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Monthly industrial output in China since 1983

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Abstract:

Monthly economic indicators are used for a variety of purposes, from studying business cycles to determining economic policy and making informed business decisions. China's published monthly industrial output statistics could hardly be more confusing, with changes in variables, in coverage, in measurement, and in presentation. This paper reviews the available official data and proceeds to construct a monthly industrial output series in nominal terms and in real terms for the period since May 1983, economy-wide and for the state sector.

JEL codes, all China:

- C80 Data Collection and Data Estimation Methodology; Computer Programs — General
- C43 Econometric and Statistical Methods: Special Topics — Index Numbers and Aggregation
- E01 Measurement and Data on National Income and Product Accounts and Wealth;
Environmental Accounts
- E23 Macroeconomics — Production
- O53 Economywide Country Studies — Asia including Middle East
- O47 Economic Growth and Aggregate Productivity — Measurement of Economic Growth etc.
- P24 Socialist Systems and Transitional Economies — National Income, Product, and Expenditure,
Money, Inflation

Keywords: China industrial output, industrial growth, monthly industry data, public sector industrial output, Chinese statistics

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Abbreviations

b	billion
c	cumulative (monthly): January, January plus February, January plus February plus March, etc.
DRIE(s)	directly reporting industrial enterprise(s)
GOV	gross output value
m	million
NBS	National Bureau of Statistics
SOE(s)	state-owned enterprise(s)
SOSCE(s)	state-owned and state-controlled enterprise(s)
VA	value-added
yoy	year-on-year (such as November this year compared to November last year)

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Introduction

Monthly data on China's industrial sector appear a hopeless jumble. Time series end for no apparent reason in one publication but not in another, then end in all publications while new series begin. A source may report gross output value data at constant prices for one month and cumulative value-added at current prices for the next month. Values rise or fall from one month to the next solely due to changes in enterprise coverage.

The National Bureau of Statistics (NBS) began to publish monthly industrial output data in May 1983. The available monthly industrial output data vary along a number of dimensions:

- variables: gross output value (GOV), value added (VA), “production sales” or “sales value;”
- coverage: all of industry or some subset of industry;
- values at current or at constant prices;
- monthly values or cumulative monthly values; and
- levels or growth rates.

No one consistently defined series runs from May 1983 through today.

The objective of this paper is to construct consistent monthly series of nominal and real (constant price) output for the years since 1983, economy-wide and for the public sector. These four constructed series can easily be subjected to a de-seasonalizing procedure. They can be turned into month-on-month growth rates (for example, November this year compared to October this year) or year-on-year (yoy) monthly growth rates (for example, November this year compared to November last year). Values for the non-state sector can be obtained as difference of the economy-wide values and the state sector values.

In order to derive the four series, different series of published data have to be spliced or transformed, and a number of decisions have to be made. For example, the first series in Figure 1 (diamond symbol) shows monthly real VA obtained from published monthly data, the second series (square symbol) annual real VA split into monthly real values using monthly data. The second series—based on *annual economy-wide* (industrial) real VA—in recent years grows much slower than the published series of monthly values (de facto, covering only the directly reporting industrial enterprises). The differences are significant. Thus, which data ones uses, matters. Pretending that the published monthly data that one uses (covering only the directly reporting industrial enterprises) reflect all industry would seem impermissible.

[Figure 1 about here]

The paper proceeds in three steps. The over time changing coverage of monthly output data is discussed first. This is followed by a description of the available data and of minor manipulations of some of the available data. The core sections of the paper describe how the desired four monthly time series are derived and report these final data, followed by a brief conclusion.

Changing Coverage of Monthly Output Data

Issues that beset all monthly industrial output data are the incomplete enterprise coverage and frequent changes in enterprise coverage. Similarly, the definition of the public sector evolved over time.

Incomplete and changing enterprise coverage

The available monthly industrial output data cover only the directly reporting industrial enterprises (DRIEs). The definition of the DRIEs changed in 1998, 2004, 2005, 2007, and 2011.¹ A key distinction is between the pre-1998 and post-1997 definitions:

- Through 1997: All industrial state-owned enterprises with independent accounting systems, plus all non-state industrial enterprises at township level and above with independent accounting systems.
- Since 1998: All industrial state-owned and state-controlled enterprises with (de facto) independent accounting systems, plus all non-state industrial enterprises with independent accounting systems and annual sales revenue in excess of 5m yuan RMB.²

Subsequently, the economic census of 2004 led to a 7.7 percent upward revision of DRIE GOV and a 26.0 percent upward revision of the number of DRIEs. DRIVE VA was *not* revised (with no reason given as to why not). Two minor redefinitions occurred in 2005 and in 2007, and a major one in 2011:

- In 2005, the term “sales revenue” changed to “revenue from principal business.”
- In 2007, the separate inclusion of all state-owned enterprises disappeared and only the size criterion was retained.
- In 2011, the size criterion changed from 5m yuan to 20m yuan.

In terms of a consistent time series of DRIE values, the 1997-1998, 2004, and 2010-2011 statistical breaks are likely non-negligible. Any attempt to use the official monthly industrial output values will have to make allowance for these statistical breaks. However, while the statistical breaks affect the aggregate, they do not appear to affect the monthly patterns.

Thus, the monthly pattern of 1998 is very similar to that of 1997 (Figure 2), despite the fact that the revised 1998 definition of DRIEs reduces the number of enterprises covered (and thereby industrial output).³ With neither annual nor monthly values of 2004 VA retrospectively revised following the 2004 economic census benchmark revision—despite the fact that annual GOV and enterprise numbers were revised—the monthly data exhibit no statistical break in 2004 (Figure

¹ See Holz (2013a) for details on the changing definitions and for an evaluation based on annual data.

² The short-form label of the DRIEs in Chinese statistics changed simultaneously from “above-norm” to “above designated size” industrial enterprises.

³ The figure shows annual output of the DRIEs to fall slightly between 1997 and 1998. This could be due either to the change in coverage, with a drop from 468,506 enterprises in 1997 to 165,080 enterprises in 1998 (*Statistical Yearbook 1998*, p. 444; *1999*, p. 432), or to changes in annual output. *Economy-wide* industrial VA in the national income and product accounts rose 3.1% in nominal terms in 1998 (*Statistical Yearbook 1999*, p. 55) while DRIE VA fell 2.1% in nominal terms (*Statistical Yearbook 1998*, p. 444; *1999*, p. 429), making it likely that the re-definition of the DRIEs led to a reduced industrial output coverage for the DRIEs.

