Does globalization affect the insurance markets? Bootstrap panel Granger causality test

Tsangyao Chang [a], Shu-Ching Cheng [b], Guochen Pan [c,*], Tsung-pao Wu [a]

[a] Department of Finance, Feng Chia University, Taichung, Taiwan
[b] Department of Economics, Feng Chia University, Taichung, Taiwan
[c] Department of Insurance and Risk Management, Wuhan University, Wuhan 430072, China

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ABSTRACT

This study applies the bootstrap panel Granger causality test to identify whether globalization promotes insurance activity using data from Sigma reports of the Swiss Reinsurance Company of 8 Eastern Asian countries over the period of 1979–2008. Empirically, results for one-way Granger causality show the influence of insurance activity on globalization only in Japan. However, there is strong interaction causality between globalization and insurance activity in India, South Korea, and Thailand. In our research, the results show that the causality between globalization and insurance activity varies across countries under different conditions. The findings of this study could provide important policy implications for the 8 Eastern Asian countries under study, namely India, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, and Thailand.

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1. Introduction

The relationship between globalization and economic growth has been widely discussed in the literature (Chang and Lee, 2010; Dreher, 2006; Dreher et al., 2008). Recent studies have argued that economic growth is strictly determined by globalization, and have given plenty of evidence to policymakers. In the existing literature, the connection between globalization and economic growth is not fully discussed yet, and most empirical results vary according to data and econometric methodology. There is no universally held view of nature of causality between globalization and economic growth. Therefore this paper uses new methods to analyze bilateral causality between globalization and economic growth.

In a recent study, Dreher (2006) used a panel data model to discuss how a single globalization dimension affects economic growth; Dreher collected the data of 123 countries during the period from 1970 to 2000. After calculating the overall index and sub-indexes of globalization variables, the results showed that globalization indeed promotes economic growth. The effects of globalization on economic growth have also been frequently found in other papers by the same index of measurement. Only recently have many studies examined this connection between globalization and economic growth by

applying a cross-sectional approach (Alesina et al., 1994, 2000; Blomstrom et al., 1992; Chanda, 2001; Dollar, 1992; Garrett, 2001; Rodrik, 1998). However, these studies have not adequately controlled the problem of endogeneity. The results might therefore reflect unobserved characteristics, which do not vary over time and are not the consequences of globalization; further, they might reflect reverse causality. Aware of the shortcomings of the cross-sectional approach, some studies have used the panel data approach to examine the relationship between various dimensions of globalization and growth (Borensztein et al., 1998; Carkovic and Levine, 2002; Dollar and Kraay, 2001; Greenaway et al., 1999).

During the past two decades, we have witnessed an unprecedented growth in insurance market activity, particularly in the emerging markets. The functions of the insurance market not only facilitate a number of economic transactions by risk transfer and insurance indemnification, but also promote financial intermediation. Ward and Zurbruegg (2000) argued that insurance market activity may contribute to economic growth. They found that financial intermediation, risk transfer, and insurance indemnification tend to allow lower financial risk and efficient management of domestic savings. According to Chen et al. (2012), in the last two decades the worldwide insurance industry has become a prominent portion of the service sector. Insurance has grown at a rate of over 10% annually since 1950. This growth rate has far exceeded that of economic development globally (Dowling, 1982; Swiss Re, 2010; UNCTAD, 1972, 1991). Browne and Kim (1993) revealed that, during this period, the life insurance industry has

grown at a rate of approximately 30% annually, while the non-life insurance industry has grown at a rate of 19% annually. Beck and Webb (2003) clarified that the life insurance markets have provided a wide range of financial services for consumers and have become a major source of investment capital. They provided empirical evidence to the effect that between 1980 and 1985, the total assets of life insurance companies accounted for only 11% of GDP for a sample of 13 countries, but from 1995 to 1997 they accounted for 28% of GDP in the same sampling. Life insurance penetration was 1.2% from 1961 to 1965 for a sample of 19 countries, but it reached 4.2% from 1996 to 2000. The insurance industry has long been known as the risk management service provider for the financial sector. Indeed, the operations of insurance companies have made essential contributions to the development of the banking industry, especially in secured lending. The insurance sector improves international trade as well as commerce across countries and generates bank revenues. Furthermore, insurance companies, with their long-term premium system, may invest in local bond and stock markets, thereby causing the local economy to boom. Thus, insurance industry has grown into a significant part of economy; positive effects of insurance related activities on economic growth are identified and confirmed by researchers.[1]

While most previous studies have discussed on how globalization or insurance activity impacts economic growth, none of these studies have examined how globalization affects insurance activity.[2] Existing studies document the possible influence of globalization on the insurance market from a theoretical perspective (Enz, 2000).[3] In this study, we empirically verify the impact of globalization on the insurance sector. We test for the existence of any bilateral causality between globalization and insurance activity (i.e., insurance density or real insurance premiums per capita) by using a bootstrap panel Granger causality test for a sample of 8 Eastern Asian countries over the period from 1979 to 2008.

