

# China as a Window to the World: Trade Openness, Living Standards and Income Inequality<sup>1</sup>

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## 1. Six Reasons to Look at China

This article draws on my recent research paper with Yi Wu on trade openness and income inequality in China (Wei and Wu 2001). There are at least six reasons why the Chinese case may be interesting for researchers and policy-makers alike. Some of them have to do with the fact that China is a large and important country. However, equally if not more important reasons have to do with a methodological innovation: many problems surrounding typical cross-country comparisons can be mitigated substantially by a careful look at within-country variations through a single-country case study.

### 1.1 Reason #1

China is a major example of a developing country that has recently embraced globalisation in the area of trade and foreign direct investment. Before 1978, the country had relatively little trade with the outside world. In 1978, the Deng Xiaoping-led Chinese government formally adopted the ‘opening-to-the-outside-world’ principle as a new national policy. Since then, the trade to GDP ratio has quadrupled from a mere 8.5 per cent in 1978 to 36.5 per cent in 1999. The country also transformed itself from one with virtually no foreign-invested firms in 1978 to the largest developing-country destination for foreign direct investment.

### 1.2 Reason #2

Poverty in China is a major component of the worldwide poverty story. In 1980, using the World Bank’s US\$1-a-day poverty line, there were 600 million poor people in China.<sup>3</sup> Thus, the poor in China accounted for approximately a third of the

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  3. I thank David Dollar for this estimate.

worldwide poverty head count. Any change in poverty in China would necessarily have a significant impact on the worldwide poverty estimate.

### 1.3 Reason #3

A single-country case study of China would avoid two problems that arise when using cross-country comparisons, the most common approach in the empirical literature on trade, growth and inequality. The first criticism is that the data on income or on inequality in different countries are not comparable, either because the purchasing power parity adjustments necessary for such comparisons are not reliable or because the methodologies underlying different countries' numbers are too diverse to be pooled together, or both.<sup>4</sup> The second criticism is that many factors other than openness, such as the culture, legal system, or other institutions, may influence growth or inequality. Some of these factors are difficult to observe or quantify, and are thus difficult to control for completely in cross-country regressions. Including fixed effects in the regression would not correct this problem if the influence of these factors interacts with openness. As a consequence, there is a big risk of mis-attributing variations in income or inequality to variations in trade openness.

While avoiding the above criticisms, a single-country case study that explores variations within a country can provide very useful information to complement cross-country studies. Data are much more comparable for different regions within a country, and the culture, legal system and other institutions are much more similar within a country than across countries.

### 1.4 Reason #4

The Chinese experience provides a quasi-natural experiment. Even though any change in tariffs applies to all regions in China, different parts of the country have experienced vastly different *effective changes in openness* due to variations in natural barriers to trade, such as the distance to major seaports. For example, during 1988–1993, while some cities saw an increase in the ratio of exports to local GDP by 50 percentage points, others actually experienced an absolute decline in their trade to local GDP ratios.<sup>5</sup> This regional variation is very useful for researchers to study the relationship between openness, local growth and local inequality.

### 1.5 Reason #5

An obvious, but nonetheless important economic observation is that China is, geographically, a large country. For example, in 1988, there were 434 cities in China

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4. Atkinson and Brandolini (2001) pointed out that for a few countries for which multiple measures of inequality are available (households *vs* individuals, consumption-based *vs* income-based), the various measures can give different, sometimes contradictory, patterns even for the same time periods.

5. See Tables 1a and 1b in Wei and Wu (2001), p 28.

(and the number of entities classified as cities has grown over time). Consequently, researchers have a lot of observations to work with, providing them with the opportunity to make statistically powerful inferences. Other economies such as Bangladesh and Costa Rica have also experienced a huge increase in their trade to GDP ratio in the last two decades, but their relatively smaller territories imply that it would be much harder to conduct a statistically reliable analysis based on different regions within these countries.

## **1.6 Reason #6**

Another less obvious, but methodologically important point, is that the peculiar geography of China turns out to be very useful for researchers attempting to disentangle causality and correlation between openness and inequality. Let me explain this point in three steps. First, in making cross-country comparisons, if increases in openness are associated with increases in the growth rate (or a reduction in poverty rates), how can one be sure that this reflects the causal impact of openness on growth or poverty rather than just a lucky correlation or even a reverse causality? This is one of the major challenges facing empirical researchers. Second, a methodological innovation in the context of cross-country regressions is to use geography as an instrumental variable for openness.<sup>6</sup> The idea is that a country's openness has a lot to do with its geography. At the same time, its geography is unlikely to be influenced by its growth or poverty performance. It would be useful if one could apply the same methodological innovation to a single-country case study. Third, it turns out that the Chinese geography makes it very suitable to adopt this strategy. There is an ocean to the east and south-east of the country but then there is a gigantic desert in its far north and west and a very high mountain range – the highest in the world – in its south-west. Therefore, as a first approximation, regional variation in trade openness (or changes in trade openness in the last two decades) is explained to a large extent by regional variation in the distance to major seaports. In fact, two seaports, Hong Kong and Shanghai, have played a dominant role in China's trade with the rest of the world. Up to the mid 1990s, roughly half of China's total trade went through either Hong Kong or Shanghai. Thus, one can use a region's distance to these two major seaports as an instrumental variable for openness.

