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Rising wages, yuan's appreciation and China's processing exports

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ABSTRACT

This study investigates the impact of rising wage and the appreciation of the yuan on the structure of China's exports. China's exports are classified here as ordinary exports (OE), and two distinctive groups of processing exports, pure assembly exports (PAE) and mixed assembly exports (MAE). The data analyzed here are derived from panel data covering China's bilateral PAE and MAE with 120 trading partners from 1993 to 2013. The estimates of fixed effect models show that wage increase and the appreciation of the yuan reduced the proportion of assembly exports in China's bilateral exports. Specifically, for a 10% increase in Chinese manufacturing wages, the share of PAE in China's bilateral exports is expected to fall 4.59% and that of MAE to decrease 0.9%; and a 10% nominal appreciation of the yuan against the US dollar is expected to lower the shares of PAE and MAE 8.56% and 7.26% respectively. The empirical results imply that rising wage and cumulative appreciation of the yuan have eroded China's comparative advantage in the assembly of products for international markets, resulting in substantial contraction of assembly exports. The analysis provides a supply-side explanation for the fall of China's export growth.

1. Introduction

Exports have for some time been one of the critical engines driving the rapid growth of the Chinese economy. It is estimated that, on average, exports accounted for one third of China's annual GDP growth between 2002 and 2007 (Xing and Pradhananga, 2013). The massive expansion of exports in recent decades has transformed China into the largest exporting nation in the world. After the global financial crisis of 2008, however, the engine of exports lost steam and the growth of exports plummeted to − 2.8% in 2015 from 20% five years earlier. This suggests that the era of double-digit growth is over.

To a certain extent, weakened demand in the US, Japan and the European Union, major destinations of China's exports, substantially undermined growth momentum. The slowing of growth might also have been a result of the government's so-called "rebalancing strategy," involving a shift from export-oriented to domestic consumption-oriented growth. The scale of exports, more than $2 trillion annually, could also have reduced the pace of export expansion. On the other hand, the deceleration of exports indicates that the impact of supply factors such as yuan appreciation and persistent wage increases is worthy of investigation.

Since July 2005 the yuan value of the US dollar has decreased from 8.3 to 6.3, a 35% nominal appreciation of the yuan. Given the disparity between inflation rates in the US and China, the real appreciation of the yuan could be even higher. Moreover, wages in China have risen steadily in recent years. The average annual wage of Chinese workers has risen more than 13% every year since 2000 and surged to 54,000 yuan (around US$ 8000) in 2014. If the growth of Chinese worker productivity failed to compensate for the increase in production costs due to cumulative wage increases and currency appreciation, profit margins and export competitiveness would be undermined, hurting the growth of exports.

Processing exports, accounting for a large share of China's exports, are heavily dependent on the input of cheap labor and have a

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razor-thin profit margin. Wage increases and the appreciation of the yuan have clearly eroded the profit margins of processing exports, thus constraining the expansion of processing exports and even driving some firms specializing in processing exports to exit or relocate to third countries. The widespread bankruptcies of manufacturing firms in Dong Guan, a Chinese city near Hong Kong where many firms engaging in assembly exports have clustered, is a typical example. Some foreign companies which had been using China as an export platform began to relocate their production facilities to the home country or to third countries. The survey of Japanese External Trade Organization (JETRO) reveals that 13.5% of Japanese affiliated electronic machinery firms planned to either downsize operations in China or retreat altogether (JETRO, 2014). The exit of both domestic and foreign firms from processing exports unambiguously undercut China's export capacity, leading to the deceleration of export expansion. The proportion of processing exports in China's total exports dropped to 39% in 2013 from a peak of 55% in 2004, a significant contraction of processing exports, which had powered the double-digit export growth following China's official entry into the WTO.

The impact of wage increases and currency appreciation on exports is a classic research topic. Numerous studies have investigated the effect of exchange rates on China's exports, concentrating mainly on estimating the exchange rate elasticity of exports. Garcia-Herrero and Koivu (2009) used a co-integration technique to estimate the long-run elasticities of China's processing exports and imports to real exchange rates. Cheung, Chinn, and Fujii (2009) analyzed a similar issue over the relatively long period from 1980 to 2006. Aziz and Li (2007) emphasized dynamic changes in export elasticity. Thorbecke and Smith (2010) simulated the impact of joint appreciation of the currencies of all East Asian economies on China's processing exports. Xing (2012) argued that the processing imports of China represent external demand and should fall, not increase, as the yuan appreciates, and demonstrated how processing imports would decrease 5.0% for a 10% real appreciation of the yuan against the US dollar.