3). The 2005 change in the coverage of the DRIEs is not detectable in the data, nor are the 2007 and 2011 statistical breaks (Figure 3, Figure 4; with nominal monthly VA data ending in November 2006, the 2007 and 2011 statistical breaks are pictured using nominal monthly GOV).

[Figure 2, Figure 3, and Figure 4 about here]

The statistical breaks in the DRIE series and the lack of plausible adjustments to create a consistent time series suggest not to directly use the monthly DRIE data. The fact that the DRIEs constitute only a *subset* of industry also advises against the direct use of these data.

The only economy-wide industrial output data available are annual data, in form of both nominal VA and (annual) real VA growth rates. Thus one can use the annual data as the basis, and break them down into monthly values by applying each year's monthly distribution of DRIE industrial output. I.e., economy-wide annual industrial VA is split into monthly values using the monthly output pattern of the DRIE *subset* of all industry, the largest subset for which monthly industrial output data are available.

Underlying this procedure are three assumptions:

- The annual industrial output data—published as part of China's national income and product accounts—are accurate.
- The monthly distribution of industrial output of the DRIEs is accurate.
- The distribution of monthly industrial output of the DRIEs is representative of the distribution of monthly industrial output of all industrial enterprises (and non-enterprise units).

Of all data published by the NBS, the national income and product accounts data are probably the most reliable. If one uses the annual data published most recently (for all years), these data incorporate various benchmark revisions. The VA for industry reported in the national income and product accounts covers all industrial productive activities across the economy (by enterprises and non-enterprise units), and thus constitutes the most comprehensive measure of economy-wide industrial VA.

One possibility to examine the accuracy of the distribution of the monthly industrial output data of the DRIEs—the second assumption—is to contrast the monthly data with annual data. Ideally, the monthly data sum to the separately published annual DRIE total. If they don't, then either the monthly or the annual data are problematic. Fortunately, the two values tend to come close. For example, the cumulative monthly current-price VA of the DRIEs in 2005 (the last complete year for which these particular monthly data are available) was 6,968.19b yuan. This compares to an annual value of 7,218.70b yuan (*Statistical Yearbook 2010*, p. 514). I.e., the summed monthly value falls 3.5 percent short of the annual value. For state-owned and state-controlled enterprises, the comparison is between a cumulative monthly figure of 2,760.10b yuan and an annual figure of 2,717.67b yuan (*Statistical Yearbook 2010*, p. 524), i.e., the shortfall in this case is an excess of 1.6 percent.

The summed monthly value can differ from the separately published annual value if the two sets of data cover different groups of DRIEs. Thus, it could be that the annual DRIE data only cover those enterprises which meet the DRIE criterion at *year-end*, while each month's data may cover those enterprises which meet the DRIE criterion at *month-end*. If the (small) discrepancies were due to data errors, then one may want to assume that the reported monthly data fall short of the true monthly data by the same proportion (percentage) every month. The DRIEs report directly to the NBS, so unless the DRIEs face incentives to mis-report (or to more severely mis-

report) in one particular month (or set of months), why should the NBS get the data wrong in one month but not in another, or more wrong in one month than in another?⁴

One aspect of the third assumption—the distribution of monthly output of the DRIEs is representative of the distribution of monthly industrial output of all industrial enterprises—that can be checked is the representativeness of the annual DRIE values. Figure 5 shows that the DRIEs capture a varying degree of all industry over time. Apart from the statistical breaks in the definition of the DRIEs, additional data problems occur in 1993 and in the most recent years for which annual DRIE nominal VA data are available before their publication ends in 2007: both the 1993 and 1994 values are historically out of line, for no apparent reason; and DRIE VA cannot exceed economy-wide VA (DRIEs are a sub-category of all industry) but the published data claim this to be the case in 2007. While there is no possibility to know how non-DRIE output is distributed across the different months of the year (in the absence of any such data), at least the DRIEs account for the majority of all industrial output in all years.⁵

[Figure 5 about here]

Monthly (DRIE) industrial output data come with two further complications. First, no monthly DRIE output data on a single output variable are available for the whole period since the beginning of the monthly series in 1983. Different series have to be spliced. At times, this requires approximations in order to create a consistent transition, or to bridge what appear to be data problems.

Second, for any one output variable, the coverage of the DRIEs changes due to the redefinitions noted above. But as a visual inspection of Figure 2 through Figure 4 reveals, the changes to the definition of the DRIEs appear to not cause any changes in the monthly output pattern. There is also no theoretical reason why changes to the definition of the DRIEs should be correlated with changes in monthly output patterns.⁶

Public sector data

The published monthly industrial output data frequently come with a breakdown by ownership, though the ownership categories do not necessarily always add up to the total. Early on, the ownership classification is limited to the three categories of state-owned enterprises, collective-owned enterprises, and “others.” Later, in some statistics, the ownership classification becomes more refined. What is consistently available are data on some aggregate of state-owned enterprises. This aggregate expanded in 1998 from ‘state-owned enterprises’ (SOEs) to ‘state-owned and state-controlled enterprises’ (SOSCEs).

The official statistics at different times incorporate three different definitions of SOEs:

⁴ One could suspect that some enterprises face incentives to over-report output in order to achieve growth targets, but it is unclear if such over-reporting necessarily favors particular months. Enterprises could also face incentives to underreport in order to avoid higher tax payments.

⁵ The correlation coefficient of state-owned and state-controlled enterprise (SOSCE) and non-SOSCE (i.e., DRIE minus SOSCE) monthly nominal VA between 1997 and November 2006—the complete time span for which the SOSCE data are available—is 0.977 (and for DRIEs and non-SOSCEs 0.998). I.e., if the monthly distribution of the non-SOSCEs is close to that of the DRIEs, then one may feel somewhat confident that the same holds for the case of the non-DRIEs.

⁶ Changes to the set of DRIEs also occur every year (and every month) as enterprises enter and leave the set of DRIEs. (An enterprise may grow in size and enter the set of DRIEs once it reaches the size requirement to be included in the DRIEs, or an existing DRIE may exit.)