As a major benefit of using this geography feature to instrument regional openness, one can be relatively more confident in saying that the correlation between regional openness and inequality (or growth) may reflect a causal relationship going from the former to the latter. It is useful to note that a similar exercise may be more difficult to carry out for Indonesia or the United States where the access points for international trade are more diffuse.

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6. Frankel and Romer (1999).

## 2. Distilling the Facts from Within-country Variations

### 2.1 Data

The unit of a region in our analysis is a ‘city’, which comprises an urban area and several rural counties under the jurisdiction of the city government. Not all peasants live in counties that are administered by a city. However, 783 counties, or 45 per cent of the total number of rural counties in China are under the jurisdiction of a city. In other words, the rural areas that fall into this category are not a trivial part of China.

The relationship between openness and growth across different parts of China was studied in Wei (1995). In this paper, our objective is to examine the relationship between the openness of a region and the change in inequality within the same region. Due to data limitations, we focus on urban-rural income inequality. In principle, a developing country’s overall inequality can be conceptually decomposed into three parts: inequality within the rural area, inequality within the urban area, and inequality between the urban and rural areas. The previous literature has established that in the Chinese case, urban-rural inequality dominates the other two types of inequality. For example, the World Bank (1997) estimated that urban-rural inequality accounted for more than half of the overall inequality in the country in 1975, and that the change in urban-rural inequality explained about 75 per cent of the change in overall income inequality between 1984 and 1995. Similar conclusions have been reached by researchers investigating a particular province or provinces within China.

We focus our analysis on the period from 1988 to 1993. 1988 was the first year in which urban-rural inequality can be computed for a large number of cities. 1993 was the last year in which trade data at the city level (value of exports, to be precise) were collected. As the reform deepened, the number of firms granted the right to conduct foreign trade mushroomed very fast. It was decided by the State Statistics Bureau after 1994 that it was no longer possible to collect reliable trade data at the city level.

### 2.2 Results from the statistical analysis

We define  $q(k, t)$ , the inequality in city  $k$  in year  $t$ , as the ratio of the average per capita income in the urban area to the average per capita income in the rural area in city  $k$ . We define openness for a city as the ratio of its exports to local GDP in logarithm.

As our benchmark, we regress the change in a city’s inequality,  $q(k, 93) - q(k, 88)$ , on the change in its openness, and a vector of other variables that can potentially affect the inequality.

The slope coefficient on the change in openness is negative and statistically significant at the 5 per cent level. In other words, *cities that have exhibited a faster increase in openness on average have also experienced a faster decline in the local urban-rural inequality* (Table 1).

**Table 1: Openness and Urban–Rural Income Inequality**  
OLS in first difference with robust standard errors

	Dependent variable: change in log (urban GDP per capita/rural GDP per capita) from 1988 to 1993			
	(1)	(2)	(3)	(4)
Change in log (exports/GDP) over 1988–93	–0.084* (0.036)	–0.085* (0.037)	–0.091* (0.037)	–0.091* (0.036)
Initial inequality in log		–0.030 (0.053)	–0.038 (0.054)	–0.044 (0.054)
Growth rate of per capita GDP			–0.009*** (0.006)	–0.007 (0.005)
Dummy for coastal open cities				–0.015 (0.071)
Change in log ratio of urban/rural fixed capital per capita (1988–94)				0.073* (0.029)
R <sup>2</sup>	0.06	0.06	0.08	0.12
No of observations	100	100	100	95

Notes: Robust standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistically significant at the 5 per cent, 10 per cent and 15 per cent levels, respectively. An intercept is included in all the regressions but not reported to save space. Special economic zones are not in the sample.

This pattern continues to hold as we add other control variables, including a city's initial level of inequality, the average growth rate of local GDP, a dummy for cities that are officially designated 'coastal open cities' (and special economic zones)<sup>7</sup>, and a measure of differential investment rates in the urban and rural areas.

