Chapter 9

Export Credit and Export Performance in Indonesia

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Chapter 9

Export Credit and Export Performance in Indonesia

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Abstract

Despite the relatively strong economic landscape, Indonesia's export sector suffered more severely during the recent global financial crisis than in the 1997 Asian financial crisis. This study examines the link between export credits and export performance. Has the export sector in Indonesia been dependent on export credit during the past two decades? In particular, did export financing contribute to the boom and bust of the two major export groups, namely manufacturing and mineral exports? Did the economic and financial crisis amplify the role of export credit in sustaining exports? Furthermore, was working capital more critical than investment capital in explaining the performance of Indonesia's exports?

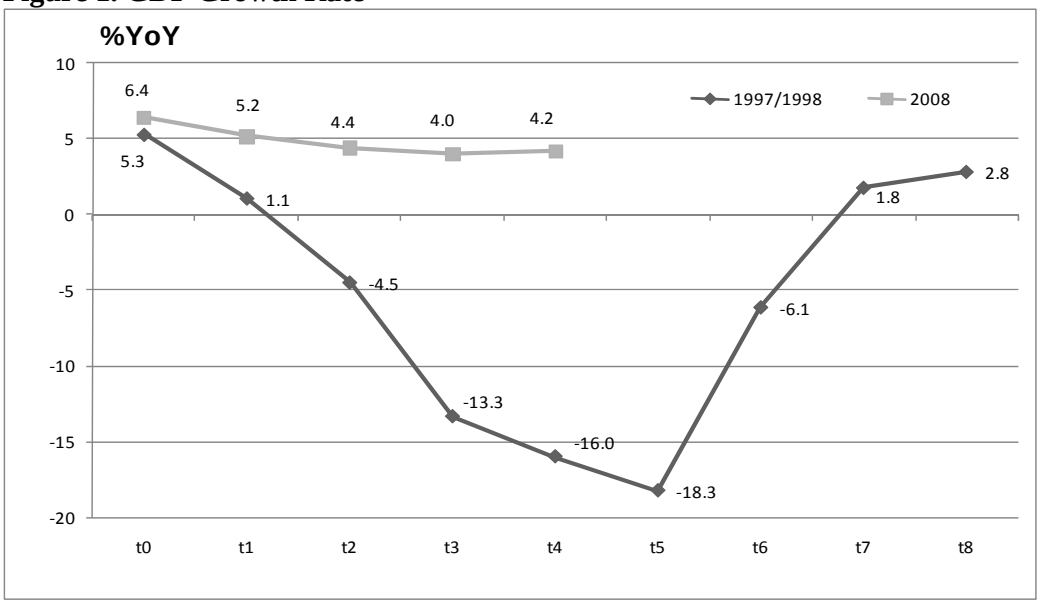
Keywords**:** export, price and income effects, trade credit, economic and financial crisis

JEL Classifications**:** F14, F41

1. Introduction

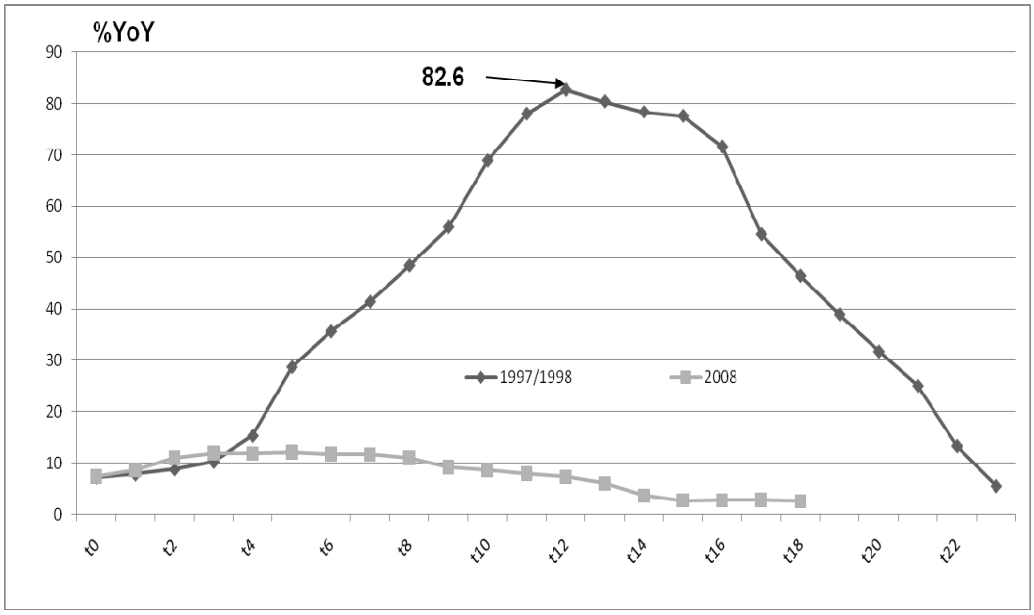
Having been among the most severely hit economies in the Asian Financial Crisis (AFC) of 1997–1998, Indonesia weathered the global slump of 2008–2009 remarkably well. The country maintained the third highest gross domestic product (GDP) growth in the Group of Twenty economies (G-20) and the major Asia Pacific economies—slower only to China and India—averaging more than 4 percent quarterly growth during the first half of 2009 (Figure 1). Both the fiscal and monetary authorities have coordinated their efforts to maintain price stability. In contrast to the 1997 crisis, domestic inflation has been well anchored throughout the height of the sub-prime crisis (Figure 2). Moreover, while the local currency depreciated sharply against the US dollar, it stabilized much quicker in the recent crisis than during the 1997 currency meltdown.

Figure 1. GDP Growth Rate



Note: a). 1997 Crisis: t0 = September (third quarter) 1997 and t8 = September (third quarter) 1999
b). 2008 Sub-prime crisis: t0 = September 2008 and t4 = September 2009
c). t1 represents a period one quarter after t0
Source: CEIC database

Figure 2. Inflation



Note: a). 1997 Crisis: t0 = October 1997 and t23 = September 1999
b). 2008 Sub-prime crisis: t0 = April 2008 and t18= October 2009
c). t1 represents a period one month after t0
Source: CEIC database

The strength of Indonesia's financial sector in this recent sub-prime crisis is in sharp contrast to the financial meltdown of the 1997/98 AFC. Even at the peak period of the global financial slowdown between the last quarter of 2008 and the first quarter of 2009, banks continued to be profitable and to maintain capital adequacy level well above the Basel requirement (Table 1). During the first half of 2009, Indonesian banks reported the highest capital adequacy ratio and return on assets among the major Southeast and East Asian economies.

Table 1: Soundness Indicators of Indonesia and Selected East and Southeast Asian Countries

	Non-Performing Loans (% of Bank Loans)			Risk-Weighted Capital Adequacy Ratio			Bank Return on Assets	
	1999	2007	2009	1999	2007	2009	1999	2009
Indonesia	32.9	4.02	3.9 Oct/	–6.7	19.18	17.5 Oct/	–8.7	2.7 Apr/
Korea	8.3	0.64	1.2 Sep/	10.8	11.95	14.3 Jun/	–1.3	0.5 Dec 08/
Malaysia	16.6	6.4	4.6 Apr/	12.5	13.2	14.1 Nov/	0.7	1.5 Dec 08/
Philippines	14.6	4.45	3.25 Sep/	17.5	15.93	15.48 Mar/	0.4	0.8 Mar/
Singapore	5.3	1.5	2.3 Sep/	20.6	13.5	16.5 Sep/	1.2	1.1 Dec 08/
Taiwan	4.9 Dec/	1.83	1.38 Sep/	11.2 Dec/	10.8	11.6 Sep/	0.49	0.3 Jun/
Thailand	38.6	7.28	5.31 Sep/	12.4	15.38	16.4 Sep/	–5.7	1.0 Dec 08/

Nevertheless, despite the relatively strong economic landscape, the export sector suffered more severely during the recent global financial crisis than in the AFC. Weak demand, especially from the traditional markets of the US, Japan and Europe, has been identified as one detrimental force for Indonesian exports. Another possible transmission channel from the financial crisis to the real sector meltdown is trade financing. Indeed, Indonesian exporters had access to a wide variety of trade financing options, including letters of credit and export credits in the forms of working capital and investment capital.