- “Unreformed,” or “traditional,” or “pure” SOEs, i.e., SOEs operating in accordance with the 1988 SOE law;
- “SOEs” as generally understood for the years through 1997: (i) unreformed SOEs (as in the previous definition), plus (ii) SOE-SOE joint operation enterprises (an extremely small category), plus (iii) solely state-owned limited liability companies;
- SOSCEs (with data available since 1998): SOEs (as in the previous definition) plus all (other) shareholding companies (i.e., limited liability companies and stock companies) in which the state has a controlling share.

For the years prior to 1998, only SOE values have been published. Since 1998 (and exceptionally, 1997), values may cover SOEs only (of the unreformed type), or SOSCEs only, or values may be reported for both classifications.

In creating a public sector time series, a consistent “SOE” or “SOSCE” series is needed. The intention is to capture the complete public sector. It is only with the passing of the Company Law in 1992, to take effect on 1 July 1994, that the institutional form of a ‘company,’ whether a limited liability company or a stock company, was created. But trial cases occurred earlier (and the stock markets in Shanghai and Shenzhen started operation in December 1990 and early 1991). In the data manipulations below, SOEs that are not “pure” SOEs or SOE-SOE joint operation enterprises or 100 percent state-owned limited liability companies—i.e., state-controlled limited liability companies with less than a 100 percent state share, plus state-controlled stock companies—are allowed to first appear in 1993. This implies the use of SOE data through 1992, SOSCE data starting with their first availability (for most output variables) in 1998, and for 1993-1997 adjusted SOE figures to capture the missing non-SOE SOSCEs. Since the intention of the adjustments to 1993-1997 data is to create a time series that at all times captures the complete public sector, the label “SOSCE(s)” will be used throughout unless there is a need to distinguish.

Data

To recap, the objective of this paper is to construct four monthly series:

- a nominal economy-wide series of industrial output,
- a nominal public sector series of industrial output,
- a real (constant price) economy-wide series of industrial output,
- and a real (constant price) public sector series of industrial output.

None of these monthly series is available. The underlying rationale for the discussion in this section is that economy-wide annual industry VA is to be broken down into monthly values based on available monthly output data (nominal or real) for the DRIEs. Annual data are available for economy-wide industrial VA in the national income and product accounts published in the *Statistical Yearbook* series, both in nominal form and as real growth rates, for the years since 1978. The national income and product accounts do not include data by ownership, i.e., no such annual series are available for SOSCEs and other approaches will need to be considered in constructing a monthly public sector output series.

Data availability

Monthly data are available in a number of sources. These are:

- A sequence of 3 statistics magazines published by the NBS (here abbreviated “3 magazines”):
 - Zhongguo tongji yuebao*: 7/85 – 1989 (this Chinese language magazine may have been published earlier and later, but if so, these issues are not available in any of the major China libraries)
 - China Statistics Monthly* (a collaboration between the NBS and the University of Illinois at Chicago): published approximately 1988 – end-1991 (or slightly later)
 - China Monthly Statistics* (published by the NBS): March 1993 (or slightly earlier) – today.
- *Zhongguo tongji* (“China Statistics”), with data for 11/1990 – today. This Chinese language monthly NBS journal contains (text) articles, with 1-2 pages of summary statistics for one earlier month.
- *People’s Bank of China Quarterly Statistical Bulletin* (here abbreviated “PBC Quarterly Statistical Bulletin”), bilingual, published by China’s central bank, the People’s Bank of China. The first issue was published in the first quarter of 1996 with data going back typically to 1994, bilingual.⁷
- The NBS website at www.stats.gov.cn (here abbreviated “NBS” as data source).
- The online database CEIC (<http://www.ceicdata.com/China.html>).⁸

Table 1 summarizes the data availability in these sources, with “m” (in this table only) denoting “monthly” values, “c” denoting “cumulative monthly” values, dates being in the format month/year, and the most recent data checked being that of December 2011.⁹ (Sources with data through 2011 are likely to continue publication of these data in later months.) Not all sources consistently label industrial output as DRIE industrial output; some of the sources occasionally come with a note explicitly to that effect.

Some of the data come with inconsistencies, such as a December cumulative nominal value that is not compatible with the November cumulative nominal value (while a monthly, non-cumulative December value is not available). January values are frequently not reported, especially since 2007, or only combined January/February values are reported.

⁷ The *PBC Quarterly Statistical Bulletin* is the source with the longest-running nominal VA and VA real growth rate data for DRIEs and SOSCEs, even though these values are originally compiled by the NBS.

⁸ Two further sources, not considered here, are the magazine *China Monthly Economic Indicators*, published by the NBS since 2000, and the magazine *China’s Latest Economic Statistics*, published by CERD Consultants Limited in Hong Kong since possibly 1988. Both appear less accessible than the sources used here, and neither appears to report any data beyond what is reported in the sources used here. The August 2001 issue of the first reports nominal value-added of the DRIEs (with an ownership breakdown). The December 2009 issue of the latter reports VA real growth rates for the DRIEs with a breakdown by ownership.

⁹ The information in the table is likely to be accurate but possibly incomplete. I have not inspected every single monthly issue of every relevant source, but used my judgment in browsing through the various issues. The print sources, not available in their totality in any library except perhaps the Universities Service Center at Chinese University of Hong Kong, would probably cover one floor-to-ceiling shelf if placed together. When the source contains data on SOSCEs and/or SOEs, it typically also does so on other ownership forms. Sources with data through 2011 are likely to continue publication of these data in later months.

Browsing through the table, two facts stand out. First, splicing two monthly real series (for GOV and VA) would yield a monthly *real* series for the complete period May 1983 through December 2011 (and the latter series continues to be published), for the DRIEs and for the SOE-SOSCE combination. Second, it is much harder to piece together a lengthy *nominal* series, with the earliest values starting in 1990 only. In working with economy-wide annual data as a basis, while it will be straightforward to break real annual data down into a monthly real series, some of the real monthly data of the earlier years will have to be drawn upon to break nominal annual data down into a monthly nominal series.

[Table 1 about here]

Defining the output variables

(i) *Gross Output Value*

Much more is known about the published annual GOV data than about the monthly GOV series, which typically comes with no explanations. A number of redefinitions and retrospective revisions to economy-wide annual GOV values of the early and mid-1980s are fortunately avoided with the monthly data, which are limited to the DRIEs. Economy-wide annual GOV of the years from 1991 through 1994 was retrospectively revised in 1995 following the 1995 industrial census. No revised annual data for the DRIEs were published, whether that is because no revision to these data was necessary, or because the NBS chose not to publish revisions.