We then correct for possible endogeneity of the openness measure by an instrumental variable approach. We use a city's minimum distance to either Hong Kong or Shanghai as the instrumental variable. A small number of seaports handle a large portion of the freight traffic in China. Hong Kong and Shanghai alone handled about half of the total trade in China during our sample. The idea of the instrumental variable regression is to capture the exogenous component in the variation of

7. Four cities were designated as 'special economic zones' at the beginning of the Chinese reform. In the mid 1980s, 14 additional cities were designated as 'coastal open cities'. These cities were allowed to carry out certain market reforms ahead of the rest of the country.

openness across regions, and to check if this exogenous variation in openness helps to explain the differential change in inequality across regions.

In the instrumental regression (see Table 2), we find that the slope coefficient on the change in openness is again negative and statistically significant. Figure 1 presents a conditional scatter plot of the change in inequality against openness based on the IV regression in the last column of Table 2. These results suggest that the

**Table 2: Instrumental Variable Regressions**

Methodology	Dependent variable: change of log (urban GDP per capita/rural GDP per capita) from 1988 to 1993			
	(1) IV	(2) IV	(3) IV	(4) IV
Change in log (exports/GDP) over 1988–93	-0.305* (0.128)	-0.323* (0.134)	-0.274* (0.114)	-0.316* (0.125)
Initial inequality in log		-0.051 (0.065)	-0.057 (0.060)	-0.057 (0.061)
Growth rate of per capita GDP			-0.012** (0.007)	-0.014** (0.008)
Dummy for coastal open cities				-0.003 (0.081)
Change in log ratio of urban/rural fixed capital per capita: 1988–94				0.079** (0.047)
No of observations	100	100	100	95
First-stage $F$ on the instrument	11.6	10.9	13.5	11.6
$p$ -value for Hausman test	0.03	0.02	0.04	0.02

Notes: Robust standard errors are in parentheses. \*, \*\*, and \*\*\* denote statistically significant at the 5 per cent, 10 per cent and 15 per cent levels, respectively.  $R^2$ s in the IV regression are not reported, as they do not have the standard interpretation.

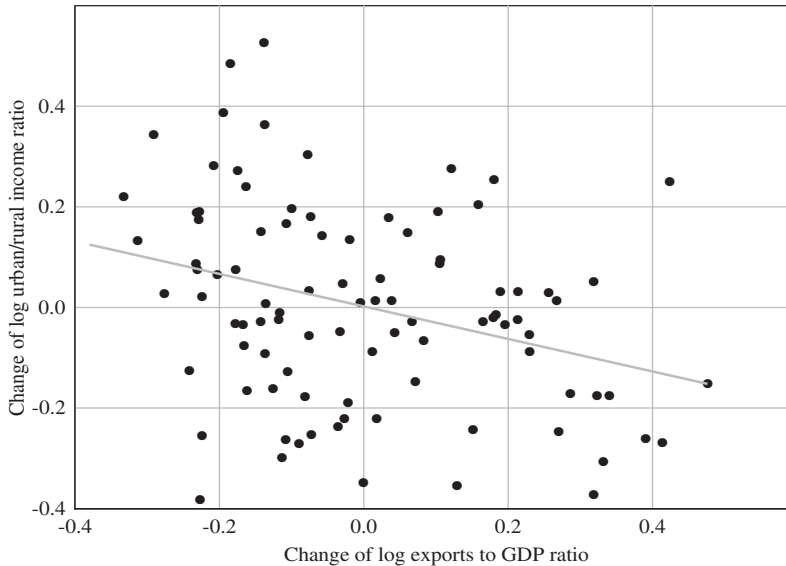
The null hypothesis for the Hausman test is that the coefficients in the OLS and the IV regressions are not different systematically. A rejection of the null implies that the OLS estimate is biased.

First-stage  $F$  is the  $F$ -statistic for the null hypothesis that the coefficients on the instruments are zero.

### Figure 1: Openness and Urban/Rural Income Disparity

Conditional correlation from a IV regression

coefficient =  $-0.316$ ,  $t = -3.09$



Note: Figure 1 corresponds to column (4) in Table 2. It shows the relationship between change of urban–rural inequality and change in openness after accounting for other factors that may also affect the change in inequality. The average relationship between the two variables is represented by the straight line in the figure.

negative correlation that we observe between openness and inequality likely reflects a causal relationship: an increase in trade openness creates opportunities for a reduction in urban-rural inequality.

## 2.3 Mechanism

What may be the channel through which greater openness has helped to reduce income inequality? Poor people in developing countries such as China reside overwhelmingly in rural areas. If a country has scarce land resources, so that agriculture is not obviously its comparative advantage, the most reliable way for the poor to raise their standard of living is to industrialise. We speculate that openness has helped the poor in China because it has offered them more opportunities to industrialise.