This study examines the link between export credits and export performance in Indonesia. The primary task is to address the following questions. Has the export sector been dependent on export credit during the past two decades? In particular, did export financing contribute to the boom and bust of the two major export groups, namely manufacturing and mineral exports? Did the economic and financial crisis amplify the role of export credit in sustaining exports? Furthermore, was working capital more critical than investment capital in explaining the performance of Indonesia's exports?

To my knowledge, little work has addressed empirically the previous set of questions. Studies such as Brown and Magiera (2000) and Ronci (2005) have either examined the issues qualitatively, or considered the Indonesian case as part of a large pool of a very diverse panel testing. With the availability of time series export credit data from quarter 3, 1993 to quarter 1, 2009 from Bank Indonesia, my study is in a unique position to look more comprehensively into the role of export financing to explain the performance of the export sector.

In the next section I present a literature review and analyse key stylized facts. An empirical section (Section 3) follows that includes a discussion of data, model specifications and econometric testing. Key empirical findings are analysed and highlighted in Section 4. In Section 5, a number of policy responses to support the export sector during the recent global financial crisis are presented and discussed. A brief concluding remark section ends the paper.

2. Literature Review and Stylized Facts

2.1 Literature Review

A number of studies have attempted to address, both directly and indirectly, the question of whether trade financing matters for export activities. However, it is important to first underscore that trade financing, especially trade credit, is offered by both financial and non-financial institutions. In particular, the role of non-financial firms in providing trade credits is more important in a country where the quality of financial intermediation is low (Fisman and Love (2003)). In short, trade credit may provide access to capital for firms that are unable to raise it through more traditional channels, such as the banking sector. Why do industrial firms extend trade credit when financial institutions such as banks could provide that facility? There are a number of possible reasons that have also been theoretically supported (Petersen and Rajan (1997)).

One reason is that imperfect capital markets enable suppliers to finance borrowers at a lower cost than financial institutions (Smith (1987)). In their work, Petersen and Rajan (1995) demonstrate that the supplier of trade credit has a long-term interest in the survival of the borrower. The credit supplier is willing to subsidize borrowers with lower interest rates since they expect to reap a higher return from future activities.

In addition, according to *transaction theory* of trade credit, firms can economize on the joint costs of exchange by using trade credits. Many have demonstrated theoretically that trade credit providers have information advantages that enable them to sort the 'buyers' of their finance (Brennan et al. (1998), Smith (1987) and Biais et al. (1993)). Banks can get such necessary information but, through the normal course of business activities, firms may be able to get it faster and more accurately. In addition, the supplier of trade credit has an advantage over the collateral. The more durable the goods exchanged in the business transaction, the better collateral they provide and the greater the credit the supplier can extend (Mian and Smith (1992)). Ferris (1981) has also demonstrated that trade credit may reduce transaction costs for the borrower. Rather than paying bills every time goods are delivered, the firm, for instance, might want to schedule the

payment on a monthly basis. Transaction costs could also be lowered as trade finance could allow the firm to stock inventory and manage it better.

Some empirical work, has focused more on the link between the availability of finance and firm/sector performance. These works show that the growth of firms depends heavily on the availability of trade finance. Fisman and Love (2003), for instance, claim that where the quality of financial intermediation is low, firms relying more on trade finance tend to grow faster. Studies also generally agree that the role of trade finance/credit on export performance is even more formidable during a crisis or recessionary period. Dell'Ariccia et al. (2008) show that during periods of financial distress, external finance-dependent industries are hurt disproportionately more. In a related study, Borensztein and Panizza (2006) find that industries with higher propensity to export are more adversely affected during periods of sovereign defaults. Similarly, Braun and Larrain (2005) demonstrate that during a recession industries that depend relatively more on external finance get hurt more.

Despite anecdotal evidence that the contraction of trade financing may have affected trade performance, only a few empirical studies have been conducted, particularly on the experiences of emerging economies in Asia. For the case of Indonesia in particular, there has been little empirical study. In addition, past empirical works have largely applied panel testing, hence have failed to capture country-specific experiences. Ronci (2005) carried out panel testing on 10 countries, covering a number of the Southeast (including Indonesia) and East Asian economies. The study examines the impacts of world trade volume, price factors (export and import prices), trade finance and the banking crisis on the export and import volumes.[1]

2.2 Brief Stylized Facts: Indonesian Economy and the Tales of Two Crises[2]

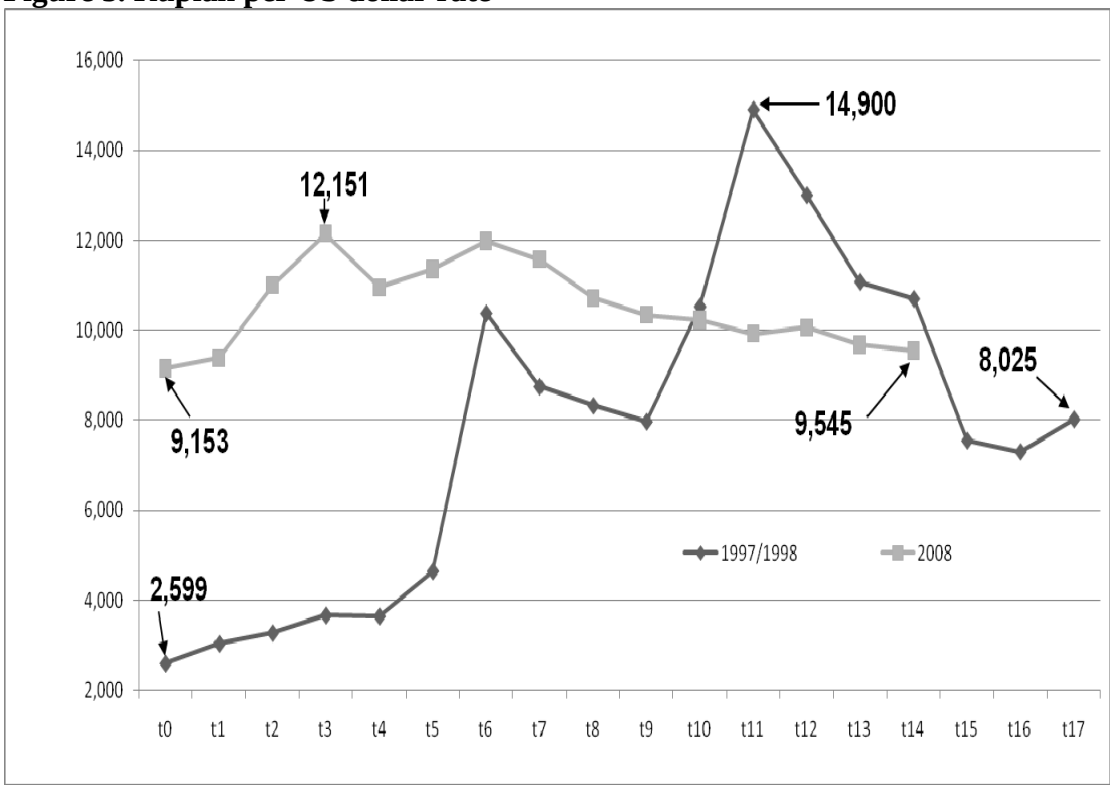
As the worst phase of the recent global financial crisis has arguably passed, it is timely to compare its impacts on the Indonesian economy with that of the 1997/98 AFC. In

[1] The countries included in the panel testing are the East and Southeast Asian economies (Malaysia, Philippines, Thailand, Indonesia, Korea), Russia, Brazil, Argentina, Mexico and Turkey.