In 1995, the NBS re-defined GOV to incorporate four changes, the most important of which is the new exclusion of the VA tax from GOV. In 1995, the exclusion of the VA tax reduces GOV by more than ten percent (but even with the exclusion in 1995, GOV rises in 1995 compared to 1994).¹⁰ As a result, pre-1995 GOV data are not comparable to 1995 GOV data calculated using the new method. Many publications do not make apparent the statistical break in 1995 (or 1996), and some series may not have adopted the new stipulations.

Annual GOV data are published for the economy in total, by ownership categories, and for the DRIEs (in the *Statistical Yearbook* and in the *Industrial Yearbook*). Starting 2000, the economy-wide total de facto covers only the DRIEs. The implicit economy-wide total obtained by adding the GOV across all ownership categories exceeds the published economy-wide total starting 1996 and continues to exceed the economy-wide total even after 1999, when publication of GOV data on “urban and rural individual-owned enterprises” (*chengxiang geti*), one subset of industry, ends. The most likely reason is a switch to reporting GOV on SOSCEs rather than SOEs, which, in the absence of any adjustment to other ownership categories (such as the category “others”) suggests double-counting of those SOSCE activities which were previously only captured in a non-SOE category. In sum, no economy-wide annual values are available starting 2000, and two sets of economy-wide values are available for 1996-1999.

The availability of nominal monthly GOV data is limited, with data for a few years in the mid-1990s and then, carried only by CEIC, data since 2003 for the DRIEs and the SOEs (likely in their narrowest definition of unreformed SOEs), not the SOSCEs.¹¹ Real GOV data are

¹⁰ The other three changes concern the pricing of specific goods and services and are far less important in value. For details, see Holz and Lin (2001).

¹¹ CEIC does not provide details on its data sources beyond a statement that the data are from the NBS. CEIC does not specify that the ‘total’ GOV that it reports is limited to the DRIEs. A double-check against the 2011 annual DRIE GOV value published in the *Statistical Yearbook 2012*, p. 503, suggests that the CEIC data cover only the DRIEs, with the CEIC’s cumulative December 2011 value exactly equal to the annual DRIE value reported in the *Statistical Yearbook*, and its summed monthly value 0.8 percent larger.

available for May 1983 through June 2000 in form of a constant price series (through 1990 in 1980 prices, then in 1990 prices),¹² and real growth rates for the years since 2003.

The monthly nominal data appear equally affected by the redefinition of GOV in 1995 as the annual data, with DRIE as well as SOSCE nominal GOV growth throughout 1996 around zero (after years of double-digit growth). The monthly real series appear unaffected. Presumably, the *retrospective revisions* to the annual economy-wide nominal data of the early 1990s did not carry through to the monthly data; monthly data were published soon after the period they cover and could not be revised in already published print publications, while a revised new monthly series was never offered, in print or online. This suggests that the level of the monthly data as well as the growth rates could be inaccurate.

In order to obtain a consistent real GOV series from May 1983 through June 2000, the values of the 1980s are re-based to 1990 prices. This requires establishing the 1990 GOV values in 1990 prices,¹³ and then applying the real growth rates inherent in the 1983-1990 data (in constant 1980 prices) to the 1990 GOV values in 1990 prices. The non-cumulative GOV values in 1990 prices for 1991 onwards (available through June 2000) are the published ones.

The same procedure is used to obtain a SOSCE real GOV series. An additional complication here is that while SOE real GOV data are available from May 1983 through December 1998, SOSCE real GOV data are available for 1997 and 1998 only (with the two subcategories “SOEs” and “state-holding companies”). With the assumption that the group of SOSCEs is identical to the group of SOEs up through 1992 (as argued above), SOSCE values for 1993 through 1996 have to be approximated in order to obtain a consistent SOSCE series for all years (SOEs through 1992, SOSCEs since then). This is done in two separate steps.

1996 SOSCE values are obtained by applying the 1997 SOSCE VA yoy monthly real growth rates to the 1997 SOSCE real GOV values. A double-check based on applying the same procedure to SOE values suggests that this is a permissible procedure.¹⁴ Proxied SOSCE monthly

¹² The published monthly values do not always come with an explicit note that the values are in 1980 or in 1990 prices. The fact that the values are constant price values is deduced from dispersed comments in the sources, though some of them contradictory, and from cross-checking data in different sources; the same holds for the choice of base year (which, however, is also simply a matter of plausibility).

¹³ GOV values for 1990 in constant 1990 prices are not available. Two series (published in *China Statistics*) for 1990 through September 1993— (i) yoy real growth rates of the cumulative constant price GOV values of the twelve months of 1991 (which are relative to the respective months in 1990), and (ii) cumulative constant price GOV levels (in 1990 prices) for the same period (months of 1991)—allow backing out the 1990 cumulative GOV values in 1990 prices. From these, individual monthly 1990 GOV values in 1990 prices follow. This procedure is legitimate because the published cumulative real growth rates in *China Statistics* are taking the switch in base year into account. Double-checking by calculating the growth rates for the published cumulative GOV level values in 1991 vs. 1990 show these to be in the 70 percent range, i.e., by far too high (presumably due to comparing 1991 GOV in 1990 prices to 1990 GOV in 1980 prices); in 1992 and 1993, the only other years for which the source (*China Statistics*) publishes these data, the real growth rates implicit in the published cumulative real data match the published cumulative real growth rates. The published real growth rates for cumulative 1991 GOV level values also make sense in long-run comparison. (In other instances, sources made explicit that real growth rates are based on comparable aggregates.) The long-run constant price monthly GOV values (published in the *3 magazines* and used here) match the monthly and cumulative monthly values published in *China Statistics*, the source of the 1991 real growth rates, up to a fraction of a percentage point.

¹⁴ Applying the 1997 monthly SOE VA real growth rates to the SOE real GOV data of 1997 yields proxied 1996 monthly SOE real GOV values. These proxied SOE monthly real GOV values are close to the published ones, with the largest difference being 1.5 percent in August 1996. (The difference in proxied vs. published values, in percent of the published values, for January through December 1996, are: -0.4, 0.2, 0.4, -0.2, -1.2, 0.4, 0.6, 1.5, 1.0, 0.8, 0.9, 0.8.)

