



# Interdependence of income between China and ASEAN-5 countries

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## Abstract

**Purpose** – The purpose of the paper is to empirically examine the interdependence of income between China and ASEAN-5 countries by using the real gross domestic product (GDP). Besides answering this important policy question, the paper is also concerned with ascertaining the causal direction between China and the ASEAN-5 income.

**Design/methodology/approach** – The paper resorts to the standard time series econometrics analysis. These includes the unit root, cointegration and the Granger causality tests in order to test the causal interplay and interdependence of income between ASEAN-5 and China for the estimation period from 1960 to 2003 obtained from the Penn World Table (PWT) 6.2.

**Findings** – Empirical results are found to support the strong interdependence of income between China and ASEAN-5 countries. Further, the causality experiment suggests that China is the key factor in connecting (equilibrium point) the ASEAN-5 region, where China in one-way or another marks the resemblance of the income amongst these economies.

**Originality/value** – The paper is of value in that it highlights the issue of interdependence of income especially in developing countries. With the increasing interest of economic integration around the globe especially the China-ASEAN Free Trade Area (CAFTA), the interdependence and synchronization movements of income between member countries is an important characteristic for suitability towards the regional common currency goal.

**Keywords** China, South East Asia, Free trade, Income, International cooperation

**Paper type** Research paper

## 1. Introduction

The rapid development of the People's Republic of China has drawn much attention in recent years. Being prosperous and holding pride as the second largest world economy (after the USA) in recent years, its gross domestic product (GDP) stood at USD10.21 trillion in 2006[1]. There had been annual consistent high growth rate averaging above 10 percent in China for the past decade and this had significantly caused an outburst upon the world economies. This is particularly true especially among its neighboring regional economies of the ASEAN-5 (Indonesia, Malaysia, Philippines, Indonesia and

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Singapore) whereby the fast moving development of China does have an impact on its neighboring economies. Nevertheless, it becomes a concern among these nations (Abeysinghe and Lu, 2003). Over the past decade, trade relationship between China and ASEAN had been influenced mainly by the growth and expansion of both economies, especially soon after China's drive towards economic modernization. There was respectable growth in total trade value (import + export) in which from around USD8 billion in year 1991 to over USD40 billion in year 2001. In 2007, the trade figure hit USD202.6 billion, while ASEAN has become China's fifth largest trading partner next to the USA, Hong Kong, Japan and the European Union. The long-time good neighborhood relationship has laid a solid foundation for their mutual economic development and greater potential for trade cooperation.

Alarmed by the growing competition from the European Union (EU), North America Free Trade Area (NAFTA) and other mushrooming free trade areas in the world, a nascent sense of an East Asian community is emerging as these countries realize that they must cooperate to tackle common challenges in this increasingly borderless and interdependent world. In this regard, this paper empirically examines the interdependence of income between China and ASEAN-5 countries from 1960 to 2003 by using the real GDP. We will also be ascertaining the causal direction between China and the ASEAN-5 income, which will provide useful mechanism as to how these economies could explore the possibility towards regional integration[2]. In reaching these objectives, we resort to the standard time series econometrics analysis. This includes the unit root, cointegration and the Granger causality tests in order to test the causal interplay and interdependence of income between ASEAN-5 and China.

With the motivation and objective in place, this paper proceeds as follows: Section 2 provides a brief discussion of the literature, covering the concept of income convergence. Section 3 presents the description of the data and the empirical results. Finally, Section 4 concludes the paper with remarks and further implications for empirical research.

## 2. Brief review: convergence hypothesis

We borrow the convergence hypothesis concept as a representation of the interdependence interaction of income among countries within a region or a continent. The convergence hypothesis are built upon the theoretical underpinnings derived from Solow's (1956) work on the neoclassical growth model, in which it postulated that differences in initial income do not have long-term effects on growth, where initially poor economies are able to catch up with the richer economies. As for the empirical investigation, the income convergence literatures are mainly centered on two different approaches, namely the cross-sectional (see, Baumol, 1986; Barro, 1991; Barro and Sala-i-Martin, 1991, 1992; Mankiw *et al.*, 1992; Engelbrecht and Kelsen, 1999; Dobrinsky, 2003) and the time series analysis (see, for example, Evans and Karras, 1996; Loewy and Papell, 1996; Li and Papell, 1999; Tsionas, 2000; DeJuan and Tomljanovich, 2005; Le Pen, 2005; Yau and Heung, 2007). Only recently, empirical investigations of the income convergence on the developing nations have become increasingly available in the literature. Authors such as Park (2000a, b, 2003), Zhang *et al.* (2001); Lim and McAleer (2004), Kim (2005), Lee *et al.* (2005), Liew and Lim (2005) conducted studies on the Asian countries while Ferreira (2000), Holmes (2005), Galvao and Gomes (2007) and Lima and Resende (2007) had focused mainly on the Latin