[2] This section greatly benefits from the valuable contribution of Anton H. Gunawan of Bank Danamon, Indonesia.

particular, it is worthwhile to extract, where possible, contrasting features of the impacts of these economic slowdowns on the country's export performance. It is safe to conclude at this stage that the AFC was far more damaging on the Indonesian economy than the 2008/2009 Global Financial Crisis (GFC). As shown in Figures 1–3, a series of primary macroeconomic indicators confirms this conclusion.

Figure 3. Rupiah per US dollar rate



Note: a). 1997 Crisis: t0 = July 1997 and t17 = December 1998
b). 2008 Sub-prime crisis: t0 = August 2008 and t14= October 2009
c). t1 represents a period one month after t0
Source: CEIC database

During the 1997 crisis, the Indonesian economic growth rate contracted sharply into negative territory a mere two quarters after the onset of the crisis, and remained at negative growth rate for the following five quarters. In the last quarter of 1998 the economy contracted at an unprecedented rate of –18.3 percent (year on year). In contrast, the real GDP growth during the GFC slowed only gradually and mildly in the following three quarters, and quickly bounced back in the third quarter of 2009. Most

importantly, there was clearly no threat of contraction in the country's GDP during the recent GFC.

The severity of the AFC was evident from the skyrocketing inflation rate, hitting over 82 percent year on year in September 1998. On the contrary, the price level remained in a single-digit level for most of the GFC: the inflation rate did rise to a double-digit level, at around 12 percent year on year in September 2008, but quickly weakened to 2.4 percent year on year in November 2009. The nominal exchange rate of rupiah against the US dollar was another key barometer of the severity of the AFC in Indonesia. The currency depreciated very sharply during the 1997/98 crisis, from around Rp2,559 per US dollar in early July 1997 (two weeks before the full blown speculative attack on the rupiah) to reach Rp14,900 per US dollar by June 1998, a span of 11 months. The rupiah depreciated during the GFC by slightly over 30 percent from August to November 2008, but recovered most of the loss swiftly by early January 2009.

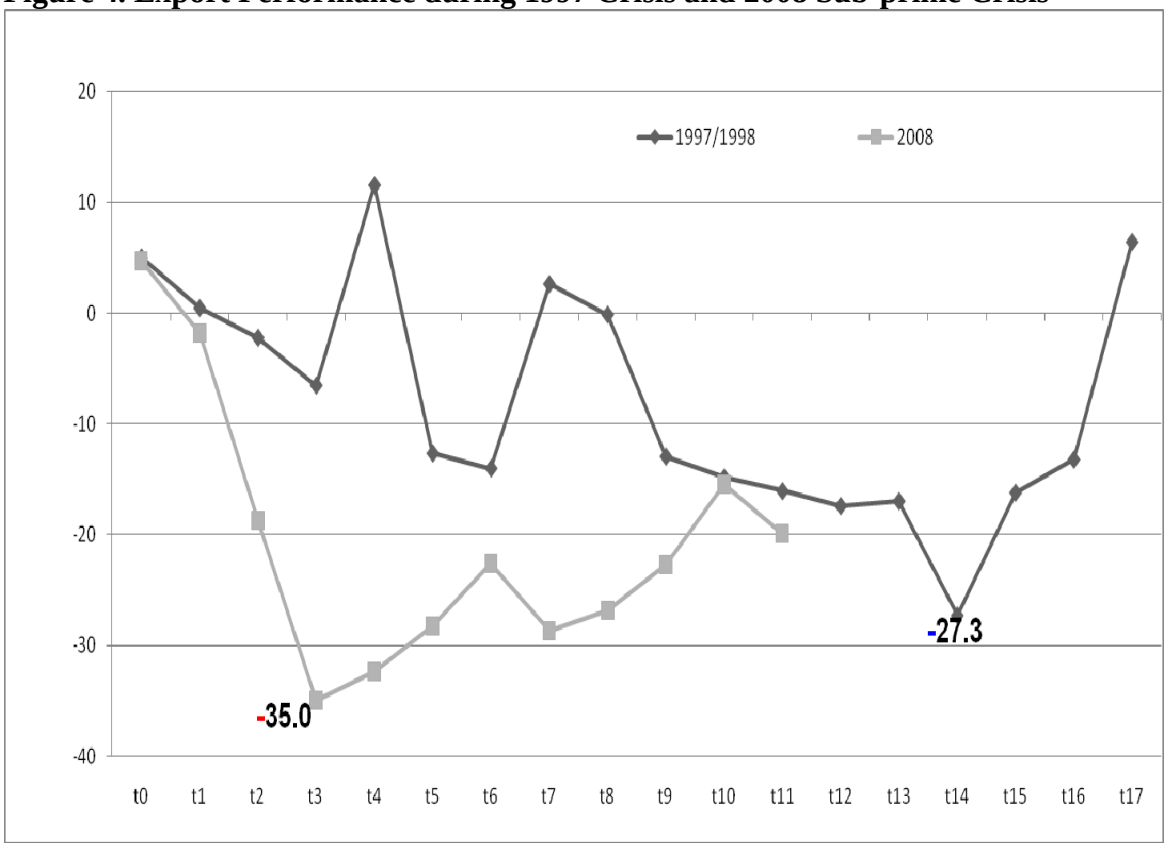
However, Indonesia's exports experienced a massive beating, despite the stable income (GDP) and price levels (inflation and exchange rate) (Table 2). The total export value contracted by around 35 percent year on year within three months after the initial decline in October 2008. The 1997/1998 crisis saw a more gradual meltdown of the export sector. It took about 14 months for the total export value to reach its nadir, reporting around 27 percent contraction year on year by the end of 1998. Similarly, the recovery process was much quicker during the AFC (Figure 4). What explained the severe collapse of the export in the recent crisis? Did export credit decline more sharply during the recent crisis vis-à-vis the 1997 AFC?

Table 2. The Tales of Two Crises

	The 1997 Financial Crisis	The Sub-prime Crisis
Total Exports	–27% (Quarter 3, 1997–Quarter 1, 1999)	–38% (Quarter 3, 2008–Quarter 1, 2009)
Manufacturing Exports	–34% (Quarter 2, 1997–Quarter 4, 1998)	–35.6% (Quarter 3, 2008–Quarter 1, 2009)
Mineral and Lubricant Products Exports	–31% (Quarter 2, 1997–Quarter 2, 1998)	–51% (Quarter 3, 2008 – Quarter 1, 2009)
Total Export Credit	–38% (Quarter 3, 1997–Quarter 3, 1998)	–22% (Quarter 3, 2008–Quarter 1, 2009)
Working Capital Credit	–43% (Quarter 3, 1997–Quarter 3, 1998)	–25% (Quarter 3, 2008–Quarter 1, 2009)
Investment Credit	–26% (Quarter 3, 1997–Quarter 3, 1998)	–20% (Quarter 2, 2008–Quarter 1, 2009)

Source: CEIC database, the database of Bank Indonesia.