GOV values of 1993-1995 are obtained by comparing the ratio of the summed monthly (annual) SOE real GOV to the summed monthly (annual) DRIE GOV in 1990-1998 to the similarly defined ratio for SOSCEs (instead of SOEs) in 1996-1998, and then creating a plausible transition between the 1992 SOE ratio and the 1996 SOSCE ratio to back out annual SOSCE values for 1993-1995.¹⁵ Monthly SOSCE values are obtained by imposing the corresponding year's SOE monthly pattern.¹⁶

(ii) Value-added

Nominal monthly data are available for 1995 (with incomplete 1994 data) through November 2006.¹⁷ Publication of monthly VA data ends at the same time as does the publication of annual DRIE VA, presumably due to the illogical discrepancy between published DRIE VA and industrial VA in the national income and product accounts in 2007, with the former, a subset of industry, larger than the latter, the total of all industry (Figure 5).

YoY monthly real growth rates are available for 1995 (with incomplete 1994 data) through December 2011. Since 2006, no January real growth rates are published. What is available are monthly and cumulative real growth rates for February through December. January real growth rates for 2006 and 2007 can be approximated using all available information (with details relegated to a footnote).¹⁸

The same type of data series are available for SOSCEs as for DRIEs. Missing January real growth rates since 2006 are addressed using the same procedure as in the case of the DRIEs.

¹⁵ The detailed considerations for each year's approximated SOSCE share are available upon request. The SOE and (/) SOSCE ratio values of 1992 through 1997 are: (1992:) 0.5945 / adopt SOE value, (1993:) 0.5244 / 0.54 (plausible value), 0.4406 / 0.51 (plausible value), 0.4449 / 0.51 (plausible value), 0.4196 / 0.5039 (obtained after approximation via VA real growth), 0.3976 / 0.4827 (actual).

¹⁶ Another option would be to impose the 1996 SOSCE monthly pattern on the 1993-1995 difference between derived annual SOSCE values and summed monthly SOE values; the resulting series is near-identical to the one relying on the current year's SOE monthly pattern.

¹⁷ The available cumulative December 2006 value in *China Monthly Statistics* implies a highly problematic (very much too small) December 2006 monthly figure.

¹⁸ If one assumes zero month-on-month inflation (not unreasonable for the years since 2006), January real growth rates can be backed out as follows:

$$\begin{aligned} &\text{January nominal VA} * \text{unknown real growth rate over next 12 months} + \\ &\text{February nominal VA} * \text{real growth rate over next 12 months} = \\ &\text{'January + February' nominal VA} * \text{cumulative 'January + February' real growth rate over next 12 months.} \end{aligned}$$

As a double-check, for January 2004/2005 (a period for which the January real growth rate is published), the equation becomes $334.42(\text{b yuan}) * 20.9\% + 370.93 * 7.6\% = 13.9\%$, compared to the *published cumulative* February 2005 real growth rate of 16.9%. As the derived value and the published value are not the same, something else must be going on. Inflation can only have a negligible effect. (In the absence of month-on-month inflation figures: yoy CPI inflation in January 2005 was 1.9% and in February 2005 3.9%.) With no theoretical explanation for the discrepancy, does the procedure yield plausible results over several years? The answer is positive. For January 2003-2004, the comparison is between a derived value of 15.0% and a published value of 16.6%, for January 2002-03 between 17.1% and 17.5%. The equation is used here to obtain January 2006 and January 2007 real growth rates (12.8% and 24.2%).

Starting December 2006, nominal VA data are no longer published. Starting with the real growth rate of January 2008, equal weight is given to January and February VA levels, i.e., the nominal VA of January and February are assumed equal. This leads to a real growth rate of 15.4% in January 2008 (same as in February 2008), -3.4% in January 2009 (when the U.S. financial crisis hit), 28.6% in January 2010, and 13.3% in January 2011.

(iii) Sales value

Monthly nominal sales values of the DRIEs and of various ownership forms within the DRIEs, including SOSCEs, are available in *China Monthly Statistics* starting 2007, except for January in each year, in monthly and in cumulative monthly form.¹⁹ The CEIC database reports “industrial sales” for the months since March 1992 (and for SOEs since March 1992, with no data on SOSCEs), including all January values.

The nominal sales values are very similar to the nominal GOV values, available for some years. Comparing the nominal sales values in CEIC to the nominal GOV values available for 10/93-6/98 in *Zhongguo tongji* or, equally, in CEIC, the average ratio of GOV to sales value is 1.05, with a standard deviation of 0.03, a maximum of 1.12 and a minimum of 0.91. For the period 2007-2010 (now using CEIC values throughout), these four values are 1.02, 0.01, 1.03, and 1.00.

In calculating monthly distributions (monthly shares in the annual total, where the annual total is obtained as summed monthly values), therefore, the use of sales values should yield similar results as the use of nominal GOV. Double-checking for 2007-10, the maximum and minimum monthly differences can reach extremes of 0.08 and -0.17, and the annual standard deviation is between 0.04 and 0.06.²⁰ I.e., the monthly patterns in the nominal DRIE GOV data and in the nominal DRIE sales value data are extremely similar.

Constructing an Economy-wide Monthly Real Value-added Series

The construction of a monthly real growth or constant price output series for the whole period presents a choice between splicing real growth rates of different series (GOV, VA) of a changing subset of industry (the DRIEs with their re-definitions), or relying on a consistent economy-wide *annual* real output series that is then broken down into a monthly series using the available monthly distributions of real GOV and real VA of the DRIEs (the largest subset of all industry on which monthly data are available). The second procedure is the preferred one and described first.

All final data series are reported in Appendix 1. Appendix 2 has the supporting monthly data, Appendix 3 the supporting annual data. [Appendix 2 and Appendix 3 are to be posted on a website, and not to be included in the print paper.]

Using annual data as basis

The NBS publishes annual economy-wide industrial nominal VA and the corresponding real growth rates (for example, in the *Statistical Yearbook* series). Choosing 2002 as base year (for

¹⁹ Growth rates are also reported, for both the monthly and the cumulative monthly data, with a note to the table stating that the growth rates are in current prices. Calculating the growth rates of the nominal data and comparing these growth rates to the reported growth rates, the match is close, but almost never perfect. January values can be backed out from monthly February and cumulative monthly February data, or once could use the CEIC data, which include January values.

