Barriers to labor mobility and international trade: The case of China

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ABSTRACT

This paper quantitatively evaluates the potential impacts of removing China's Hukou system on the world economy. By denying migrant workers the right to health benefits and housing, China's Household Registration (Hukou) system presents a significant distortion to the Chinese labor market that discourages the reallocation of its labor from agriculture to non-agriculture. I find that the elimination of Hukou could increase China's real income per capita by about 4.7%. Moreover, although for most countries the impact of removing Hukou is modest (less than 1% changes in real income per capita), substantial changes in real income could take place for China's small neighboring economies. For example, the decreases in real GDP per capita are 2.7%, 3.2%, and 4.1% for Bangladesh, Sri Lanka, and Vietnam, while Thailand stands to enjoy a 3.8% increase in its income.

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1. Introduction

The Household Registration System, commonly referred to as the Hukou system, is an important institution in China and has attracted much attention from the research community. By denying migrant workers access to some basic publicly provided goods such as health care, housing, and education, the Hukou system in effect discourages the reallocation of labor from agriculture to non-agriculture in China. A number of studies argue that Hukou represents an important labor market distortion and has been a major contributing factor to a wide range of issues in China, such as its growing income inequality.[1]

While reforming Hukou will most certainly impact China's economy, there are reasons to believe that the rest of world may also be affected. This is especially true when one considers the size of China's economy and its population, as well as China's share in world trade. For example, in 2009, China's GDP was 8.6% of the world GDP, and its labor made up 24.7% of the world labor force (World Development Indicator, 2009). In the same year, 9.7% and 13.1% of world's merchandize and manufacturing exports were from China.

Motivated by the importance of Hukou to China's economy and China to the world economy, this essay examines the impact of reforming the Hukou system on both China and the rest of the world. Specifically, this essay asks: What are the possible impacts of eliminating the Hukou system on the income level and the sectoral composition of China as well as those of other individual economies?

To answer this question, I employ a multi-country general equilibrium model, in which the Hukou system is modeled as a distortion to China's labor market. With data from 46 countries (for the year 1997), the model is calibrated to bilateral trade flows,

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[1] Examples include Cai, Wang, and Du (2002), Zhu (2002), Fleisher and Yang (2003), Liu (2005), and Whalley and Zhang (2007).

sectoral employment shares, and relative GDP per capita. Based on the calibrated model, counterfactual exercises are performed to evaluate the potential impacts of removing the Hukou system on China's economy as well as other economies in the world.

The model in this essay extends the multi-country Ricardian trade model in Eaton and Kortum (2002). To allow for cross-country differences in sectoral composition, each economy in the model has three sectors: agriculture, manufacturing, and service. Subject to "iceberg" trade costs, countries are allowed to trade agricultural goods and manufactured goods. To generate cross-country differences in agricultural employment shares as observed in the data, there is a subsistence requirement for agricultural goods. Moreover, workers who work in agriculture also have access to a home production technology, which produces non-tradable agricultural goods and is uniform across countries. This is to account for the fact that a significant portion of low income countries' agricultural labor engages in subsistence farming.

In the model, except for China, workers in all countries can move freely and costlessly across sectors. To model the impact of the Hukou system as a distortion to China's labor market, I follow the approach of Restuccia, Yang, and Zhu (2008) by assuming that Chinese workers face a cost of reallocating from agriculture to non-agriculture. This barrier to labor movement in China is modeled as a percentage of the wage rate in non-agriculture in China. As a result, the Hukou system depresses the income of agricultural workers in China and creates a wedge between the earnings of working in agriculture and non-agriculture for Chinese workers.

For a sample of 46 countries, the model is calibrated to observed bilateral trade flows, sectoral employment shares, and relative real GDP per capita. As part of this calibration procedure, the cost of reallocating Chinese workers from agriculture to non-agriculture is calibrated to match the observed income differences between China's agriculture and non-agriculture sectors. The calibration exercise also discusses the quantitative importance of introducing a cost to labor movement in China on accounting for two key moments in the data: the observed sectoral income differences and sectoral employment shares in China. In the calibrated model *without* barriers to labor movement in China, I show that there exist large discrepancies between the data and the model's predictions on agricultural employment share and the difference between agricultural income and non-agricultural income in China. This suggests that there exist substantial labor market distortions that depress agricultural income in China.

Based on the calibrated benchmark economy, counterfactual exercises are performed to evaluate the impacts of removing the Hukou system in China. Following Whalley and Zhang (2007), I attribute the entire difference in sectoral income in China to the Hukou system. Therefore, the removal of Hukou entails setting the cost of reallocating China's labor from agriculture to non-agriculture to zero. I find that it results in about 4.7% increase in China's per capita income. The increase in China's income is driven by 10.9% of its labor force being reallocated from agriculture to non-agriculture, which decreases China's wage rate in non-agriculture by 30.6% and increases its real manufacturing exports by 30.2%.

The removal of Hukou also affects the rest of the world in two ways. First, the increase in China's manufacturing exports leads other economies to reallocate their labor both within manufacturing and between manufacturing and non-manufacturing. This results in increases in manufacturing productivity and benefits all countries. Second, the decrease in the price of China's manufactured goods also impacts the relative prices of tradable manufactured goods to agricultural goods in the world. As manufactured goods become cheaper relative to agricultural goods around the world, net agricultural exporters such as Thailand benefit and net agricultural importers such as Bangladesh are adversely impacted.

Overall, while the removal of the Hukou system had modest impacts on most sample countries (less than ±1%), three of China's small neighboring economies have substantial *decreases* in their real income level. Namely, the reductions in real income per capita are 2.7% for Bangladesh, 3.2% for Sri Lanka, and 4.1% for Vietnam. On the other hand, Thailand's GDP increases by about 3.8%.

This asymmetry in the quantitative impacts of removing the Hukou system is driven by two factors. First, the impact of removing Hukou is highly correlated with a country's distance to China. In particular, the closer a country is to China, the larger the impact of removing Hukou tends to be. This is because, as trade costs increase as a country is further away from China geographically, it tends to trade less with China. As a result, these countries are less impacted by the changes in China's sectoral wages and the prices of China's tradable goods.

Second, the impact of removing Hukou tends to be smaller when a county's economy is larger relative to that of China's. This is because the bilateral trade volume with China as share of a country's GDP tends to be smaller as the size of the country's economy increases. Therefore, the importance of its trade with China is inversely related to the size of a country's economy. Due to these two factors, the most impacted economies by the removal of Hukou are the four China's small neighboring countries: Thailand, Bangladesh, Sri Lanka, and Vietnam.

It is important to note that the key results presented in this paper are not without limitations. The first important limitation comes from the model assumption of homogeneous manufactured goods. A concern is that, by ignoring the heterogeneity of manufactured goods, the current study fails to consider how labor reallocation in China could affect different types of manufactured goods asymmetrically. For example, if China's workers in agriculture are largely unskilled, a relaxation of the Hukou system would cause this large pool of unskilled labor to reallocate to the manufacturing sector, which in turn drives down the prices of the goods that are unskill intensive. This will change the mix of manufactured outputs of other countries, which tends to cause the quantitative results in this paper to be less useful.

While fully accounting for the heterogeneity of manufactured goods would certainly change the results, I argue that the key insights in this paper remain valid and that the quantitative results are still useful as they tend to provide a *lower bound* on the potential impacts of removing the Hukou system in China. As discussed more extensively in Section 5.3, the countries that are most *negatively* affected by the removal of the Hukou system are largely exporters of unskill-intensive goods. As a result, if one considers the differences between skill-intensive and unskill-intensive manufactured goods, these economies would *further suffer*