

## Appendix A1

### Sources and Types of Price Data

#### *Sources of price data for different products*

The prime source of price data is the *Price Statistical Yearbook 1991*. It contains the retail prices of 306 specifications of consumer goods across 29 large and medium-sized cities (the provincial capital cities of all provinces except Tibet), and for almost half of these goods also the price at the nationwide level.<sup>1</sup> These data are not always complete. In the case of many goods, the particular brand name is not the same across *all* cities, but the specifications (such as size of TV screen) are usually identical. Since product variety across China in 1990 is likely to have been quite small, one particular specification may cover very similar products across all provinces. If differences in product specification across provinces are random, the use of several goods is likely to average out the differences across provinces.<sup>2</sup>

Lacking provincial-level (or within-province rural and urban) price data for consumer goods, we take the retail prices of these consumer goods across the 29 provincial capitals as representative for the whole province, i.e., of *all* urban and all rural areas in the province, rather than only the provincial capitals. In the basket, these retail goods prices are relevant for the product categories clothing, articles for daily use, energy, and some foods.

One, somewhat far-fetched possibility to check whether it is permissible to use price data in provincial capitals for the whole province, and even for rural areas, is to compare the change in the annual Consumer Price Index (CPI) in provincial capitals vs. the whole province. The earliest year for which city-level CPI data are available is 1995, a year in which the nationwide CPI rose by 17.1%, thus providing some scope for variation between provinces and between capital cities and their corresponding province. The correlation coefficient is 0.7406, which is significant at the 0.1% level. This implies that the data on price changes in the provincial capitals are likely to be somewhat representative of price changes in the whole province and suggests there is at least a chance that the same is true for the absolute price data.<sup>3</sup>

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<sup>1</sup> The mean price across the 29 provincial capitals is usually within a few percentage points of the nationwide retail price, except for coal and gas. In the case of coal, the nationwide retail price is 63.69% higher than the arithmetic mean across the 29 provincial capitals, with the price in none of the 29 provincial capitals higher than the nationwide price; in the case of gas, the nationwide price is 2.0476 times higher than the mean, with the price in two out of the 29 provincial capitals higher than the nationwide price (*Price Statistical Yearbook 1991*, pp. 147, 303f.). It is theoretically possible that the rural price is significantly higher than the prices in the 29 provincial capitals, which would justify the higher nationwide price, but, given the approximate nationwide per capita consumption of coal in the countryside compared to that in the urban areas, this would imply that the price of coal is at least three to five times higher in rural areas than in urban areas, which appears unreasonable. Consequently, below, when using nationwide prices, the nationwide prices of coal and gas were replaced by the arithmetic mean price across those of the 29 provincial capitals for which these prices are available.

<sup>2</sup> These data are published by the NBS and could well be the only provincial-level price data collected for these products; i.e., separate price data on rural areas and other urban areas within a province may not have been collected. Similarly, in the U.S., the Bureau of Labor Statistics collects only urban price data.

<sup>3</sup> The three provincial-level municipalities directly subordinate to the central government, Beijing, Tianjin, and Shanghai are omitted (and Chongqing did not yet exist as separate provincial-level entity); their municipal

The *Price Statistical Yearbook* also contains national and provincial-level agricultural procurement prices for 118 items, for all provinces except Tibet. Since not every product is grown or sold in every single province, only in the case of a very few products are procurement prices available for all provinces. One caveat could be that agricultural procurement prices need not necessarily reflect the prices the rural populations pays for a particular agricultural good. But they are probably more appropriate than the retail price of goods in the 29 cities.

For staples, vegetables, housing, energy, and services, we resort to implicit prices, i.e., unit values, separately for rural and urban areas (except for vegetables, where only urban unit values are available). In the urban case, for example, a detailed breakdown of urban consumer goods expenditures into approximately 75 categories is available, with quantities and expenditure values reported. Unit values are obtained by dividing expenditures on these products by their quantities. There are two potential weaknesses in using unit values. First, the expenditure categories may be so broad that they include a different mix of products across provinces. Second, even if the categories are narrowly defined, systematic differences can arise if quality is not controlled for. High (low) unit values may reflect high (low) quality. Unit values work well as long as variety and quality do not differ much across provinces, and we limit the use of unit values to those product categories within which quality differences may be minor and/or alternative pricing methods are not feasible or not credible. (Further details are provided in the paper and in appendices referred to in the paper.) Unit values are calculated from expenditure and quantity data provided in a number of yearbook series: *Statistical Yearbook*, *Rural Statistical Yearbook*, *Rural Household Survey Yearbook*, *Urban Household Survey Yearbook*, *Investment Materials 1990-1991*, *TVE Yearbook*, *City Yearbook*.