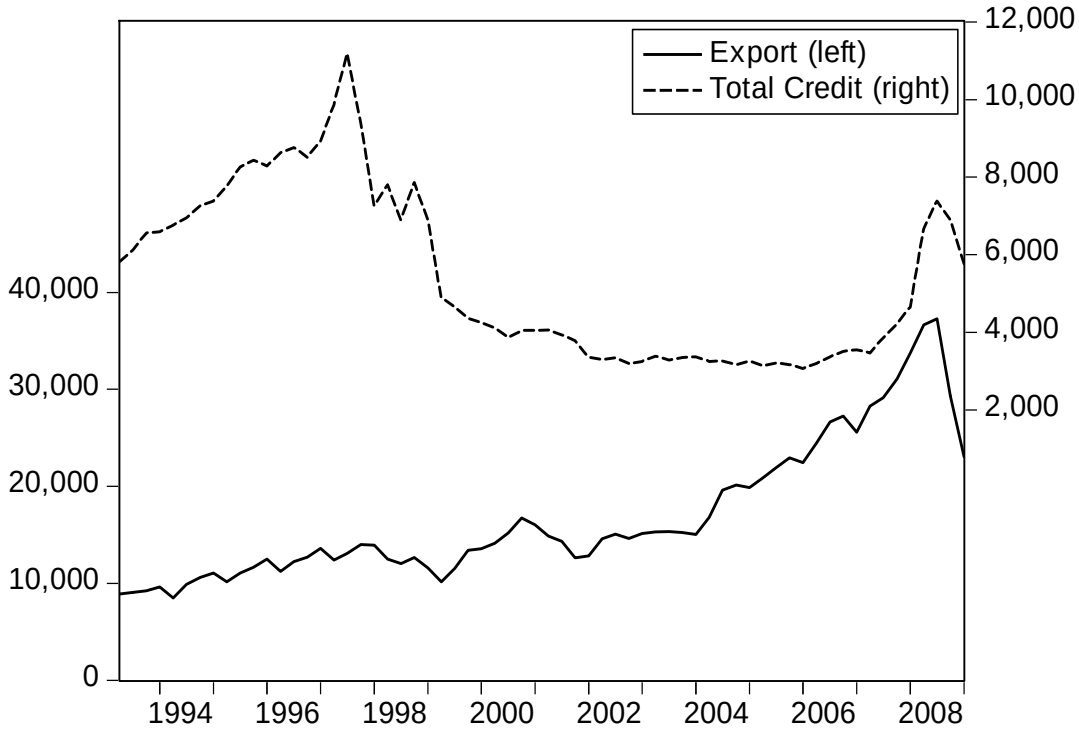
Figure 4. Export Performance during 1997 Crisis and 2008 Sub-prime Crisis



Note: a). 1997 Crisis: t0 = October 1997 and t17 = March 1999
b). 2008 Sub-prime crisis: t0 = October 2008 and t11= September 2009.
Source: CEIC database.

Figures 5 and 6 indicate that the collapse of export credit was much more severe during the 1997/1998 AFC. Although the government tried to calm panicked depositors by issuing a blanket guarantee on all banking sector assets and liabilities in February 1998, big social and political shocks in May 1998 led to a near collapse of the Indonesian banking sector. Less than two years after the start of the AFC in Indonesia in August 1997, around 64 banks were closed and a number of big banks, including state banks and large conglomerate-owned banks, were either taken over or bailed out and recapitalized.

Figure 5. Export and Export Credit of Indonesia (in million US$)

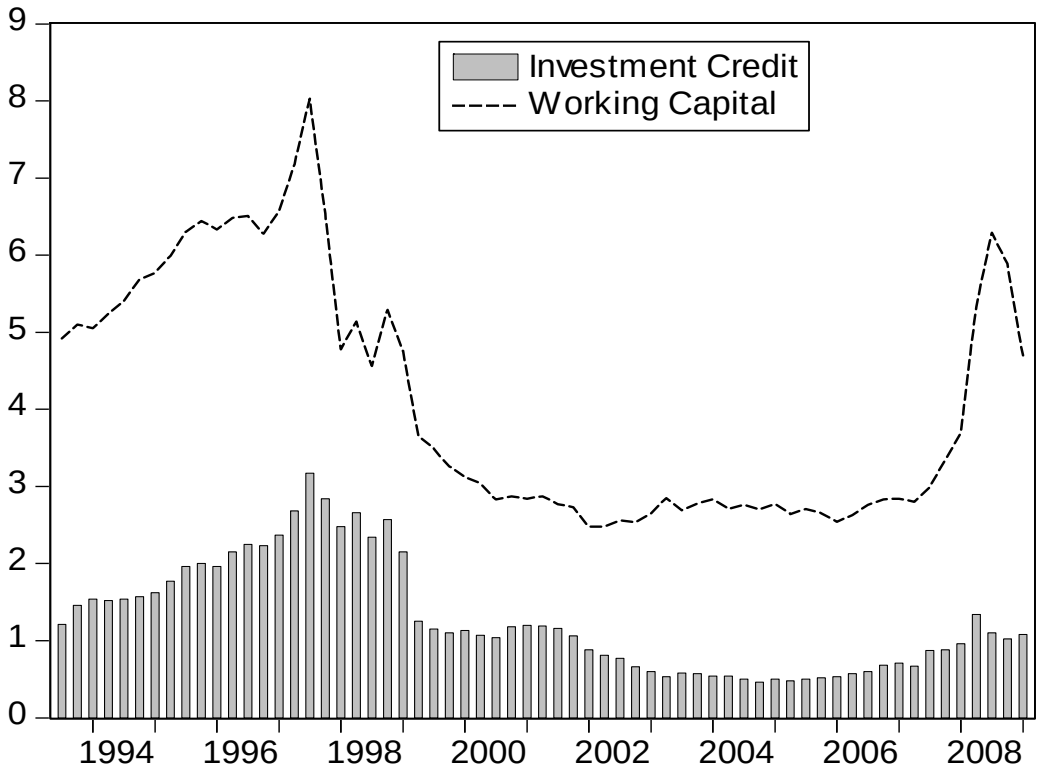


Source: Bank Indonesia.

This near collapse of the Indonesian banking sector in 1998 greatly compromised the availability of trade finance, and the collapse of many large conglomerates also reduced external trade activities (Brown and Magiera (2000)). Total export credit contracted as much as 38 percent at the third quarter of 1998 from one year ago. Both long-term and short-term financing declined sharply but short-term financing contracted more sharply,

by well above 40 percent for the same period. In general, the share of short financing (working capital) in the overall export credit averaged around 70 percent between 1997 and 1999.

Figure 6. Quarterly Decomposition of Export Credit (in billion, US$)



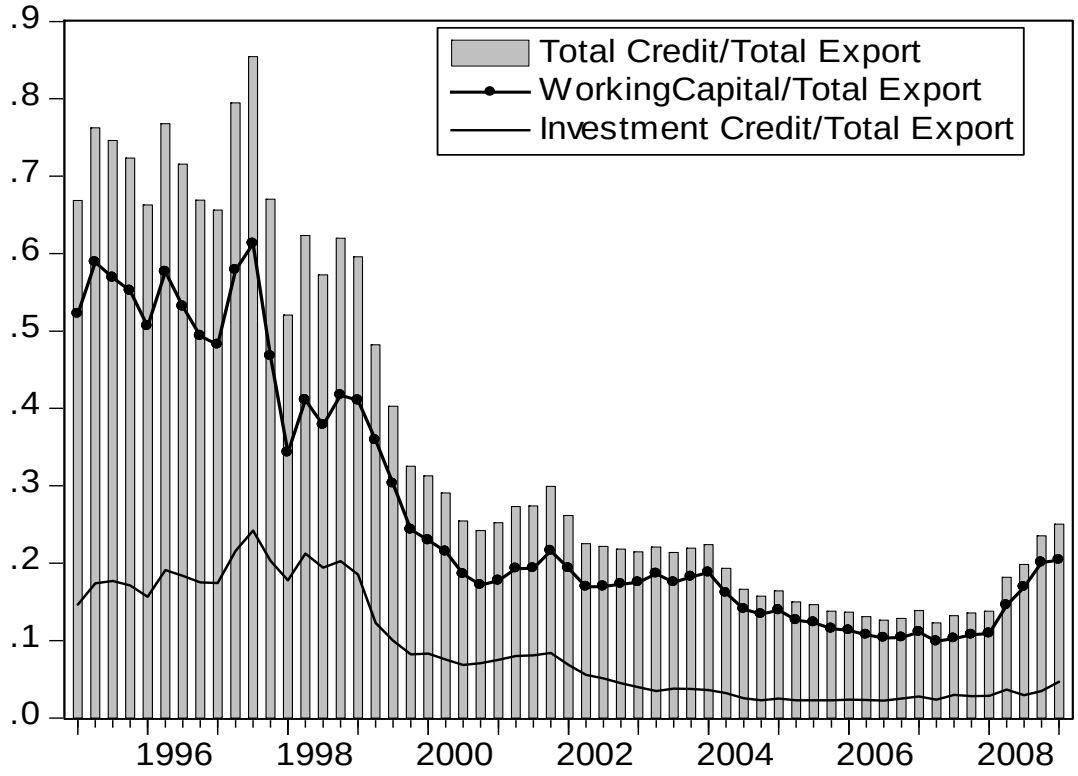
Source: Bank Indonesia

The declining trend of export credit may have stabilized by the third quarter of 1998, but the waning trend in fact continued until the first quarter of 2006. The new height of the export credit at around US$7.4 billion in the third quarter of 2008 remained well below its peak in 1997 of over US$11 billion in the third quarter of 1997. During the GFC, the export credit contracted by 22 percent, well below the sharp fall during the AFC. The tumble at its highest amounted to only slightly over US$1.5 billion between late 2008 to the first quarter of 2009, compared to about US$4.3 billion from the third quarter of 1997 to the third quarter of 1998. The decline has largely resulted from the tightening of

short-term financing. The share of working capital in overall export credit was about 80 percent from the last quarter of 2004 (Figure 6).

