale trade credit (accounts receivable) with sales to control for decreases in economic activity, which are common during crises.

⁵ Since both foreign trade loans and documentary bills are balance data and stock variables whereas exports are a flow variable, we make these variables comparable by using a 12-month rolling sum of exports.

⁶ Data on KSPRD is only available from May 1995. The Bank of Korea removed the upper limit for which commercial banks could extend foreign trade loans in 1998 (MK Business News, April 11, 1998).

⁷ To avoid seasonality in trade data, we take a year-on-year difference for both TFLOAN and TFBILL.

³ See Auboin and Meier-Ewert (2003) for a general description of various trade finance instruments.

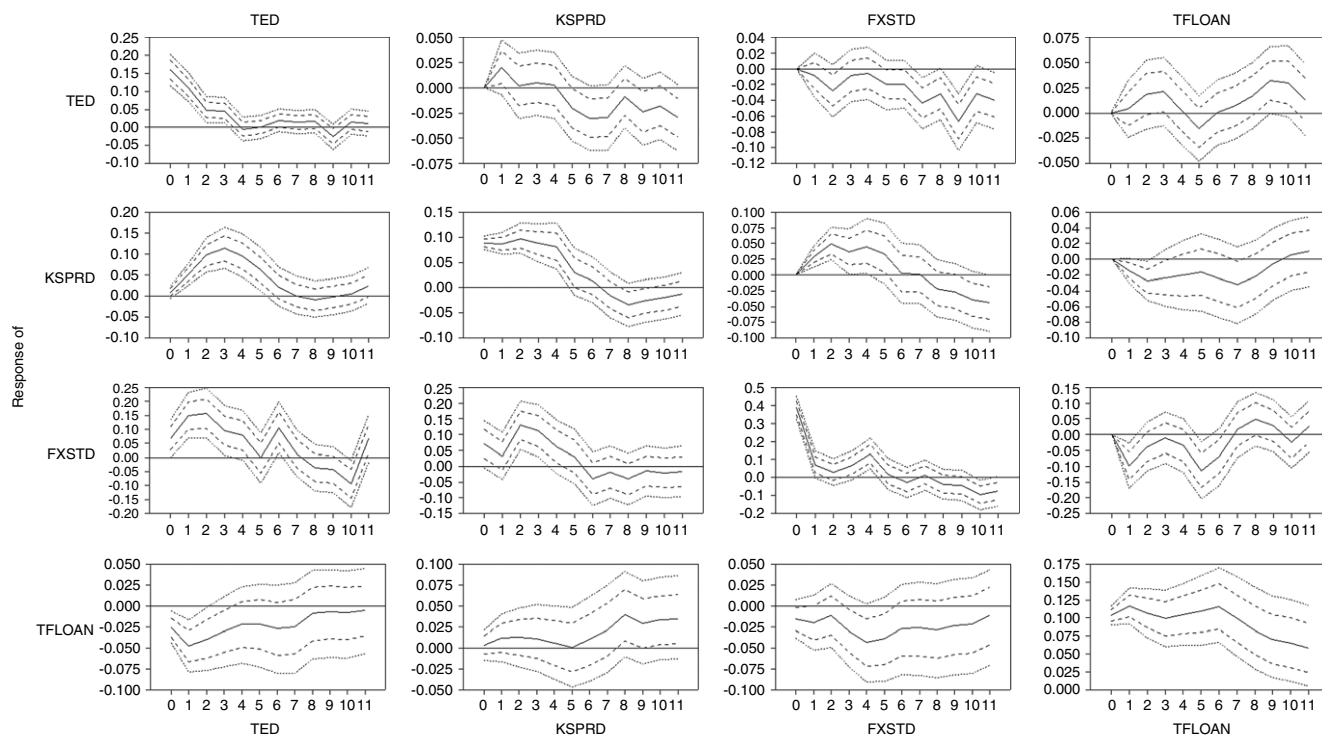


Fig. 1. Impulse responses with foreign trade loans. Notes: Solid lines indicate impulse responses to one standard deviation of innovation, and dashed lines indicate 68% and 90% bootstrapped confidence intervals (10,000 draws for bootstrapping results).

