



# Economic transition and demand pattern: Evidence from China's paper and paperboard industry

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## Abstract

In this study, we investigate the demand pattern and structural changes during the economic transformation using data from the paper and paperboard industry in China. Instrumental variable estimations as well as co-integration analysis and error correction models are applied to the analysis. Our results show that in the early stages of economic reform before 1993, the demand did not respond to price changes; while in the later stages, the demand shows significant responses to its own-price and the price of international markets. In particular, since 1992, the own and cross-price elasticity of demand for domestically made paper and paperboard products becomes, respectively,  $-0.69$  and  $0.59$ , in the range found in some market economies. We also find that imports are substitutes for domestically made paper and paperboard products, but the reverse is not true; and in the later stage of economic transition, the reliance on international market has increased, as reflected by the lower price elasticity of imports.

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## 1. Introduction

China's economic transition since 1979 is characterized by rapid economic growth, gradual transformation into a market system, and increasing integration into the world economy. The complex economic dynamics during the transition period affects every aspect of the economic system, including industry demand structure. Understanding the demand for a particular industry is important for policy makers and for the industry stakeholders; as an emerging international

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market, China is also of especial interest to foreign producers and investors who are ready to tap into the Chinese market.

Moreover, the economic transition and market reforms may add new features to industry demand, and thus poses new questions in studying the demand structure. Over the period of 1979–2001, continuing economic growth and economic reforms have dramatically changed the Chinese economy, providing an opportunity to investigate the demand dynamics. If the economy becomes increasingly market oriented and open, it is expected that the demand responses to price and to international markets would increase. Some studies, such as Young (2000), however, indicate that the Chinese economy has become fragmented internally as a result of economic reform. The demand dynamics for a particular product group will at least shed light on the overall degree of market mechanism in the Chinese economy.

This study investigates the demand for paper and paperboard products in China. The paper and paperboard industry represents Chinese traditional industries. A common feature of a traditional industry in China is that most firms in this industry were state-owned or other publicly owned and thus operated under the government planning system that did not use profits or return on investment as a metric for success. The economic reforms forced state-owned enterprises to adopt more market oriented approaches and are increasingly employing market-related criteria to evaluate the success of the enterprise. This change is having a greater impact on traditional industries (with inefficient organizational structures) relative to ‘new economy’ industries, such as information technology (IT), which suffer considerably less from these ‘legacy costs’. Moreover, traditional industries are facing increasing competition from international producers as China gradually opens its markets. Therefore, given the combined effects of increasing international competition and market reforms, the demand pattern has important implications for any traditional industry.

At the same time, China possesses a huge market potential for paper and paperboard products. Chinese total paper and paperboard consumption is currently ranked second in the world, only behind the U.S. The consumption of paper and paperboard products in 2001 reached 42.6 million metric tons, increasing at an average annual rate of 10.38% over the last 20 years.<sup>1</sup> By comparison, the average growth rate of the U.S. paper and paperboard consumption over the same period is 1.85%.<sup>2</sup> China’s imports of paper and paperboard products grew at an average annual rate of 12.7% for the period 1979–2000, and the share of imports in the consumption increased from 9% to 17% for the same period. In 2001, China imported 5.57 million tons of paper and paperboard products, almost double the amount in 1995.

However, in comparison with the worldwide average of per capita consumption of 53.8 kg and the U.S. per capita consumption of 331.7 kg, China’s per capita paper and paperboard consumption remains very low, at 28.4 kg in 2000. Therefore, as the Chinese economy grows, spurred on by continuing economic reforms and an increasingly literate population, the demand for paper and paperboard products will increase rapidly. In addition, with the entry into the World Trade Organization (WTO), China import tariffs are expected to fall from 12–15% to 5% for most paper and paperboard grades over the next few year. Overall, there is every expectation that China will be one of the major markets for international pulp and paper producers.<sup>3</sup>

Currently China’s small-scale mills and outdated technologies limit its ability to satisfy the growing demand. Its capacity and output are scattered among numerous small mills. On average, Chinese paper mills produce less than 6500 tons/year, while the world average is over

<sup>1</sup> Consumption, import and capacity are defined in metric tons throughout this study.

<sup>2</sup> The statistics source is *FAO Statistical Databases*.

<sup>3</sup> “China and Taiwan Lower Import Tariffs for Pulp, Paper and Board”, available at: <http://www.paperloop.com>.

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