The above suggests that the role of export credit in explaining recent export slowdowns has weakened. Figure 7 reports the ratio of export credit and its breakdowns to total export. At its height in the third quarter of 1997, total export credit reached around 85 percent of the country's total exports. By the end of the second quarter of 2007, almost a decade later, total export credit amounted to only 12 percent of total exports. The Indonesian exporters appear to have become less and less dependent on export credit in recent years.

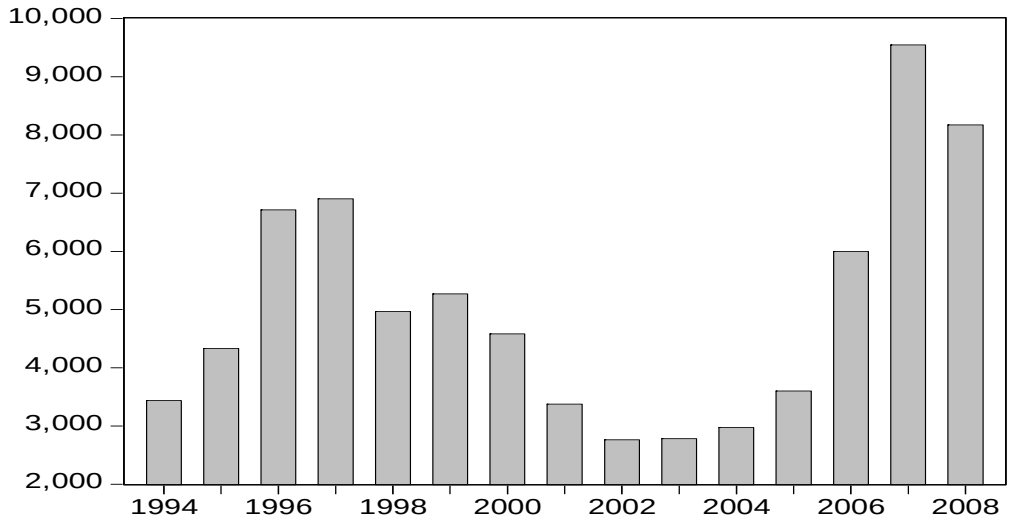
Figure 7. Ratio of Export Credit to Total Export



Source: Bank Indonesia and author's calculations.

It is interesting to note that there seems to be a strong correlation between the fluctuations of export credit and the flows of the international bank claims to Indonesia from US banks (Figures 5, 6 and 8).[3] Both of these flows dropped significantly during the 1997 AFC, followed by a mild increase in 1999 and a declining trend until 2002. The two flows finally showed a substantial upward trend in 2006. Siregar and Choy (2010) reported a similar trend for the total international claims of banks from seven OECD nations to Thailand and Indonesia. This evidence of co-movements between trade finance and international bank claims suggests that during the period of economic crisis, with bank lending drying up, including those from the international banks, the availability of trade finance should tighten as well in Indonesia.[4] Naturally, it is important to study further the direction of causality between these two flows, if any, before arriving at any firm conclusion.

Figure 8. Annual Lending to Indonesia from the US Banks (in millions of US dollars)



Source: The World Bank and the Bank for International Settlements' Databases.

[3] The total international claims of the US banks to Indonesia ranked among the top three during the period 1990–2004. Japanese banks and UK banks were the other two largest international lenders to Indonesia (Siregar and Choy (2010)).

[4] This possible relationship supports the argument extended by previous works, such as Dell'Ariccia et al. (2008), Borensztein and Panizza (2006) and Braun and Larrain (2005).

3. Empirics

3.1. Model Specification

There are two primary determinants of export demand (Dornbusch (1988); Hooper and Marquez (1993)). First is the foreign income variable that measures the economic activity and purchasing power of the trading partner country ("income effect"). Second is the relative price or the term of trade factor. Capturing the price effect in international trade, the terms of trade factor also implicitly captures the impacts of exchange rate fluctuations on export demand. As noted in above, another instrumental determinant of export performance is the availability of trade financing. Furthermore, economic crisis or downturn has also been argued to adversely affect export performance. Incorporating all of these possible determinant factors, we derive the following model specification of export demand function.

$$\Delta X_t = \alpha + \sum_i \beta_i \Delta X_{t-i} + \sum_i \delta_i \Delta TOT_{t-i} + \sum_i \theta_i \Delta GDPTP_{t-i} + \sum_i \eta_i \Delta TCR_{t-i} + \tag{1}$$

$$\sum_i \chi_i \Delta (DGDP * TCR)_{t-i} + e_t$$

where: (Δ) denotes growth rate from $(t-1)$ to (t); (X) is the export value in US dollars; (TOT) denotes the terms of trade, measured as the ratio of unit value of export over unit value of import; $(GDPTP)$ represents Indonesia's major trading partners' trade-weighted GDP (in US dollars); is the total export credit in US dollars; $\Delta(DGDP * TCR)$ represents the interactive variable of domestic GDP and export credit; and (e) is the error term and is assumed to have zero mean, constant variance and is not autocorrelated.

Theoretically, we expect $\left(\sum_i \delta_i\right)$ to be positive. A rise in the terms of trade (TOT) should have a positive impact on export growth. The inclusion of (TOT) allows us to capture the impact of price shocks in the global market, including exchange rates. Similarly, fluctuations in external demand would have consequences on export performance. To account for the external demand, $(GDPTP)$, the trade-weighted trading

partners' GDP, is included in the regression model (Equation 1). The rise in the purchasing power of trading partners, reflected by a positive growth of $(GDPTP)$, should lead to a higher demand for export products. Hence, $\left(\sum_i \theta_i\right)$ is expected to be positive. Recent works by Freund (2009) and Freund and Klapper (2009) have shown the importance of external demand shocks to be very significant.

Next, a sharp decline in trade credit (TCR) would likely have a number of adverse consequences and would therefore disrupt trade and growth performance (Wang and Tadesse (2005)). As discussed above, the availability of trade financing/credit should enable export producers to meet demand. The loss of liquidity in the trade sector may also force exporters (and importers) to obtain spot foreign exchange to make necessary payments, thereby increasing demand in foreign exchange and possibly creating delays in payment. Furthermore, exports may have high import content in some countries. In these cases, a collapse in import financing could end up adversely affecting exports. Hence, $\left(\sum_i \eta_i\right)$ is expected to be positive.

Finally, the impact of trade financing shortage during a financial crisis on export performance would likely be more severe. As discussed, studies such as Braun and Larrain (2005) have demonstrated that during recessions the performance of an industry is heavily influenced by its dependence on the availability of financing. Moreover, deeper crises (higher GDP loss) often trigger further tightening of credit, including trade credit, and in turn have much more severe adverse consequences on trade sectors.

