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Does China's trade expansion help African development? — an empirical estimation ☆

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ABSTRACT

This paper uses Comtrade panel data to assess the impacts of imports from China, in comparison with those from the United States and France, on Sub-Saharan African manufactured exports (as proxies of production performance). It is found that Chinese impacts are significantly positive in all sectors and in general Chinese impacts are stronger than those of the United States and France. A South–South trade theoretical framework is then explored to interpret this finding: When the absorptive capability of a poorly-developed country is quite limited and (or) a sizeable substitution effect of importing intermediate goods on this country's local production is present, it is better to import from a Southern country with a superior technology than from a Northern country with a very advanced technology. Therefore, my finding has provided evidence that China's increasing trade with Africa is helpful to African economic development.

1. Introduction

The expansion of China–Africa trade has been one of the most remarkable events in the developing world (Alden, Large, & Soares de Oliveira, 2008; Manji & Marks, 2007; van Dijk, 2009). In the face of the rapid development of China–Africa trade links, a question emerges as to its impacts on both sides, in particular on Africa. Until now, the research on this topic has mostly adopted a macroeconomic approach. While there exist major regional and sectoral differences (Asche & Schuller, 2008), China's presence in Africa is judged positively in terms of the impacts on balance of payments, saving, growth rate, investment, and government budget (Broadman, 2007; OECD, 2006). According to OECD (2002), between 1950 and 2000, as one of the world's most open regions, Africa's share of world GDP, measured in terms of PPP, fell by a third, that of exportation by two thirds, and that of FDI from 6% to 1%. This downward trend can be largely explained by the changes in the terms of trade. Since the mid-1990s, however, most African countries have realized an average GDP growth rate of more than 4%, and it increased steadily between 2000 and 2009. In 2007, growth was at a record high of 5.5% (OECD, 2008). China's trade expansion enables Africa firstly to improve its terms of trade by increasing the demand for African exports, in particular on its natural resource goods, and secondly to reduce its internal inflation with cheap Chinese manufactured goods (Alden, 2007; OECD, 2006).

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There are, nevertheless, few empirical studies focusing on the impact of Chinese trade on African manufacturing sectors. Two directions for the studies of this impact are the direct bilateral trade links between African countries and China, and the indirect impact — the impact of trade competition from China in third-country markets. Several works (Edwards & Jenkins, 2005; Stevens & Kennan, 2006; World Bank, 2004) based on sector-level studies, or on a complementarity index, conclude that, except for a few sectors, the imports of Chinese goods by African countries have trivial negative impacts on local African producers, and Chinese exports have small impacts on African exports to third countries. These studies, nonetheless, have been criticized for being too aggregated and for hiding important specific impacts that can be found only with firm-level methodologies. Kaplinsky, McCormick, and Morris (2007) cite several studies illustrating that a high percentage domestically-produced goods in such countries as Ghana, South Africa and Ethiopia are being downsized or forced into bankruptcy by imports from China.

Studies on the China–Africa trade relationship are lacking econometric tests, except a recent interesting work by Elu and Price (2010). Their parameter estimates reveal that across a panel of the manufacturing firms of five sub-Saharan African countries between 1992 and 2004, there is no relationship between productivity-enhancing foreign direct investment and trade with China. In addition, increasing trade openness with China has no effect on the growth rate of total factor productivity. The relevance of their results may be limited by the fact that they just use the ratio of trade with China to the GDP at the country level, instead of using a trade indicator with China at the sector, or at the firm level to measure the impact of this trade exerting on the firms. This study seeks to contribute to this line of work. On the basis of the Comtrade data, an econometric measurement of the impacts of imports from China on the manufactured exports of Sub-Saharan African countries (hereafter Sub-Saharan Africa and Sub-Saharan African are abbreviated to SSA) will be performed. It is notable that such manufactured exports here are just considered as proxies of the countries' production performances. In other words, by measuring the impact of Chinese-manufactured exports on SSA's exports, I intend to measure the impact of Chinese-manufactured exports on SSA's manufacturing activities. I do not directly use manufacturing production data to measure this impact because, while SSA's manufacturing production data by country, year and sector suffer from severe deficiencies, the Comtrade data are quite complete. Another question regarding the extent to which the exports from SSA countries reflect their production performances will be answered later with empirical tests in Table 5.

This paper is organized as follows. Section 2 introduces the facts about the increasing trade between China and SSA countries and provides the motivations of this work. Section 3 presents the descriptive statistics and methodology for econometric modeling, and then analyzes the regression results. Section 4, before the conclusion, explores the theoretical implication of the empirical finding.

2. Facts and motivations

According to Chinese official statistics from Table 1, China's imports from and exports to Africa, in terms of current values, have risen by more than 10 times between 2000 and 2010. The share of Chinese trade with Africa in China's total trade has also been steadily increasing.

Focusing on Chinese exports to Africa, while their values have doubled between 1990 and 1995 and between 1995 and 2000, they have much more than trebled between 2000 and 2005 and between 2005 and 2010. It is worth noting that Chinese trade expansion in Africa coincides with African countries' improving performance on growth in GDP, as OECD (2008) has mentioned, since the mid-1990s.

SSA countries' trade with China is important for their development because their growing imports and exports are two of the most powerful driving forces of their economies. Table 2 shows that even though SSA is less developed, its manufactured imports and exports have been highly dynamic and appreciably increasing.

It is also worth noting that while the difference in value between SSA's manufactures and agricultural goods exports was small in the period 1991–1995, it has become huge in the period 1996–2000, and has more than doubled in 2001–2005. The timing of this improving performance of manufactured exports also coincides with Chinese expansion of manufactured exports in SSA.

Most SSA countries belong to the less developed world. We expect technology spillovers of their imports from advanced countries. We also expect that importing from different countries, especially from two types of countries, emerging and developed, would have different impacts, depending on the quantity and the technology level of the imports from them. For the sake of evaluating China's trade impact with some comparisons, I choose two of the key trade partners of SSA: the USA and France.[1]

Table 3 presents China's shares in the imports and exports of manufactured goods of SSA relative to the USA, France, and intra-SSA exports. Its share in SSA imports has significantly increased from 4.43% in 1995 to about more than 16% in 2005, and has exceeded those of the USA and France. The imports of SSA manufactured goods by China, however, remained weak.

As this study will perform estimations at the more detailed manufacturing sector level, Table 4 gives the shares of China relative to the United States, France, and Intra-Sub-Saharan Africa in the imports of seven manufactured goods by SSA.

Table 4 confirms that the developed countries were the main exporters of equipment goods towards SSA, while China was the main exporter of textile and leather, and its exports of equipment goods were increasing significantly.

All these descriptive data confirm that China has been becoming one of the key players in SSA trade. This fact strengthens my motivation to estimate its trade impact on SSA countries' production and exportation.

This study is also motivated by an abundant literature written on North–South spillovers (Cf., Dollar, 1986; Findlay, 1978; Grossman & Helpman, 1991; Krugman, 1979). Following this literature, importation from a technologically advanced country is

[1] The UK and Germany are also two of the most important trade partners of SSA countries. In this paper they are not present in the empirical tests for two reasons: First, as the main propose of the paper is to explore China's role in SSA, I am hesitant to involve too many countries to give readers the impression that this is a comparative study. Second, I have conducted econometric tests on these countries with the same models, and the tests yield the results similar to those obtained for the United States and France.