### *Price data availability over time*

The *Price Statistical Yearbook*, the key source for prices of specific products, was published in 1988 (carrying “1988” in the title), 1989, 1990, 1991, 1992, and 1994, with, altogether, data for the years 1986-1993.<sup>4</sup> Beginning with statistics on 1998 in the *Price Yearbook 1999*, a different yearbook series, price data on individual, nationwide identically defined *industrial* consumer goods in 36 large and medium-sized cities became available. For the same 36 cities, agricultural *retail sales* prices (but not procurement prices) also became available in the same source.

The monthly magazine *Zhongguo wujia* (China Price) has since its inception in 1989 always carried some monthly country fair market (*jishi*) prices for major agricultural

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CPI is identical to their provincial-level CPI. The source of the city-level CPI data is the *Urban Household Survey Yearbook 1996*, p. 51, which provides data on 35 cities, and the source of provincial CPI data is the *Statistical Yearbook 1996*, p. 260.

A second check is the following. The *Market Statistical Yearbook 1995*, pp. 593ff., reports the annual relative change in 20 CPI categories and sub-categories in 1994 in the (total of the) 35 cities, as well as the annual relative change in these CPI categories and sub-categories in (the total of) all urban areas. In each category (or sub-category), the urban and the 35 city values are very close; for example, meat prices in urban areas in 1994 rose 40.6%, and in the 35 cities 40.4%.

<sup>4</sup> In 1992 and 1993, the two last years for which the data are available (in the *Price Statistical Yearbook 1994*), the number of retail goods with prices for the 29 provincial capitals is 102, rather than 306 as in the *Price Statistical Yearbook 1991*.

products. Between 1989 and May 1993, in the rural case, these prices were country fair market prices reported for very selected rural and urban country fair markets. In the rural case, they covered 30 specific (but over time varying) townships in 20 to 21 provinces, not systematic and representative (of each province) enough for the purpose of this paper, and with significant gaps even in these geographically limited data; similar data were published for 30 urban country fair markets in 23 provinces. In June 1993 reporting switched to a systematic coverage of the country fair market prices of agricultural products in 35 cities (mainly provincial capital cities); a practice which ended with the January 2001 data. No data from rural localities are reported any more. *Zhongguo wujia* also carried monthly industrial consumer goods price data across 35 large and medium-sized cities in the very early years, at least for November and December 1990. It has been publishing prices of producer goods—of no use for this paper—throughout all years.

### *Alternative data*

A potential second, different set of price data is available in two tables labeled “mixed average retail prices” (*shangpin lingshou hunhe pingjun jiage*) and “mixed average agricultural procurement prices” (*nongfu chanpin shougou hunhe pingjun jiage*). These two tables are published with nationwide data in the *Price Statistical Yearbook 1991* and in the *Statistical Yearbook 1991*; many (but not all) provincial statistical yearbooks also contain these tables, then with provincial-level data. The *Statistical Yearbook (1991, p. 265)* defines “mixed average” in the two tables as total sales/ procurement value of a particular commodity divided by the quantity of this commodity sold/ procured, i.e., unit values. While “average” presumably implies an average across localities, “mixed” seems to imply an average across pricing regimes (state-determined price, state guidance price, enterprise-determined price, country fair market price, etc., depending on the type of product), but also, and that is the complication, an average across different qualities of a particular commodity, with the average determined by the local mix of qualities.

Since products in these price tables are only broadly defined, such as grains or bicycles, quality differences are lost. These may not matter for grains, a rather standard product, and where we indeed resort to unit values which we calculate directly from expenditure and quantity data, but it is likely to matter for consumer goods. For example, if the “mixed average” price of cotton cloth were a composite of different types of cotton cloth of differing quality, this price does not control for the fact that expensive (presumably high-quality) cloth may account for a larger share of the sales value (expenditures) in some provinces than in others. Differences in the mixed average price of one commodity across provinces, with the price obtained as sales revenue per unit purchased, then may to a large extent reflect quality differences. In contrast, the very specific product data in the *Price Statistical Yearbook* define the specific commodity characteristics by, for example, size, volume, and often even brand name. Due to the inferiority of “mixed average” prices to the specific price data available in the *Price Statistical Yearbook*, and due to the lack of a complete provincial-level set of data, the mixed average price tables are not used here. When unit values are used, these are calculated directly from expenditure and quantity data.

***References relevant for this appendix and not listed in the paper***

*Market Statistical Yearbook. Zhongguo shichang tongji nianjian* (China Market Statistical Yearbook). Beijing: Zhongguo tongji chubanshe. Various years.

*Price Yearbook. Zhongguo wujia nianjian* (China Price Yearbook). Beijing: Zhongguo wujia chubanshe. Various years.