To test the role of trade financing during the crisis on export performance, we introduce an interactive variable between the growth rates of domestic GDP and total trade credit $\Delta(DGDP * TCR)$. The growth rate of domestic GDP $(DGDP)$ captures the boom and bust of the local economy. For this study in particular, the GDP growth captures the deepness of the economic slowdown/crisis. In addition, this series is adopted instead of the frequently applied crisis dummy, to allow for a continuous time series. During the

period of economic crisis, macroeconomic volatility sharpens and causes severe restrictions to firms' access to external finance, especially from the banking sector (Braun and Lerrain (2005)). This situation in turn raises the demand for trade finance, and thus enhances the role of trade finance in explaining export performance (Nielsen (2002)).

The adoption of this interactive variable has been reported in many studies, including recent ones such as Dell'Ariccia et al. (2008) and Iacovone and Zavacka (2009). Finding a positive $\left(\sum_i \chi_i\right)$ would suggest that during a crisis or economic slowdown, the adverse impact of trade credit on the export sector would be more significant. Hence, this variable confirms the existence of the trade credit channel operating during the economic crisis. The case of Brazil in 2002 demonstrates further that the initial impact of a drop in trade credit on export performance created further selling pressure on the local currency. In turn, it worsened external debt payment and increased country risk, leading to further cut backs in all funding, including trade financing (Mori (2005)). Hence, $\left(\sum_i \chi_i\right)$ is expected to be positive.

To deepen the analysis and to further contribute to the literature in this area, I decompose the export credit into two key components, working capital $\left(TCR^{WK}\right)$ and investment capital $\left(TCR^{INV}\right)$, and test the following working model:

$$\Delta X_t = \alpha + \sum_i \beta_i \Delta X_{t-i} + \sum_i \delta_i \Delta TOT_{t-i} + \sum_i \theta_i \Delta GDPTP_{t-i} + \sum_i \lambda_i \Delta TCR_{t-i}^{WK} + \sum_i \gamma_i \Delta TCR_{t-i}^{INV} + \sum_i \chi_i \Delta\left(DGDP^{*}TCR\right)_{t-i} + e_t \quad (2)$$

The objective here is to further examine which particular kind of export credit that Indonesian exporters have been relying on more for delivering their final products. In their papers, Fisman and Love (2003) and Iacovone and Zavacka (2009) claim that long-term financing, i.e. investment credit, hurts export performance during a crisis. The latter study looks at panel data of around 23 banking crisis episodes between 1980 and 2000

across 21 developed and developing countries, including Indonesia. To my knowledge, however, no empirical study has looked into this issue on the individual case of Indonesia.

Next, I further extend previous research by testing the contribution of investment and working capital export credits in the overall performance of two major groups of Indonesian exports, manufacturing exports $\left(X^{MAN}\right)$ and the export of minerals and lubricant products $\left(X^{MIN}\right)$. Since the terms of trade for manufacturing and for mineral and lubricant product exports are not available, I exclude the $\left(TOT\right)$ variable from the following modified export demand model:

$$\Delta X_t^{MAN/MIN} = \alpha + \sum_i \beta_i \Delta X_{t-i} + \sum_i \theta_i \Delta GDPTP_{t-i} + \sum_i \lambda_i \Delta TCR_{t-i}^{WK} + \sum_i \gamma_i \Delta TCR_{t-i}^{INV} + \qquad (3)$$

$$\sum_i \chi_i \Delta\left(DGDP^{*}TCR\right)_{t-i} + e_t$$

Note for both working models (2) and (3), the interactive variable, $\Delta\left(DGDP*TCR\right)$, is included to capture potential impacts of crisis on exports and potential structural break in the regressions.

3.2. Data and Empirical Testing

3.2.1. Data

In general, the raw data series are sourced from the CEIC database and the IMF-IFS, unless otherwise noted. The observation set included in the empirical testing covers the period from the last quarter of 1993 to the second quarter of 2009. This period is dictated by the availability of export credit data $\left(TCR\right)$, which is sourced from the Bank Indonesia database. The total export series $\left(X\right)$, the manufacturing export $\left(X^{MAN}\right)$ and the mineral and lubricant export $\left(X^{MIN}\right)$ are in US dollars and were all obtained from the CEIC database. The terms of trade series $\left(TOT\right)$ is calculated as the ratio of unit value of export over unit value of import. The real trading partners' GDP $\left(GDPTP\right)$ is the trade-

weighted combination of the GDPs of the top three major export destination countries of Indonesia. The $(GDPTP)$ variable is computed by the following standard formula:

$$GDPTP = \omega_1 GDPTP_1 + \omega_2 GDPTP_2 + \omega_3 GDPTP_3 \quad (4)$$

$$\omega_1 = \frac{X_1}{(X_1 + X_2 + X_3)} \quad (5)$$

$$\omega_2 = \frac{X_2}{(X_1 + X_2 + X_3)} \quad (6)$$

$$\omega_3 = \frac{X_3}{(X_1 + X_2 + X_3)} \quad (7)$$

where: $(GDPTP_1)$, $(GDPTP_2)$ and $(GDPTP_3)$ are the GDPs for trading partner countries #1, #2 and #3, respectively. Accordingly, $(\omega_1, \omega_2, \omega_3)$ are the trade weights for trading partners #1, #2 and #3, respectively. Lastly, (X_1), (X_2) and (X_3) are the exports of Indonesia to country #1, #2 and #3, individually. The first two major export destinations during the sample period are the United States of America and Japan. The People's Republic of China has emerged as a key trading partner for Indonesia.[5] However, we do not have a complete set of quarterly GDP data for China. Instead, Korea is listed as Indonesia's third major trading partner.

The variable $\Delta(DGDP * TCR)$ is computed as the first difference of the product of the quarterly domestic GDP $(DGDP)$ and the quarterly trade credit (TCR). All variables in the regression equations (1)–(3) are log-normalized.

[5] For most of the Southeast Asian nations, including Indonesia, Singapore has also been a key trading partner and a primary export destination. However, exports to Singapore from Indonesia are largely going to be re-exported Hence, Singapore is not the final main destination of the export goods from Indonesia, thus I do not include Singapore.

3.2.2. Empirical testing

In this study, I employ the frequently applied Autoregressive Distributed Lag (ARDL) testing with the general-to-specific approach (Hendry, 1974).[6] The ARDL testing includes lags up to four quarters.[7] The combination of ARDL and the general-to-specific approach allows us to start from the general model by including all key explanatory variables and their time lags supported by various theoretical frameworks. The general-to-specific procedure is then adopted to reduce the complexity of the model by eliminating the statistically insignificant variables. This process should ensure the consistency of the final reduced model. The final outcomes of the ARDL and general-to-specific should enable us to capture not only the significant determinants and eliminate the insignificant ones, but also to arrive at the number of lags/periods needed for the impacts of changes in the explanatory variables on the dependent variable.

Before conducting the ARDL testing, I test the unit root properties for each of the variables in equations (1)–(3). To anticipate the possible presence of structural breaks, I employ Banerjee et al. (1992) (henceforth BLS) in addition to standard unit root tests, i.e. the ADF test, the Phillip Perron test and the KPSS test.[8] Depending on the unit root properties of the series, I then test for the possible cointegration relationship among the variables at their levels. If a cointegrating relationship is found, then the error correction component series (ECM_{t-1}) will be included in the ARDL testing.

A battery of test statistics will be reported to ensure that the coefficient estimates are valid and robust. In addition to the standard F-statistics to confirm the significance of one or more explanatory variables, I also report the Breusch–Godfrey serial correlation

[6] The application of the ARDL approach with the general-to-specific approach is common. Recent studies applying the ARDL framework include Siregar and Goo (2010), Campa and Goldberg (2002) and Gagnon and Ihrig (2004).

[7] Pesaran and Shin (1999) suggested up to two lags for annual data. Since I work with quarterly data, I expanded the lags up to four.

[8] The BLS provides a more in-depth investigation of the possibility that the aggregate economic time series can be characterized as being stationary around 'a single or multiple structural breaks'. It extends the Dickey–Fuller *t*-test by the construction of the time series of rolling computed estimators and their t-statistics. Following the BLS procedure, I compute the smallest (minimal) and the largest Dickey–Fuller *t*-statistics.

