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Imports and growth in China ☆

M.J. Herrerias [a,*], Vicente Orts [a,b]

[a] Department of Economics, Universitat Jaume I, Spain
[b] Institute of International Economics, Universitat Jaume I, Spain

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ABSTRACT

In this paper, we analyze the role played by imports and investment on labor productivity and output in China from 1964 to 2004. In doing so, our analysis focuses on the role of technological progress incorporated into the Chinese economy through capital accumulation and imports, which could be a cause of significant technology transfer from abroad that facilitated industrialization and rapid growth in China. However, as we know that there could be other factors influencing economic development, we have also considered the role played by domestic innovation activities, competitiveness and foreign economic conditions. We focus on examining the short- and long-run effects of the considered variables as well as the direction of their causality. In addition, we investigate the role played by the exchange rate on growth and discuss some policy implications of this effect on the current debate on the appreciation of the Yuan. The empirical results provide evidence that both imports and investment encourage output and labor productivity in the long run, but neither investment causes imports nor imports cause investment. Moreover, we found that during the period considered the real exchange rate influenced output, but not productivity. These findings provide interesting insights on the future Chinese economic policy.

1. Introduction

In economic terms, the growth of China has been remarkable for almost four decades. Capital accumulation and export promotion policy have been widely analyzed in the literature as one of the main sources of this rapid economic growth (Chow, 1993; Herrerias and Orts, 2010; Siebert, 2007). The Chinese economy, with its singular characteristics, followed the strategy begun by other rapidly developing Asian countries (East Asian Miracle countries) that highlight their rapid export promotion as a central channel enhancing economic growth (World Bank, 1993). However, the endogenous growth literature emphasizes the role played by imports rather than exports in economic growth.[1] In these models, imports (through access to capital goods and intermediate goods from technologically more advanced countries) have become a form of technology transfer and a source of competition that stimulates the competitiveness of domestic industry. Nevertheless, there are other studies, like Rodrik (1995), which suggest that the increase in growth rate in Asian countries was mainly in response to variations in investment, trade (and specially imports) being a consequence rather than a cause of rapid economic growth. In this paper we analyze the role played by imports and investment on labor productivity and output in China from 1964 to 2004 and we try to disentangle the nature and direction of possible relationships between imports, investment, output and productivity. To the best of our knowledge there is no empirical evidence that analyzes the role played by imports as a source of long-run growth in China, and this work aims to fill this gap.

Furthermore, China is an interesting case of study because, in spite of the general perception about the decisive role played by exports in the process of growth, in our view, this was not the only factor responsible for its fast growth. Instead, we believe that the promotion of exports, which is beyond question, could have encouraged imports by allowing foreign equipment and intermediate inputs to be acquired from abroad, thus making it an important factor in the growth of China over the last four decades. In fact, some authors, like Hsu (1989) or Shi (1998), argued that the importation of foreign technology has played a key role in the process of industrialization in the Chinese economy since the fifties. Thus, one of the main objectives of the Chinese government has been to gain access to advanced foreign technology and equipment. This strategy has been constant throughout the study period (1962–2004), although developed through different stages. First, in the mid-sixties, there was a

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* Corresponding author at: Department of Economics, Universitat Jaume I, Castellón, Spain.
E-mail addresses: herreria@eco.uji.es (M.J. Herrerias), orts@eco.uji.es (V. Orts).

[1] See the models proposed by Grossman and Helpman (1991), Lee (1995) or Mazumdar (2001), to cite just a few.

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change in the suppliers of imported capital goods, from Russia to Western countries (Japan, USA and European countries), which facilitated access to more advanced technology. Second, during the pre-reform period, the strategy of imports was concentrated on the importation of complete plants and equipment to establish the productive capacity, and during the post-reform period it was concentrated on renewing and updating existing obsolete production facilities. In 1980s the Chinese policy on technology imports changed significantly to become "in line with and a part of the overall economic reform program and the 'open-door' policy". Although imports diversified in comparison to the pre-reform period, capital goods, as key pieces of equipment and production lines, still accounted for a very large share of foreign exchange spending (Shi, 1998). These changes attempted to make a more efficient use of economic resources. Finally, the decentralization process and the market forces were gradually introduced to replace the central planning. This period was characterized by an increase in the presence of the non-state sector (Township and Village Enterprises and foreign investment).

Thus, the analysis of the role of imports in China's growth is also a way to focus on the role of technological progress incorporated into the Chinese economy through capital accumulation and imports, which could be a cause of significant technology transfer from abroad that facilitated industrialization and rapid growth in China. Furthermore, we also examined whether the rapid growth of the Chinese economy since the mid-sixties can be explained mainly by an *import-led* growth effect (in line with the predictions of the endogenous growth theory) or, on the contrary, it is investment that drives economic growth in China, and trade (especially imports) is more a consequence of growth than a cause, as Rodrik (1995) suggested. Moreover, our analysis provides some insights on the current debate on the convenience of a substantial increase in the value of the Yuan and its implication on economic growth.