To the best of our knowledge, this paper is the first study to use a new panel Granger causality approach based on the seemingly unrelated regression (SUR) model and Wald tests with country-specific bootstrap critical values followed by Kónya's (2006) empirical method to explore the relationship between globalization and insurance activity in Eastern Asian countries.[4] This new methodology makes it possible to investigate Granger-causality for each individual panel country separately, while accounting for possible bias and cross-sectional inconsistencies that may occur in our panel data.[5] We hope that this study can bridge the gap in the current literature between globalization and insurance activity.

The bootstrap approach has not been used in previous insurance literature. It is widely known that the bootstrap approach produces robust critical values (Hacker and Hatemi-J, 2005).[6] To detect causality between globalization and insurance activities, we utilize the panel causality approach since the information for the panel data set consists of not only a time series dimension but also a cross-sectional dimension. This advantage of panel data analysis has made the non-stationary

panel tests (unit root, cointegration, and causality) popular for econometrics. In recent years, the economic or financial instability of one country has been shown to spread to other countries through international trade and economic and financial integration. This emphasizes the importance of the cross-sectional dependency issues considered in our empirical analysis. Even though there is strong evidence of dependence across countries, it is well-known that each country sustains its own dynamics in economic development; this fact calls attention to the need for an empirical modeling strategy that can control cross-country heterogeneity and dominance. Accordingly, the panel causality method that we utilize is able to control for dependency across countries as well as for country-specific characteristics. In this paper, we follow a systematic modeling strategy to examine causality between globalization and insurance activity. We also test for cross-sectional dependence and cross-country heterogeneity by using recently developed and statistically powerful tests instead of assuming the existence of these dynamics in our panel data set. We contribute to the existing literature by addressing these two concerns.

The structure of this paper is organized as follows: Section 2 presents the data, and Section 3 briefly describes the bootstrap panel Granger causality test proposed by Kónya (2006). Section 4 shows empirical results, and Section 5 discusses economic and policy implications from our empirical findings. Section 6 is the conclusion.

2. Data

The data used in this study is from Sigma reports from the Swiss Reinsurance Company between the period from 1979 to 2008 for 8 Eastern Asian countries (India, Indonesia, Japan, Malaysia, the Philippines, Singapore, South Korea, and Thailand). The variables used in this study include the overall Globalization index (*Glob*), the real insurance density (*D* for insurance activity), and the per capita real GDP (*PRGDP*).[7] We follow Dreher (2006) and use Globalization index[8] as a proxy variable for globalization. Dreher (2006) divided globalization into three dimensions: economic integration, social integration, and political integration, the details of which are shown in Dreher et al. (2008). In our study, we only focus on the overall Globalization index, which consists of economic globalization (36%), social globalization (38%), and political globalization (26%). This index is taken from the KOFI Index of Globalization website (http://globalization.kof.ethz.ch/).[9]

Insurance companies offer many types of products, which can be roughly divided into life and non-life insurance (both also known as general insurance, Chen et al., 2012). Life insurance, in its general form, is guaranteed to pay a specific amount of indemnification to a beneficiary after the insured's death or to the insured who lives beyond a certain age. In contrast, non-life insurance includes all other types of insurance, such as property–liability insurance, motor vehicle insurance, marine insurance, etc. In this study, we employ a measurement of *Density*[10] as a proxy variable for insurance market activity and select

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[1] Sumegi and Haiss (2008) provide a comprehensive review of the relationship between insurance and economic growth.

[2] The difference between our study and that of Lee and Chang (2012) is that ours uses the bootstrap panel Granger causality model. Lee and Chang (2012) is the first empirical paper to examine the influence of the KOF index of globalization on the development and convergence of international life insurance markets by applying a panel cointegration technique. They found that globalization has a significant impact on the development of international life insurance markets and an impact on reducing the deviation of individual country's life insurance penetration from the world average.

[3] Enz, 2000 indicates that increased globalization in the insurance sector might bring a movement towards the world average.

[4] We select Eastern Asian countries as samples, because Eastern Asian countries have exercised considerable economic power and have played important roles in the world economy in the past few decades.

[5] Bai and Kao (2006) demonstrated that the assumption of cross-sectional independence is difficult to satisfy in a panel data; neglecting this information causes bias and inconsistent results.

[6] Hacker and Hatemi-J (2005) argued that a bootstrap distribution reduces size distortion compared with an asymptotic distribution by using Monte Carlo simulations.

[7] We use per capita numbers for two following reasons. First, per capita numbers are less sensitive to territorial changes. Second, per capita numbers provide variables in the same units for large and small countries and they control for the scale of the economy.

[8] Globalization index ranges between 0 (not globalized) and 100 (globalized).

[9] Kacowicz (1999) claimed that globalization means many different things for different people with an intensification of economic, political, social, and cultural relations across borders. Park et al. (2002) also notice that on the basis of multi-layer perspectives of globalization, a large body of research has identified that globalization is constructed out of complex interactions among social, political, and economic processes together with materiality. This multi-scalar viewpoint shows that globalization is not only a process of economy, but is also constituted by social and political activities. Therefore, we use the overall Globalization index in our study to test the causality between globalization and economic growth. See Dreher (2006) for details on how to construct the index.

[10] Density is defined as the ratio of Total insurance premium to total population. In order to be consistent with per capita real GDP, we estimate Density in real term (i.e., CPI 2005 is viewed as base period) in this study.