



China's economic fluctuations and consumption smoothing: Is consumption more volatile than output in China?

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ABSTRACT

This paper provides a fundamental study of China's consumption and output fluctuations. The most recent literature reports that, in the post-1978 period, detrended consumption is significantly more volatile than detrended output in China. This indicates the inability to impose consumption smoothing. However, in those previous studies, consumption of durables, which has some features of capital, as discussed in the real business cycle literature, was not separated from private consumption. This paper is the first to estimate consumer durables for China and their service values following the method introduced in Cooley and Prescott (1995). We adjust the consumption measure to make it consistent with the real business cycle literature, and find that consumption of durables is much more volatile than output, but non-durable consumption is less volatile than, and less correlated with, output that provides evidence that supports consumption smoothing in China.

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1. Introduction

In the most recent literature on Chinese economic fluctuations, He et al. (2009), Xu (2007) and Boyreau-Debray and Wei (2005) report that detrended consumption is significantly more volatile than detrended output in China in the period after the 1978 economic reform. This finding has features that are the opposite of those in the US that are well known in the real business cycle (RBC) literature. It is also inconsistent with the theory of consumption smoothing, and it may indicate bad risk sharing in consumption. However, in those previous studies, the measure of consumption includes the consumption of durables. As described in Cooley and Prescott (1995), consumer durables have features similar to capital, and the consumption of durables is typically separated and classified as investment in the RBC literature. The inclusion of the consumption of durables is likely to result in an over-estimation of consumption volatility.

This paper aims to improve the measurement of consumption in order to understand better the features of economic fluctuations in China. Because direct information on consumer durables in China is not available, this paper is the first attempt to provide such an estimation. The procedure of constructing a measure of consumption, which is consistent with the RBC literature, is as follows. First we estimate the series of consumption of consumer durables, which includes durable daily-use articles, recreational durables, means of transportation, means of communication and households' consumption of construction and decoration materials. The data for these items are not complete. Some items are available for a certain period, but some provide no direct information at all. For those items and years without direct data, we find that the information on each item's upper-

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category consumption amounts and price indexes can be used to identify the weights of the items in their upper categories. This enables us to calculate the amount of each consumer durable, with its estimated weights. Using this method, we successfully construct the series of the consumption of durables from 1981 to 2006.

Secondly, although the consumption of durables should be treated as investment, the services provided by durables should be included in current consumption as well as output. We estimate the stock of consumer durables by its law of motion, and then the service values of the consumer durables. The service values are added to non-durable consumption and output. We find that the consumption of durables is much more volatile than that of output, whereas non-durable consumption is less volatile than, and less correlated with, output from 1981 to 2006. This finding suggests that the Chinese people do smooth (non-durable) consumption, in a way that is consistent with what is observed in the US.

The rest of this paper is organized as follows. Section 2 describes the procedure of constructing consistent measures of consumption and output. Section 3 presents the results of our estimation and calculation of consumption and output volatility. Section 4 concludes the paper.

2. The measurement

We obtain GDP data (by the expenditure method) from the Data of Gross Domestic Product of China 1952–2004 (DGDPC) and China Statistical Yearbook (CSY) published by the National Bureau of Statistics (NBS) of P.R.C. NBS also provides GNP at current prices for the years after 1978. We estimate real GDP at the price of year 2000 with GDP deflator.¹

Consumption data are also from NBS, and are deflated by the consumption deflator of national accounts (at the price of year 2000).² We focus on per capita output and consumption. Population data are also available in CSY for calculating per capita level figures. Please note that every economic variable we discuss below without additional specification is defined as per capita level.

Consumption of durables is classified as investment in the RBC literature (see Cooley and Prescott, 1995, for example) and its accumulation is counted in capital. The inclusion of consumer durables is likely to result in an over-estimation of the volatility of consumption, since it has the feature of investment. However, the service provided by the stock of consumer durables should be counted as private consumption.

To be consistent with the RBC theory, we adjust consumption and output from the original data as follows:

$$Y = Y_0 \text{ (original data)} + Y_d; \quad (1)$$

$$CNDS = CONS \text{ (original data)} - Cd + Y_d; \quad (2)$$

where Y is aggregate output, $CNDS$ is private non-durable consumption, Y_d is the service provided by consumer durables, and Cd is consumption of durables.

2.1. Consumer durables (Cd)

Estimating consumer durables in China is a challenge. In the literature, no one has provided an estimation for China. This is the first attempt. We use household survey data from CSY. The items we include in consumer durables are durable daily-use articles, recreational durables, means of transportation, means of communication and households' consumption of construction and decoration materials.

CSY provides the data of per capita consumption of durable daily-use articles and recreational durables from 1986 through 2006 in the urban area, and construction and decoration materials are available only from 1985 to 1991. For the rest, CSY provides only aggregated data of their upper categories. The direct information available is not complete, but if we can identify the weights of each subcategory, we are able to obtain the consumption of each item of durable goods. Fortunately, price index data, which are calculated from weighted average prices, are available to identify the weights. CSY provides a consumer price index (CPI) for all categories and subcategories from 1985 to 2006. For the years before 1985 CPI data are not available, and we use the retail price index (RPI) instead. We use the price index information to estimate the weight of each durable good in its upper category. For instance, the category of housing from 1994 through 2000 contains two subcategories—rent and construction materials. We would like to establish expenditure on construction materials, but only expenditure on housing is available. Because the price of housing (Ph) is a weighted average of the price of rent (Pr) and the price of construction (Pc), which are available in the CPI and RPI data, we can present the following equation:

$$Ph = w \times Pc + (1-w) \times Pr, \quad (3)$$

where w is the weight of construction materials in housing consumption. Rearranging the equation, we obtain the weight w of construction materials:

$$w = \frac{Ph - Pr}{Pc - Pr}. \quad (4)$$

¹ GDP deflator can be derived from the data of real GDP growth provided by NBS.

² In the national account, NBS also provides real aggregate consumption growth data, which can be used to identify consumption deflator.

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