LM-test statistics to verify that autocorrelations in the residuals are not a problem in any of the regressions.

4. Key Results and Lessons Learned

Based on our set of unit root tests, all relevant series included in equations (1)–(3) are found to be non-stationary and integrated of order 1 at their level ---I(1) series.[9] Hence, we cannot rule out the presence of a cointegrating relationship among the variables presented in Equation (1) for all three countries' cases. The standard Johansen cointegrating test is carried out. Based on the trace statistics, no robust cointegrating relationship is found at the 5% level of significance. The number of lags included in the cointegrating for each country case is determined by the Akaike Information Criterion (AIC).[10]

The overall ARDL test results are reported in Tables 3–6. The adjusted R^2 values suggest that the explanatory variables can clarify around 18 to 69 percent of the quarterly changes in the export values of Indonesia. The F-statistics confirm that one or more of the independent variables are non-zero. In addition, the Breusch–Godfrey serial correlation LM test statistics confirm that no autocorrelation in the residuals is found in any of the three regressions. In general, the coefficient estimates of the explanatory factors are theoretically consistent. Next, we return to the set of policy-relevant issues motivating this study.

Has the Indonesian export sector been dependent on export credit during the past two decades? In particular, did export financing contribute to the boom and bust of the two

[9] For the sake of brevity the test results of the unit root testing are not reported, but they can be made available upon request.

[10] Based on the AIC, each of the cointegrating tests includes around two to three quarter lags. No robust cointegrating relationship is reported at the 5% significance level from any of the three countries' test results. A weak cointegrating result is found at the 10% level for total export demand (Equation 1). I consider this a weak case because the relationship exists only when we consider lags beyond four quarters. For the sake of completeness, I include the error correction component into the regression equations. However, I do not find the error correction component to be significant in all regressions.

major export groups in the country, the manufacturing and mineral exports? The evidence is robust that export credit has indeed contributed significantly to the export performance of Indonesia during most of the last two decades. However, the test results also suggest that the size of the contribution of export credit to the boom and bust of the country's exports has been modest. The sum of the total export credit coefficient for total exports $\left(\sum_i \eta_i\right)$ is reported at (0.04) or equal to (0.744+(–0.875)–0.172) (Table 3). That is, a one percent increase in export credit would only translate into an increase in exports of less than 0.04 percent. It is worth noting too that the impacts of changes in trade credit on the performance of exports in Indonesia was felt immediately within the same quarter (t) and lasted up to four quarters $(t-4)$.

Table 3. Total Export Credit on Total Export
Dependent Variable: (ΔX)

Variable	Coefficient	Std. Error	t-statistics
(ΔTOT_t)	0.713	0.341	2.091**
(ΔTCR_t)	0.744	0.132	5.633***
(ΔTCR_{t-1})	–0.875	0.149	–5.876***
(ΔTCR_{t-4})	0.172	0.077	2.220**
$(\Delta GDPTP_{t-2})$	0.960	0.365	2.633**
$\Delta(DGDP*TCR)_{t-1}$	–1.784	0.494	–3.612***
(α)	0.021	0.009	2.369**
Adjusted R-squared: 0.443		Prob (LM-test): 0.409	
F-statistics: 8.677		Prob (F-statistics): 0.000	

Note: * significant at 10%; ** significant at 5%; *** significant at 1%.
Source: Author's own calculation

Furthermore, *was working capital more critical than investment capital in explaining the performance of the country's exports?* When we decompose the export credit into working capital and investment capital, the robust results suggest that Indonesian exporters depend more predominantly on working capital. The importance of working capital is highlighted by the immediate impact (within the same quarter) that it has on

exports and the persistence of the impact (lasting up to four quarters). None of the regressions has in fact shown any significant role of investment credit (Tables 4–6). This finding contradicts the results posted by Fishman and Love (2003) and Iacovone and Zavacka (2009), where they find the importance of long-term financing (i.e. investment credit), but not working capital.

Consistent outcomes with the case of total exports are reported when we consider two major groups of Indonesian exports, namely manufacturing and mineral fuels and lubricants. Exporters of both export groups have been significantly dependent only on working capital. As reported for the case of total credit, the role of working capital has been modest. The sums of the coefficients for working capital $\left(\sum_i \lambda_i\right)$ are only (0.10) for the case of manufacturing exports (Table 5) and (0.05) for the case of mineral and lubricant exports (Table 6). As far as the timing, however, trade credit fluctuation has more immediate and short-term impacts on the growth rate of mineral and lubricant exports than on that of manufacturing exports.

Table 4. Working and Investment Export Credit on Total Export
Dependent Variable: (ΔX)

Variable	Coefficient	Std. Error	t-statistics
(ΔX_{t-1})	0.293	0.053	5.571***
(ΔTCR_t^{WK})	0.457	0.091	5.042***
(ΔTCR_{t-1}^{WK})	–0.278	0.139	–1.990*
(ΔTCR_{t-2}^{WK})	–0.299	0.135	–2.212**
(ΔTCR_{t-4}^{WK})	0.216	0.101	2.132**
(ΔTOT_t)	0.688	0.210	3.259***
(ΔTOT_{t-3})	0.469	0.251	1.871*
(ΔTOT_{t-4})	–0.489	0.271	–1.809*
$(\Delta GDPTP_t)$	–0.405	0.210	–1.926*
$(\Delta GDPTP_{t-3})$	0.619	0.226	2.738***
$\Delta(DGDP^*TCR)_t$	1.489	0.364	4.083***
$\Delta(DGDP^*TCR)_{t-2}$	–1.456	0.436	–3.343***
$\Delta(DGDP^*TCR)_{t-3}$	1.208	0.415	2.907***
(α)	0.021	0.005	3.963***
Adjusted R-squared: 0.689		Prob (LM-test): 0.601	
F-statistics: 10.572		Prob (F-Statistics): 0.000	

Note: * significant at 10%; ** significant at 5%; and *** significant at 1%.
Source: Author's own calculation

Next, did the economic and financial crisis amplify the role of export credit in sustaining exports? With the exception of the case of mineral exports, the remaining test results robustly concluded that indeed economic downturn or crisis amplified the dependence of Indonesian exporters on export credit. This result confirms the claim that during economic slowdown, tightening of liquidity in the economy will also affect the trade sector.

Table 5. Working and Investment Export Credit on Manufacturing Export
Dependent Variable: $\left(\Delta X^{MAN}\right)$

Variable	Coefficient	Std. Error	t-statistics
$\left(\Delta TCR_{t-2}^{WK}\right)$	–0.514	0.194	–2.654***
$\left(\Delta TCR_{t-3}^{WK}\right)$	0.613	0.193	3.182***
$\left(\Delta GDPTP_{t-1}\right)$	–1.041	0.431	–2.416**
$\left(\Delta GDPTP_{t-2}\right)$	1.579	0.452	3.490***
$\Delta\left(DGDP^{*}TCR\right)_{t-4}$	1.017	0.543	1.872*
$\left(\alpha\right)$	0.0009	0.017	0.052
Adjusted R-squared: 0. 341		Prob (LM-test): 0.110	
F-statistics: 6.991		Prob (F-Statistics): 0.000	

Note: * significant at 10%; ** significant at 5%; and *** significant at 1%.
Source: Author's own calculation

In addition to the above findings, our test results confirm the importance of two primary determinants of export demand, namely income and price factors. The total sum of the coefficient estimates for trading partner income variable $\left(GDPTP\right)$, as captured by $\left(\sum_i \theta_i\right)$, however, ranges from (0.538) for manufacturing exports, $\left(\sum_i \theta_i\right)$ to (0.641) for mineral and lubricant exports. The results may fail to capture the true coefficient estimates for income factor $\left(GDPTP\right)$ as the selection of three trading partners, namely the US, Japan and Korea, was based on the individual shares of total Indonesian exports to those three countries. It is possible that these three countries are not among the top three destinations of Indonesian manufacturing exports. Regrettably, we do not have detailed breakdowns by country of destination of Indonesia's manufacturing exports and mineral and lubricant exports to select more appropriately the top three partners and calculate their individual weights for each group of exports.