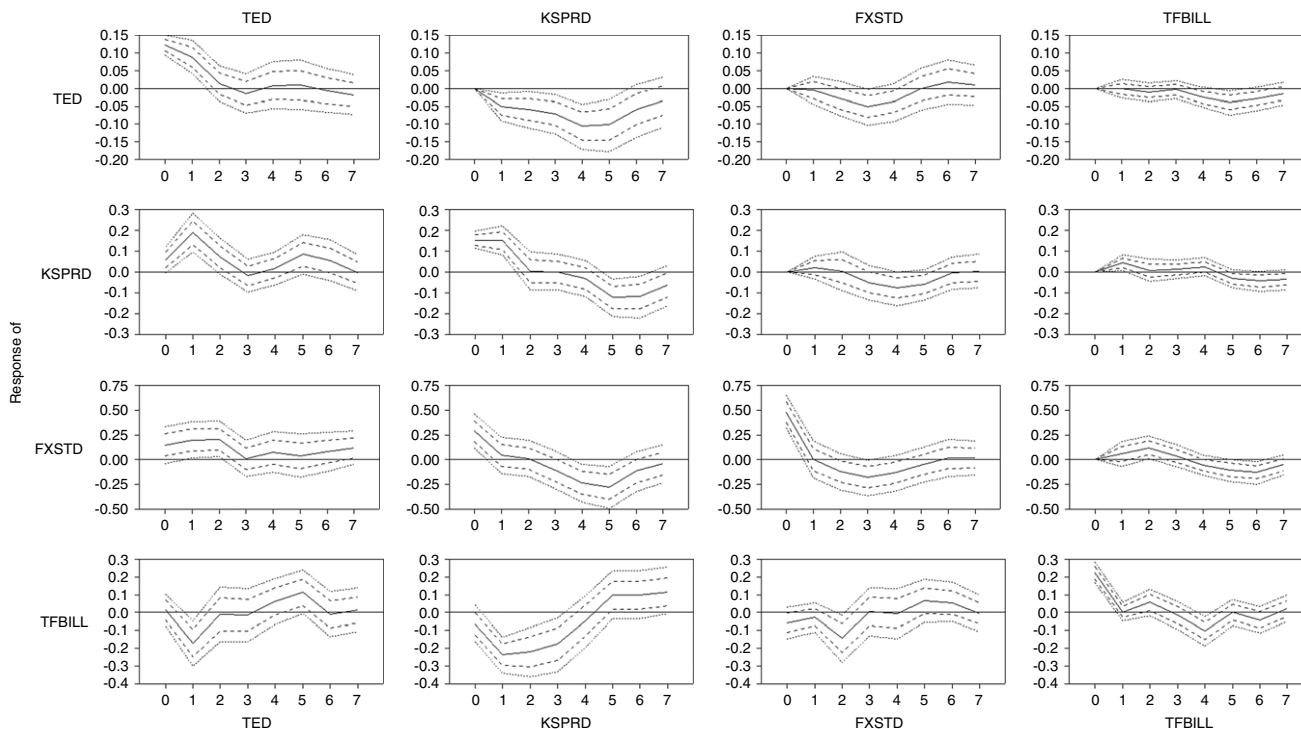


Fig. 2. Impulse responses with documentary bills. Notes: Solid lines indicate impulse responses to one standard deviation of innovation, and dashed lines indicate 68% and 90% bootstrapped confidence intervals (10,000 draws for bootstrapping results).

Information Criterion (AIC) suggests 12 lags, and the sequential Likelihood Ratio (LR) test indicates 11 lags for foreign trade loans. Both criteria suggest 4 lags for documentary bills. Hence, we estimate a monthly VAR model with 12 lags for the former and a quarterly VAR model with 4 lags for the latter.

To compute the impulse response function, we assume a recursive system and use the Cholesky decomposition. The baseline ordering of the variables is TED–KSPRD–FXSTD–TFLOAN (or TFBILL). The assumption implicit in this ordering is that a global liquidity shock may contemporaneously affect domestic credit constraints

and exchange rate volatility. In addition, we assume that a shock to either domestic credit constraints or exchange rate volatility contemporaneously affects trade finance conditions. This ordering scheme is natural in that Korea is a small open economy.⁸

Figs. 1 and 2 show the impulse responses of the variables for foreign trade loans and documentary bills, respectively. Here those of foreign trade loans and documentary bills to various shocks are of main interest, as highlighted in the last four panels in each figure. In the case of foreign trade loans, the deterioration in global liquidity and high exchange rate volatility have negative effects on Korea's trade finance condition, and these effects last for more than three months at the 68% confidence interval (over two months at the 90% confidence interval). However, domestic liquidity constraints have no significant effect even at the 68% confidence interval.⁹ In terms of documentary bills, all the financial variables have significantly negative effects, and these effects persist for at least a quarter at the 68% and 90% confidence intervals.

Although the duration of the effects may be short in terms of the business cycle, it can nevertheless imply a substantial setback for exporters. For example, the transport of ocean containers takes about 15 and 31 days from Pusan, Korea, to Los Angeles and Antwerp, respectively.¹⁰ Hence, negative effects on trade finance that last for more than three months can delay shipments by several batches or may terminate trade altogether. In addition, the results of the impulse responses indicate that a 1%p increase in the TED spread reduces the ratio of foreign trade loans to exports by 0.27%p in two months and that of documentary bills to exports by 1.4%p in a quarter. Given that the TED spread spikes from 0.42% in 2007m7 to 3.15% in 2008m9 by 2.73%p during the recent global financial crisis, it is likely that such a deterioration in the global liquidity condition has a considerably negative effect on Korea's trade finance condition.

5. Conclusion

This paper provides an empirical analysis of the effects of financial shocks on the availability of trade finance by using two novel measures of bank-intermediated trade finance in Korea: foreign trade loans extended by commercial banks and documentary bills bought by them (LC and D/P or D/A). The former supply exporters with working capital before the shipment, whereas the latter provide them with funds after the shipment but before the importer's payment. The results indicate that, regardless of the measure, the impulse responses of trade finance with respect to financial variables such as the TED spread, exchange rate volatility, and the Korean spread are generally negative and last for more than three months, implying significant delays and losses for traders, particularly during financial crises.

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⁸ The only ambiguous part in the ordering is that between FXSTD and KSPRD. However, the impulse responses in the other ordering scheme, that is, TED–FXSTD–KSPRD–TFLOAN (or TFBILL), are not qualitatively different from the baseline.

⁹ When we extend the coverage of data on foreign trade loans to include the Asian financial crisis of 1997, the results remain qualitatively the same (these results are available from the authors upon request).

¹⁰ See <http://www.searates.com>.