²⁰ For each of the four years 2007-2010, the average / standard deviation / maximum / minimum of the differences in the monthly shares in summed monthly values between GOV and sales value are 0.00 / 0.06 / 0.08 / -0.16, 0.00 / 0.04 / 0.06 / -0.08, 0.00 / 0.06 / 0.07 / -0.17, 0.00 / 0.04 / 0.06 / -0.10. When the summary statistics are based on the *absolute* values of the differences, the statistics are 0.04 / 0.04 / 0.16 / 0.01, 0.03 / 0.02 / 0.08 / 0.00, 0.04 / 0.04 / 0.17 / 0.00, 0.03 / 0.03 / 0.10 / 0.00,

reasons explained below), an annual constant price industrial VA series (in 2002 prices) can be established. These annual industrial real VA values are broken down into monthly values using monthly DRIE values.

Given the interest in monthly economy-wide real VA, DRIE monthly real VA—rather than real GOV—is the obvious first choice as source of the monthly distributions to apply to the economy-wide annual industrial real VA. DRIE monthly VA real growth rates are available starting May 1994. The early VA data could be of poor quality; the 1993 and 1994 annual values appear problematic (Figure 5). DRIE constant price GOV data are available from May 1983 through June 2000 (and GOV real growth rates for 2003-2011).

In the following, the DRIE constant price monthly GOV series is used through 1997, and the DRIE VA monthly real growth rates for the years since 1998.²¹ This avoids the earliest monthly VA data, and the switch between the two series occurs in the year in which the DRIEs are being re-defined. As explained below, 1998 is also a year in which the monthly distributions of the two series is near-identical.

For the derivation of the monthly distribution of real VA, the monthly VA real growth rates are turned into constant (year 2002) price values by assuming no inflation in 2002, i.e., by accepting the nominal monthly VA data of 2002 as real values. The monthly distribution that is applied to the annual constant price economy-wide industrial VA then is derived from the constant price monthly GOV series (in 1990 prices) through 1997 and from the real monthly VA series (in 2002 prices) starting in 1998, by using each month's output share in the (summed monthly) annual total.²²

How important for the monthly distribution is the choice of year in which to switch from real GOV to real VA data? Figure 6 shows the monthly distributions of DRIE real GOV and real VA in the overlapping years 1995-1999, for which both data series are available. Through 1997, the GOV growth rate series tends to be smoother; since 1998, there is virtually no difference between the two.²³ This suggests that 1998 (as chosen here, or 1999) is the optimal year to splice the monthly distributions of the two series.

The ideal base year exhibits no inflation between the different months of this year, i.e., no month-on-month inflation between January and December. The only published data, however, are yoy values. Zero yoy inflation in all months of this year does not imply that prices do not change from one month to the next in this year; that would require that prices did not change between the same two months of the previous year, either, which in turn would require that prices did not change between the same two months of two years earlier, etc. In the absence of month-on-month inflation data, the criterion used here for choosing the base year is that it is a low-inflation year with several preceding years of low inflation. Examining all years 1983-2011,

²¹ Because the monthly DRIE constant price GOV data for 1983 are incomplete, covering only May through December 1983, assume that the same percentage of the annual total (in form of summed monthly values) is produced in the first four months of 1983 as in 1984 (summed months January through April: 30.9%); then split the remainder, May through December 1983, using the available monthly data and start the series in May 1983.

²² Monthly distributions could also be derived from a number of other series, or combination of series. Thus, one could switch from constant price GOV to VA real growth rates in other years, or one could use constant-price GOV and GOV real growth rates throughout, bridging only the lack of relevant GOV data in 1999-2002 with some other variable.

²³ Taking the *absolute* value of the monthly difference between the two monthly distributions, the biggest 12-month (summed monthly, annual) difference is 4.4 percentage points (compared to the annual distribution total of 100 percentage points) in 1995 and 1996, with values of 3.9, 2.2, and 2.2 in 1997-1999.

the period 1997-2003 stands out with relatively low monthly yoy inflation rates. Within the period 1997-2003, 2002 appears the best choice (Figure 7).

[Figure 6 and Figure 7 about here]

Splicing monthly real growth rate series of the directly reporting industrial enterprises

An alternative to relying on an annual series broken down into monthly values using DRIE monthly output distributions is to directly splice different series of DRIE monthly yoy real growth rates and to assume that these real growth rates are representative of all industry. As in the previous case, the procedure chosen here is to switch from the constant price GOV series to the VA real growth series in 1998.

At first sight, it would seem impermissible to splice the real growth rates of two very different output series (GOV and VA). However, up through the early 2000s, the NBS operated with product-specific fixed prices that were used to value gross output at constant prices, and VA was obtained in a second step by multiplying GOV with a constant factor. What is astonishing is not so much the fact that the GOV and VA real growth rates of the DRIEs in the overlapping years are similar, as the fact that there is any difference at all (Figure 8).²⁴

[Figure 8 about here]

A severe shortcoming of the spliced real growth rate series is its limitation to a subset of all industry (the DRIEs), which furthermore changes in definition over time (though the NBS may calculate real growth rates for consistently defined sets of DRIEs in each year). The assumption that non-DRIEs grow at the same rate as DRIEs is likely a stronger limitation than the additional assumption made when using annual data as basis, that non-DRIEs exhibit the same monthly distribution as DRIEs. The spliced series, anchored to the economy-wide monthly real (equals nominal) 2002 VA, is included in Appendix 1.

Comparing the results of the two procedures

The results of the two procedures, shown graphically in Figure 1 and Figure 9, differ. The monthly real VA series with underlying annual values grows slower than the series based on official DRIE monthly (GOV and VA) real growth rates.²⁵ If the annual real growth rates are accurate, and if non-DRIEs grow at the same rate (or slower) than the DRIEs, then the yoy monthly real growth rates published by the NBS for the DRIEs are an exaggeration. On the other hand, if the DRIE yoy monthly real growth rates were accurate and were to furthermore accurately reflect real growth of all of industry, then industrial VA reported in the national and

²⁴ See Holz (2013b) for details on NBS practices for calculating annual real output. Orlik (2012, p. 25) specifically for the monthly data writes that “getting from the raw output data to an estimate of value added means subtracting the value of intermediate inputs from the value of final output. [...] Making that calculation is time consuming, so for the monthly data, the NBS dispenses with the niceties and multiplies total output for the month by the ratio of total output to value added for the previous year.” According to Orlik, real growth is obtained by applying the producer price index to nominal growth rates. Orlik’s information is for the recent years. At least through the early 2000s, it is most unlikely that a producer price index was used (which did not become available with a sectoral breakdown until the early 2000s); the official data explanations point towards the use of product-specific constant prices (as is also indicated by the fact that the NBS published constant price GOV through June 2000).