Given the importance of the export of commodities and raw materials in the overall export sector of Indonesia, the terms of trade should play a crucial role in explaining the demand for Indonesian exports. As discussed above, we do not have the individual terms-of-trade series for the manufacturing and mineral export groups. Hence, I could

not examine the importance of the price factor for those two major groups of exports. The limitation with the data may have contributed to the relatively low levels of adjusted R-square for the individual groups of exports (Tables 5 and 6).

Table 6. Working and Investment Export Credit on Mineral & Lubricant Export
Dependent Variable: $\left(\Delta X^{MIN}\right)$

Variable	Coefficient	Std. Error	t-statistics
$\left(\Delta X_{t-2}^{MIN}\right)$	–0.393	0.140	–2.801***
$\left(\Delta TCR_{t}^{WK}\right)$	0.313	0.102	3.065***
$\left(\Delta TCR_{t-1}^{WK}\right)$	–0.262	0.110	–2.373**
$\left(\Delta GDPTP_{t-2}\right)$	0.641	0.379	1.686*
$\left(\alpha\right)$	0.026	0.015	1.758*
Adjusted R-squared: 0. 175		Prob (LM-test): 0.167	
F-statistics: 4.283		Prob (F-Statistics): 0.004	

Note: * significant at 10%; ** significant at 5%; and *** significant at 1%.
Source: Author's own calculation

5. Policy Response[11]

Two policy approaches are often implemented in Indonesia to support the export sectors during economic downturns. The first set pays particular attention to ensuring the availability of trade financing. The second set of policies concentrates on areas that enhance the competitiveness of the sector. Given its relevance, I begin by reviewing policy efforts to ensure the adequacy of export financing.

To provide post-shipment guarantees and to reduce the liquidity risks of exporters, commercial banks were allowed to sell (re-discount) export receivables (drafts) to Bank Indonesia, starting in December 2008. Furthermore, to increase on-shore supply of US dollars and to protect against risk of counter-party default, in January 2009 the Indonesian government issued a regulation on mandatory use of a Letter of Credit (L/C) for export payment for certain products (i.e. coffee, CPO, cocoa, rubber, mining

[11] This section greatly benefits from the valuable contribution of Anton H. Gunawan of Bank Danamon, Indonesia.

products and tin), stipulating that this payment was to be done through on-shore foreign exchange bank.

The effectiveness of these two policies has been somewhat limited. Until late 2009, only a few banks participated and sold their export receivables to Bank Indonesia. Similarly, the implementation of the L/C policy has been postponed three times because it was rejected by the exporters of those commodities. The latest schedule of implementation is expected to be in July 2010. It is unlikely that it will result in a significant rise in the L/C payment. Data from the Bank Indonesia has in fact demonstrated that there has been a decline in the use of L/C as an export payment since the first half of 2008 (Table 7).

In addition, Lembaga Pembiayaan Ekspor Indonesia (LPEI) was legally established in January 2009 to replace the state-owned Bank Ekspor Indonesia (BEI), which was established in September 1999 to provide financing and co-financing, and to guarantee facilities for international trading activities. The BEI, operating as a state bank, was ineffective in giving out loans since, like any other commercial bank, it relied on mostly short-term deposits to fund lending. Hence, during economic downturns the institution faced significant tightening of its third party liabilities (deposits).

The LPEI, which will operate under the name Indonesia Eximbank, was initially expected to open its office in July 2009, but was delayed until September 2009. Despite its name, the LPEI is not a commercial bank, thus cannot take third-party deposits. It is a state agency with government backing to provide financing, insurance, guarantees and consultancy services to exporters. Its authorized capital of at least Rp4 trillion is in the form of government equity participation. The government may add another Rp2 trillion equity participation in the first half of 2010. This additional capital can be used as a guarantee for as much as six to 10 times additional business credit extension, estimated around Rp12 to 20 trillions. This is possible, since besides extending credit directly and export insurance, the LPEI is also allowed to give credit guarantees.

Table 7. Types of Export Payments (in millions of USD)

Types	2000	2001	2002	2003	2004	2005	2006	2007	Jan-08	Feb-08	Mar-08	Apr-08	May-08
1. Letter or Credit	13,294	11,329	10,791	9,976	10,082	10,787	12,498	12,868	1,028	1,031	1,092	1,033	1,153
2. Others	35,189	31,908	34,130	36,582	44,222	55,223	67,594	79,731	7,876	7,237	7,934	7,477	8,362

Source: Bank Indonesia

If warranted, the LPEI may raise capital by issuing bonds or borrowing from international multilateral or bilateral agencies. In October 2009, the LPEI received almost Rp1 trillion (or slightly above US$100 million) in a trade-financing loan from the Japanese government through the Japan Bank for International Cooperation (JBIC), with an interest rate of LIBOR plus 230bps, maturing in five years, and a grace period of two years. JBIC has committed to extend up to US$500 million of loans to LPEI to support its business credit growth plan. In 2009, the LPEI was expected to give trade financing of as much as US$1.35 billion, roughly around 17% of the total national commercial banks' capability. The LPEI has also set a target of trade-related loan growth at 60 percent in year 2010, which is much higher than the overall banking sector loan growth target of 17–20% set by Bank Indonesia.

The injection of capital to the LPEI was part of a series of major fiscal stimulus packages initiated in 2008–2009 (Gunawan and Siregar (2009)). Given the important role of short-term export financing, namely working capital, liquidity provision from fiscal stimulus for export activities has ibeen an appropriate strategy to bridge much-needed temporary financing constraints facing exporters. However, due to limited data and information available, further studies are warranted to examine the overall effectiveness of Indonesia Eximbank.

As indicated above, another set of policy efforts has concentrated on enhancing the competitiveness of the export sector during the global financial slowdown. One particular policy adjustment targeted a key commodity export, namely crude palm oil (CPO). Seeking to raise domestic supplies of CPO-based cooking oil, the government imposed a high exports tax on CPO when the price of CPO skyrocketed between late 2007 and the first half of 2008. However, starting in the third quarter of 2008, the CPO price experienced a sudden and sharp decline. To support the industry the government eliminated (or reduced to zero) the exports tax on CPO in November 2008.

Furthermore, the government launched a one-stop service for processing import and export documents/procedures at a number of key ports around Indonesia. Coordinated with 25 government agencies, it is known as the National and ASEAN New Single

Windows (NSW). The pilot project was completed in 2007 in Batam, followed by a similar undertaking at Tanjung Priok port in Jakarta in 2008. This development involves standardizing documents/business processes for flows of documents, and integrating port clearance procedures for flows of goods. The final target is to have on-line application, processing and electronic manifests. The government has also been trying to establish a new registration system as part of its NSW program, leading to a better database system that will benefit the business community. The new system is expected to shorten the registration process to within a seven-day period. By late 2009 the new registration system has approved around 75 percent of traded commodities.

6. Brief Concluding Remarks

Despite an overall much stronger economic outlook during the recent global financial crisis, Indonesia's export sector suffered a more severe decline than during the 1997 Asian financial crisis. This study evaluates the role of export credit in explaining the performance of the export sector in Indonesia. I am particularly concerned with the role of this financing facility during the economic downturns. The test results found robust evidence that export credit contributed to the boom and bust of the export sector in Indonesia. However, the results also suggest that the size of the contribution is modest at the most. The significance of export credit has indeed magnified during the crisis. Furthermore, it is short-term financing, not investment capital, which has been detrimental to the performance of the export sector in Indonesia. Similar conclusions are reported when I examined the two largest export groups in the country.

Two traditional determinants of export demand remain the most significant contributing factors, namely income and price factors. The slump of the economies of the major trading partners weakened demand for Indonesia's exports. Finally, the country's exports have been highly sensitive to the uncertainties and volatilities in the price of major commodities in the world market.

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