All of the studies mentioned above implicitly assume that the underlying impact of the yuan's appreciation is experienced through price mechanisms. In other words, when the yuan appreciates against foreign currencies, the prices of Chinese exports are expected to rise. This increase in prices reduces the demand by foreign consumers and thus causes a fall of exports. However, about 80% of Chinese exports are invoiced in the US dollar, so there is no automatic exchange rate pass-through mechanism for these exports. In other words, without raising dollar-denominated prices, Chinese exporters simply cannot pass the cost of the yuan's appreciation on to foreign buyers. In addition, most Chinese exporters, in particular those specializing in processing exports, have no pricing power. It is highly unlikely that Chinese manufacturers of processing exports would be able to renegotiate processing fees and pass the cost of currency appreciation on to foreign buyers or contractors.

To cope with wage increases and currency appreciation, firms usually adjust their operating strategies. Domestic firms may opt to exit the assembly business; multinational companies using China as an export platform may relocate production capacity to third countries; and foreign companies may outsource labor-intensive tasks to countries where wages are lower than in China. These adjustments not only reduce export capacity but also give rise to changes in export structure. Nevertheless, the impacts of such operational adjustments on export structure are irrelevant to, and cannot be captured by, exchange rate elasticity. Estimations of elasticity cannot determine to what extent wage increases and currency appreciation have affected export structure, nor can they measure the consequences of firms' exit from the processing export sector.

This paper investigates the impact of currency appreciation and wage increases on the structure rather than the volume of China's exports. Export structure is defined here in terms of production methods, not commodity categories. Specifically, we divide exports into ordinary exports (OE), pure assembly exports (PAE) and mixed assembly exports (MAE). OE refers to exports which generally do not involve imported parts and components, and whose value added is 100% domestically produced; PAE refers to processing exports created with supplied materials as defined by Chinese Customs; and MAE are processing exports created with imported materials. The sum of PAE and MAE is equal to the total processing exports reported in China's foreign trade statistics. The paper reports the analysis of data on China's bilateral assembly exports with more than 100 trading partners during the period 1993–2013. This is the first study to investigate the impact of wages and exchange rates on China's export structure, defined in terms of production methods.

2. Processing exports and the evolution of China's export structure

Processing exports have been a major export modality in China, contributing significantly to overall growth, e.g., from $73.7 billion to $860 billion between 1995 and 2013. During the high-growth period 1995–2007, processing exports accounted for more than 50% of China's total exports. At the peak, the share was 57% (see Fig. 1). It is estimated that more than 80% of China's high-tech exports are processing exports, which makes China the top high-tech exporting nation in the world (Xing, 2014).

Assembling parts and components into finished products is a necessary but low value added segment of global value chains (GVCs). Aside from China's comparative advantage in labor endowment, the rapid expansion of China's processing exports is mainly attributed to Chinese firms' active participation in value chains of global manufacturing. Since 1990, the influx of foreign direct investment and the outsourcing activities of multinational enterprises have integrated Chinese firms into GVCs and transformed China into the global center for assembly of manufactured products. GVCs have functioned as a vehicle for the entry of China's processing exports into international markets. All processing exports are distributed via networks established by the lead firms of value chains, which greatly enhances market access for China's exports. In addition, processing exports usually bear internationally recognized brands owned by multinational enterprises and preferred by foreign consumers, in particular consumers in developed countries. To a large extent, the spillover effects of GVCs in terms of brands, technology innovations and distribution networks have strengthened the international competitiveness of China's processing exports and greatly facilitated China's global expansion (Xing, 2016).

The dominance of processing exports began to decline in 2006, one year after China reformed its exchange rate regime and let the yuan appreciate. The share of processing exports dropped below 50% for the first time in 2008 and continued to fall, reaching 39% in