²⁵ For the purpose of comparison, the DRIE monthly GOV/VA real growth series in Figure 1 is anchored to the 2002 monthly real VA of the economy-wide series based on annual data.

product accounts underestimates actual output; consequently, China's GDP real growth rates would also be underestimates.²⁶

[Figure 9 about here]

Overall, the procedure based on annual data would seem superior. The quality of the monthly data is unlikely to be better than the quality of the annual data, and DRIE growth rates are unlikely to always be fully representative of all industry. Even if the monthly distributions of the DRIEs were to not to apply fully to the non-DRIEs, using annual data as a basis at least guarantees long-run economy-wide industrial yoy growth rates that are consistent with the national income and product accounts.²⁷

Constructing an Economy-wide Monthly Nominal Value-added Series

Data on monthly nominal VA are scarce (Table 1). Reliance on annual values again constitutes a plausible solution.

To be consistent, the annual nominal values are ideally broken down into monthly values using the monthly *nominal* output distributions of the DRIEs. However, the availability of monthly nominal values is limited:

- VA: 1995 through 2006 (with an approximated December 2006 value);²⁸
- GOV: March 1992 through 1998, 2003 through 2011;
- Sales value: March 1992 through 2011.

To obtain the monthly distributions for all years, the starting point is the nominal monthly VA data available for 1995 through 2000. For the years prior to 1995, one could use all available nominal GOV data (March 1992 or 1993 through 1994) combined with real GOV in all other years (1983 through February 1992 or end-1992); constant price GOV is the only series that is available for the months prior to March 1992. Table 2 suggests that the monthly distribution of the nominal and real GOV series are reasonably close, and in 1995 and 1996, the first two years for which the comparison is possible, equally match the distributions of the nominal VA data. To keep things simple, only constant price GOV is used for all years prior to 1995 to establish the monthly distributions.²⁹

[Table 2 about here]

²⁶ Maddison (1998, 2006) and Wu (1993, 2002) claim that China's official (annual) industrial real growth rates are *exaggerated*. (Their evidence is questioned by Holz, 2006a,b). Monthly real growth rates that are higher than the official annual real growth rates would, if accurate, and if they reflected the growth of all industry, point to exactly the opposite bias in the official data than the one claimed by Maddison and Wu.

²⁷ If the DRIE monthly distribution were to exhibit a consistent bias in comparison to the unknown economy-wide monthly distribution, yoy real growth rates could possibly not be affected at all.

²⁸ The December 2006 value is assumed to be 10 percent of the annual total. The decision was informed by the actual December share of 9.6 percent in 2005 and 10.2 and 10.6 percent in 2004 and 2003. For nominal GOV, the December shares in 2005-2007 are 10.3, 10.2, and 10.1 percent, and for sales values 10.5, 10.3, and 10.3 percent.

²⁹ One could also switch from the real GOV to the nominal VA series in 1998, to coincide with the change in the definition of the DRIEs. Since the nominal VA data are directly available and do not require any manipulation, these data are used from the point in time when they become available (1995). Table 2 shows that the monthly distributions of real GOV and nominal VA are very similar in 1995-1997.

For the years after 2006, three choices of data are available: real VA, nominal GOV, or (nominal) sales value. Examining the last four years for which nominal VA is available (2003-2006), the DRIE monthly distributions of all three series match the monthly distribution of nominal VA very well; sales values fare best, with, on average, a month's share in annual sales value about 0.1 percentage points off that month's share in annual nominal VA (an average annual value of 1.2 in Table 2). Nominal GOV fares little worse (with an average annual value of 1.6) and is the theoretically better matching variable: VA equals GOV less intermediate inputs; VA and GOV are production-based concepts, unlike sales value which is a revenue-based concept (with sales values approximately equal to GOV less net additions to inventories). In the following, the monthly distributions inherent in the nominal GOV data of 2007-2011 are applied to the annual nominal VA data.³⁰

Constructing Public Sector Monthly Real and Nominal Value-added Series

The national income and product accounts do not provide data by ownership. I.e., in the case of the public sector, foundation values in form of consistently defined series of annual nominal and real values are not available. Outside the national income and product accounts, some SOSCE annual output values are available. Those that are available are typically in nominal form.³¹

A plus in the case of SOSCE data is that the available monthly SOSCE data reflect virtually *all* SOSCEs.³² Thus, these monthly values are potentially of immediate relevance. This is unlike in the economy-wide case where no economy-wide monthly data were available and annual economy-wide data were broken down into monthly values using the monthly distribution of the largest subset of industry for which monthly data are available, the DRIEs.

Public sector real value-added

Because the monthly SOSCE data cover (nearly) all SOSCEs—and in the absence of consistently defined annual real values—the obvious procedure is to use the available monthly SOSCE constant price and real growth values. Constant price public sector monthly GOV values

³⁰ In practical terms, if only sales value data are available, these will do just as well. The monthly distributions of nominal GOV and sales value are near-identical in 2008-2011, with the average month's share in annual GOV only 0.03 percentage points different from that month's share in annual sales value (Table 2). Compared to a month's 8.3% average share in the annual total ($100\% / 12 = 8.3\%$), a difference of 0.03 percentage points is negligible.

³¹ The only SOSCE real annual values are GOV real growth rates for 1978 through 2003 (published in the *Industrial Yearbook*).

³² The 2004 economic census (*Economic Census 2004*, first secondary sector volume, pp. 2, 7, 10 and 101) reveals that not all state-owned enterprises are included in the DRIEs, even before the re-definition of the DRIE category to no longer specifically include all SOSCEs. All unreformed SOEs (as listed in the table on all industrial enterprises) vs. the unreformed SOEs included in the DRIE category numbered 25,339 vs. 23,417, with GOV of 2.35 vs. 2.34 trillion yuan, and with employment of 8.92 vs. 8.84 m laborers. For the state joint operation enterprises, the comparison numbers are 6547 vs. 1439 enterprises, 103 vs. 93b yuan GOV, and 98,500 vs. 81,500 laborers. For the solely state-owned limited liability companies, the comparison numbers are 2083 vs. 1449 enterprises, 996 vs. 995 b yuan GOV, and 3.70 vs. 3.67m laborers. Details on limited liability companies with controlling but less than 100% state ownership and on state-owned stock companies are not available; presumably, these are all large enough to be included in the DRIEs. In terms of GOV, the aggregate difference based on the available data (three categories with data above) is approximately 0.6 percentage points, and this difference would presumably be smaller if data on the missing two categories were available and included. No attempt is made in the following to bridge this slight difference between all SOSCEs and the SOSCEs included in the DRIEs (with data available only on the latter).

in 1990 prices are available for May 1983 through 1998 (with the necessary manipulations to derive a consistent SOSCE series explained above in the section on GOV). SOSCE monthly VA real growth rates are available since 1997.