In recent years, the Chinese government has received external pressures to appreciate the Yuan and this has become one of the most important debates on the international scene.[2] It is well-known that the Chinese exchange rate has been kept strongly undervalued in order to promote exports, at least until the mid-2000s,[3] and this has resulted in substantial current account imbalances around the world. Although even the most radical advocates of the need for a substantial appreciation of the Yuan recognize that there are other causes responsible for the current account imbalances, the idea that China should revalue its currency is widespread in the rest of the world. At the same time, the Chinese authorities are hesitant about the idea of appreciating the Yuan, since they are convinced that the deterioration in demand for their exports would slow their economic growth. And only recently, since 2005, has the Yuan begun a significant appreciation. This appreciation comes close to the real exchange rate in force from that year onwards, although this new trend is far from being able to fully offset 40 years of undervaluation.

Nevertheless, if imports were one of the channels through which the policy of openness to trade generates its growth gains, the revaluation of the Yuan would have a positive effect on growth rather than slowing it down. There are two reasons for this. First, because it would eliminate an implicit tax on imports, the revaluation of the Yuan would make imports cheaper and this in turn would enhance economic growth. Second, because it would restrain exports, the revaluation of the Yuan would also give greater prominence to domestic demand for growth.

Finally, we employed the VAR methodology for two reasons: first, to distinguish between the long-run and short-run relationships and, second, to avoid endogeneity bias in our estimates, given that it is based on a joint modeling of all the variables considered. The empirical results provide evidence that both imports and investment encourage output and labor productivity in the long run. However, neither investment causes imports nor imports cause investment, both of them playing an independent and positive role as sources of economic growth. Moreover, we also found that R&D expenditure encourages investment in the long run. Last but not least, it was found that throughout the period considered the real exchange rate influences output, but it does not affect labour productivity as expected. These findings provide interesting insights on the future Chinese economic policy, since appreciating the Chinese currency should be a complementary strategy to alleviate the economic constraints and encourage growth.

The rest of the paper is organized as follows. Section 2 contains the literature review. Section 3 shows the description of the variables considered and the methodology. Section 4 presents the empirical results. Comments and conclusions are given in Section 5.

2. Literature review and theoretical considerations

Economists have been interested in the differences in growth rates across countries and the causes that lead to some countries growing more than others for some time. To examine these issues, they have employed different theoretical frameworks, from the neo-classical growth model up to more recent models based on endogenous economic growth. Both approaches consider technological progress to be a key factor in enhancing long-run growth, but while technological progress is considered to be exogenous in the traditional model of growth, in the endogenous growth models technological progress is not considered as a purely random process but rather as one that is determined by the internal forces of the system.

In particular, the endogenous growth theory grants a greater role to technological progress, in both developed and developing countries. We can find technological progress embodied in capital goods, in formal innovation activities, in the abilities of human capital or in improved efficiency in the organization of production. However, as argued by Grossman and Helpman (1991), in the less developed economies, the scant activity in commercial R&D or the scarcity of original discoveries that are relevant to the world economy could make us believe that technological progress does not play a significant role in the growth and development of an emerging economy. But as these same authors remark: "Yet the process of industrialization in these countries does involve substantial technical change, in the sense that producers gain mastery over products and processes that are new to the local economy".[4] Of course, developing countries are unable to produce most of the machinery and equipment required by the industrialization process, and their economic growth depends on imports of such goods. In this way, imports play a similar role to that of R&D activities in developed countries, that is, they help developing economies to be able to acquire foreign technology from R&D intensive countries (Busse and Groizard, 2008; Caselli and Wilson, 2004; Coe et al., 1997; Eaton and Kortum, 2001; Lee, 1995; Mazumdar, 2001).

In short, if we agree that new technologies are usually embodied in intermediate and capital goods, it is through capital accumulation that these new technologies are incorporated into the production processes and become an engine of growth for the economy. Therefore, for developing countries, the imports of these intermediate and capital goods from technologically more advanced countries are a way to directly improve both the efficiency of domestic production processes and their own processes of innovation and growth.[5] However, there is no reason to think that this process of international learning is easier, inevitable or automatic — it depends on domestic strategy and on the absorptive capacity of the recipient economy.[6]

Thus, even if less developed economies import foreign technologies, the process of assimilating and spreading these technologies to the rest of economy, and thus the effect on own growth, depends on a large variety of factors. These include initial technological capabilities of the domestic economy, the role played by the government in negotiating with

[2] See Cline and Williamson (2009).

[3] The estimated undervaluation prior to 2005 was around 50%, but this estimation is about 10% when data until 2008 are considered. See Cheung et al. (2009).

[4] Grossman and Helpman (1991), p. 12.

[5] See for example Aghion and Howitt (1998, 2005) or Grossman and Helpman (1991).

[6] See Keller (2004).