A peculiar feature of the Chinese industrialisation process is something called ‘township-village enterprises’, or TVEs, which are industrial firms established in previously rural areas. This policy, which was set up because of the government’s concern with possible over-population in existing urban areas, encourages farmers to set up factories in their rural counties rather than migrating to the cities. Although

the policy has not been executed perfectly, it has been binding ‘on the margin’ nonetheless. In other words, the rural-to-urban migration has been substantially smaller than it otherwise would have been (even though the transformation of the economic structure from agriculture to industry has been fast). As a result, many former peasants have been transformed into workers (or entrepreneurs) without physically leaving their counties of residence. We suspect that TVEs or other industrial or service firms grow especially well in more open areas.

This hypothesis can be checked against the data. If we separate urban and rural areas in the database, we find that across the country, those rural areas that are more open also grow faster (in their per capita income). Similarly, more open urban areas also grow faster than less open urban areas.

We have also examined the growth rate of industrial output in the rural and urban areas. Again, the second-sector output tends to grow faster in more open areas. If one looks at the growth rate of industrial output in the rural areas relative to the adjacent urban area, one finds that it is positively related to a region’s openness.

## 2.4 Inter-regional inequality

The finding that more open areas grow faster than less open areas suggests that the inter-regional inequality must have increased as a result of the dramatic increase in openness. Suppose one simultaneously takes into account the effect of openness on urban-rural inequality within a given region, summed over all regions, and the effect of openness on inter-regional inequality, what would be the net effect? This is a very interesting question, but unfortunately, at this stage, our estimates are not precise enough to give a definitive answer to this question.

However, all regions in China, including less open areas, have been growing relatively fast in the last two decades. Therefore, widening inter-regional inequality resulting from a faster rise in the standard of living for some people rather than at the expense of the others cannot, by itself, be a bad thing.

Even if we hope to moderate overall inequality in China, reducing openness using trade policy is not the answer. A positive way forward would be to find ways to raise the effective openness of currently less open areas rather than to set up trade barriers to reduce the openness of the currently more open areas.

## 3. Implications of the Chinese Case for Cross-country Comparisons

As I said at the beginning of the article, the importance of this case study goes beyond the importance of China itself. In this last section, I would highlight three implications for cross-country studies from this case study.

**First, impressions from the aggregate statistics can be misleading.** Over the last two decades, overall inequality in China has risen together with an increase in openness. It may be tempting to conclude that the greater openness is somehow responsible for the greater inequality. Yet, this conclusion is incorrect as the



evolution of inequality is influenced by many factors in addition to openness. Within China, regions that have experienced a faster increase in openness have also experienced a faster reduction, rather than an increase, in inequality. So embracing trade openness has in fact created opportunities for poor people in rural areas not only to grow, but to grow at a faster pace than their relatively more fortunate urban neighbours.

**Second, reducing inequality should not be an end-objective by itself.** Inter-regional inequality in China has risen partly as a result of an uneven distribution of effective openness across different regions. However, all regions have grown relatively fast. Widening inter-regional inequality largely reflects a faster increase in the standard of living in more open areas, which has not occurred at the expense of other people in the country. Any policy that slows the growth of more open areas without raising the growth of the less open areas cannot be a good policy, even if it improves equality. The challenge is to find ways to raise the effective openness of the currently less open areas, and/or to find fair and least-distorting ways to distribute some of the overall gains from openness more evenly across the country.

**Third, raising trade barriers is the equivalent of imposing a bad geography on the country that renders it inaccessible to trade.** Across different regions in China, as across different countries in the world, effective openness is closely linked to geography. Regions/countries with a more favourable geography (e.g. easy access to sea or proximity to major world markets) tend to have higher trade to GDP ratios, and tend to grow faster. While overcoming geography is not easy, improvements in transportation infrastructure and communication technology helps. An equally important implication is that raising tariff barriers or quotas is equivalent to artificially imposing a difficult geography on oneself.

## References

- Atkinson AB and A Brandolini (2001), 'Promise and Pitfalls in the Use of "Secondary" Data-Sets: Income Inequality in OECD Countries as a Case Study', *Journal of Economic Literature*, 39(3), pp 771–799.
- Frankel JA and D Romer (1999), 'Does Trade Cause Growth?', *The American Economic Review*, 89(3), pp 379–399.
- Wei S-J (1995), 'The Open-door Policy and China's Rapid Growth: Evidence from City-level Data', in T Ito and AO Krueger (eds), *Growth Theories in Light of the East Asian Experience*, University of Chicago Press, Chicago, pp 73–98.
- Wei S-J and Y Wu (2001), 'Globalization and Inequality: Evidence from Within China', NBER Working Paper No 8611.
- World Bank (1997), *Sharing Rising Incomes – Disparities in China*, The World Bank Group, Washington DC.