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Abstract

The threat of the subprime crisis in the United States began to make itself felt in early 2008, with its effects subsequently become global. It is evident that trade linkages have been the most important channel for transmitting the subprime crisis to East Asian countries, including Thailand. The international trade literature points out that trade concentration is considered to be an important factor in the amplification of the effects of the crisis. Thailand was still greatly affected by the recent crisis even though its direct exports to the G3 markets, i.e., the United States, the European Union and Japan, has been declining during the past 40 years. In fact, international trade linkages could be both directly and indirectly linked through international supply chain production. In this paper, the authors attempt to measure the importance of total trade concentration, which includes the effects through indirect linkages, and its connection to the transmission of external shocks experienced by the Thai economy. By constructing an algorithm that calculates total trade linkages, the authors find that Thailand still has high exposure to the G3 markets. Simulation using the CGE model has also confirmed that the country was, in fact, seriously affected through indirect channels. The results also show that the high concentration of domestic forward linkages in certain areas leads to those industries accumulating the effects of external shocks from financial crisis.

Keywords: trade concentration, crisis transmission, export diversification, backward linkages, and financial crisis

JEL Codes: F14, F41, F42

Introduction

The subprime crisis in the United States started at the beginning of 2008 when more than 100 mortgage-lending companies went bankrupt. The crisis is considered to be the worst financial catastrophe since the Great Depression. It has led to a sharp contraction in global trade and caused a worldwide recession. Due to strong financial and economic linkages between the United States and many countries around the world as well as the massive size of the United States' economy, the subprime crisis has been transmitted worldwide. Trade linkages are presumed to have been the most important channel for the transmission of the crisis to East Asian countries, including Thailand.

Apart from direct trade channels, the crisis has also caused a severe drop in indirect intraregional trade in parts and components, especially in the East Asian region. Most of the industrial production in East Asia – i.e., automobile and parts, computers and parts, and electronic and electrical appliances – is done through international production networks (IPNs), where production is fragmented into several stages and carried out in various countries, depending on the comparative advantages. Therefore, a decrease in the demand for final goods in the G3 countries – the United States, the European Union and Japan – has resulted in a drop in exports of parts and components in the region via IPNs.

Thailand depends heavily on exports, which accounted for 64 per cent of its GDP in 2007. About 33 per cent of Thailand's total exports in 2007 were to G3 destinations. Thailand has played a vital role as a major production base in ASEAN's IPNs with regard to the assembly of parts and components. Because 28 per cent of its total exports are parts and components serving these types of networks, Thailand has high exposure to G3 economies, via both direct and indirect trade. As a result, the country has experienced severe effects from the subprime crisis. Thailand's total exports dropped by 14 per cent in 2009, with exports to G3 destinations declining by 20.7 per cent. Consequently, industrial production, particularly in the major exporting industries, and private consumption decreased by 5.2 per cent and 2.5 per cent, respectively. The Thai economy moved into recession in the fourth quarter of 2008. These statistics led to the hypothesis that the subprime crisis had affected the Thai economy, with international trade being the most important channel of transmission.

In fact, the international trade literature points out that both geographical and commodity trade concentration are considered to be among the important factors leading to the amplification of the crisis transmission effects via international trade channels. Using the gravity model, Da Costa Neto and Romeu (2011) considered the impact of exports, destination and intra-industry concentration on export performance in Latin American countries during the subprime crisis; they found that export concentration significantly amplified trade collapse during the crisis while destination concentration played an insignificant role in helping to relieve the impact of the crisis spillover on trade.

Regarding export concentration in Thailand, Hesse (2008) showed that the country had experienced a decline in export concentration during the past 40 years. During that period, the country moved from an agricultural and resource-based economy to become a manufacturing exporter. However, the export data for Thailand still shows that export concentration is in the country's major manufacturing sectors such as computers and parts, automobiles and parts, and electrical parts and appliances. These products may also share similar export destinations as well as backward and forward linkages. In addition, many Thai manufacturing exports comprise intermediate goods that may be re-exported to G3 destinations, i.e., the so-called indirect trade effect. Therefore, when the indirect effect is taken into account, Thailand's destination concentration may be high, especially in terms of exposure in the G3 economies. Hence, trade concentration could be one reason why the subprime crisis had a serious impact on Thailand, despite the fact that the country has very weak financial linkages with the United States.

To consider whether trade concentration, with the presence of the indirect trade effect, played a vital role in the spillover to Thailand of the 2008-2009 global financial crisis, the authors first computed the Herfindahl index in order to find the product and destination concentration of Thai exports using the Harmonized System (HS) classification of trade data at the 2-digit level. Next, the trade matrix was computed to identify Thailand's total trade dependence on, and concentration in the G3 countries, including indirect trade, i.e., trade in components and parts which will be used in the production of final goods that will also be re-exported to G3 destinations. The calculation of such a trade matrix will help to reveal the true destination concentration of Thailand's exports to the G3 economies. In addition, the authors explored the forward linkages, using the input-output matrix, in order to reveal the impact of export concentration on related industries. Finally, information was extracted from the Global Trade Analysis Project (GTAP) model and used to reconstruct a model that could decompose the total effect of external shocks on the Thai economy into direct and indirect effects. The results illustrate the importance of trade concentration in the crisis transmission to the Thai economy when the indirect trade effect is taken into account.

Section 1 of this paper reviews related literature. Section 2 explains the conceptual framework and methodology. Section 3 provides the results of the study while the conclusion is given in section 4.

1. Literature review

This section considers the previous literature regarding trade diversification and transmission of financial crises. The related literature is divided into three groups: (a) the importance of trade diversification in international trade theories; (b) the possible transmission channels of financial crises; and (c) the linkages between trade diversification and transmission of financial crises.

(a) Importance of trade diversification

Even though there is no room for product diversification in traditional trade models such as Ricardo's comparative advantage and the Heckscher-Ohlin model, the new trade theories such as Krugman (1979a) and Helpman (1981) applied the "love of variety" approach with monopolistic competition and a representative consumer, with preference given to differentiated products. Therefore, such diversification results in the higher welfare of economies. Krugman (1979a) also showed that trade liberalization induced higher diversification, which promoted welfare gains.

Furthermore, endogenous growth models such as those used by Grossman and Helpman (1991) and Matsuyama (1992) show the importance of diversification in economic development via innovation stimulation and a learning-by-doing process. Amin Guitierrez de Pineres and Ferrantino (2000) suggested that export diversification could create knowledge spillovers, leading to diversification-led growth. Krugman (1979b) and Agosin (2007) also developed models to support the fact that export diversification brings about higher growth from the process of technological transfer and imitation of existing products from the more developed countries. Coe and Helpman (1993), Van Meijl (1997) and Das (2002) showed that technological spillovers were induced by export diversification through a study of new products or techniques.

Considering the empirical literature on the relationship between export diversification and growth, the debate is continuing on whether diversification promotes economic growth. Al-Marhubi (2000), and Maloney (2003), and Herzer and Nowak-Lehmann (2006) found evidence that supported diversification-led growth.
In contrast, Imbs and Wacziarg (2003), Cabellero and Cowan (2006), and Klinger and Lederman (2006) showed that countries benefitted from diversification when their incomes were low and that they graduated towards a more specialized economy at the higher income level. Nevertheless, the empirical evidence and theoretical literature support the theory that export diversification yields higher growth in