A constant price monthly VA series in 2002 prices is obtained by assuming the 2002 SOSCE monthly nominal VA figures to also represent real values, and then to apply the available real growth rates to these constant price 2002 monthly values. The available SOSCE monthly VA real growth rates are used for the years since 1998, and the constant price GOV growth rates for the years prior to 1998.³³

Public sector nominal value-added

No monthly nominal output data are available for any year prior to 1993. This implies the need to either take recourse to (limited) annual data for at least the years prior to 1993 (and to apply some monthly distribution to these annual data) or to obtain SOSCE values as a share of the economy-wide values (either by using annual SOSCE shares and then applying a monthly distribution, or by using monthly SOSCE shares).

The following annual nominal SOSCE data are available at the time of writing:

- VA: 1992-2007 (*Statistical Yearbook*);
- GOV: 1978-2010 and ongoing (*Industrial Yearbook*);
- Sales value: 2001-2010 and ongoing (*Industrial Yearbook*).

Values on the same variables in the same years are also available for the DRIEs (GOV only starting 1986). Economy-wide VA data are further available for all years in the national income and product accounts, and economy-wide GOV values are available for 1978 through 1999.

The annual data (and by implication the corresponding monthly data) come with a number of questions. As noted above, DRIE nominal VA exceeded economy-wide total industrial VA in the national income and product accounts in 2007—logically not possible—before the DRIE (and, equally, the SOSCE) nominal VA series was discontinued. The SOSCE category is a subset of the DRIEs; if the DRIE VA data are of dubious quality, then the SOSCE VA data may be of dubious quality, too: it could be the case that only the VA of the non-DRIEs is problematic, and it could also be the case that the calculation of VA in this particular set of statistics is problematic across all ownership forms.

Monthly nominal SOSCE data are available for:

- VA: 1997 through November 2006;
- GOV: 1994 through 1998 (and, SOEs only, 2003-2011);
- Sales value: 2007 through 2011 (and, SOEs only, 1993-2011).

If SOSCE data were published together with economy-wide data, so that both sets of data are potentially equally problematic, the SOSCE share could still be accurate. But what is available are only (potentially problematic) SOSCE monthly values and problematic DRIE monthly values

³³ Due to the manner in which constant price SOSCE monthly GOV values of 1996 were derived, the monthly constant price GOV growth rates and the monthly VA real growth rates in 1997 are identical. (See the section on GOV above.)

(not economy-wide values), or (potentially problematic) SOSCE annual values and (presumably accurate) economy-wide data. The issue cannot be resolved.

A key assumption in the following therefore is that the SOSCE data are accurate, even when the DRIE data are not. A rationalization would be that SOSCEs tend to maintain a reliable accounting framework, while the data of smaller, non-state enterprises (also included in the DRIEs) are likely of poorer quality.

The procedure chosen here is to break the period May 1983 through 2011 into four sub-categories.

- 1997-2005: directly use 1997-2005 published SOSCE monthly nominal VA data.³⁴
- 2006-2011: calculate the share of monthly SOSCE real VA in 2002 prices in monthly economy-wide real VA in 2002 prices (both series derived above) and multiply this share by economy-wide nominal monthly VA (derived above).
- 1983-1992, 1996: multiply economy-wide nominal monthly VA (derived above) by a monthly SOSCE share obtained as a ratio (a)/(b): (a) use the monthly distribution of DRIE constant price GOV to break down economy-wide annual nominal GOV into monthly values; (b) use the monthly distribution of SOSCE constant price GOV to break down annual nominal SOSCE GOV into monthly values.³⁵
- 1993-1995: these are the years for which only SOE values are available but SOSCE values should be used. Therefore, divide the earlier derived SOSCE monthly constant price GOV of 1993-1995 by the corresponding published SOE monthly constant price GOV to obtain a multiplication factor that turns SE into SOSCE values. To obtain the SOSCE share in nominal economy-wide VA for 1993-1995, use the same procedure as for the period ‘1983-1992, 1996’—where the values through 1992 are SOE values and non-SOE SOSCEs did not yet exist, and the 1996 values are SOSCE values—to calculate the monthly SOE shares of 1993-1995, and then multiply by the multiplication factor to turn SOE into SOSCE shares.

The transition between the 1997-2005 series and the 2006- series is unproblematic because the SOSCE share values in the economy-wide total in 2005 are very similar for real and nominal values (Figure 10). I.e., either both SOSCE series, the real and the nominal series, are biased equally, or neither one is biased. The option of using the real series all the way starting in 1997 exists (rather than using the nominal series for 1997-2005), but since the intention is to have a nominal series, and since the two share series are so similar in 2005, it would seem preferable to use the available monthly nominal SOSCE VA data.

For the years prior to 1997, one has no choice but take recourse to the annual nominal GOV data and the monthly constant price GOV data. The trick is to use the available annual economy-wide and SOSCE nominal GOV data, obtaining monthly SOSCE shares by applying the DRIE monthly constant price distribution to the economy-wide annual values and the SOSCE monthly constant price distribution to the SOSCE annual value. The published annual GOV data on the public sector through 1995 cover only the SOEs, and the 1993-1995 values are consequently adjusted using the same procedure as above in the case of real growth rates. As Figure 11 shows,

³⁴ These data end in November 2006; the series could run through 2006 if December 2006 values were approximated.

³⁵ The GOV series are the original constant price series in 1980 and 1990 prices (i.e., have not yet been combined into one series at 1990 prices).

these measures create a plausible overall SOSCE share series with a transition from SOEs to SOSCEs in 1993 and from GOV-based calculations to nominal VA in 1997 (first series in Figure 11 through 1992 and in 1996, third series in 1993-1995 or 1993-1996, with equal 1996 values as the first series, and the second series for the years starting 1997).

[Figure 10 and Figure 11 about here]

Conclusions

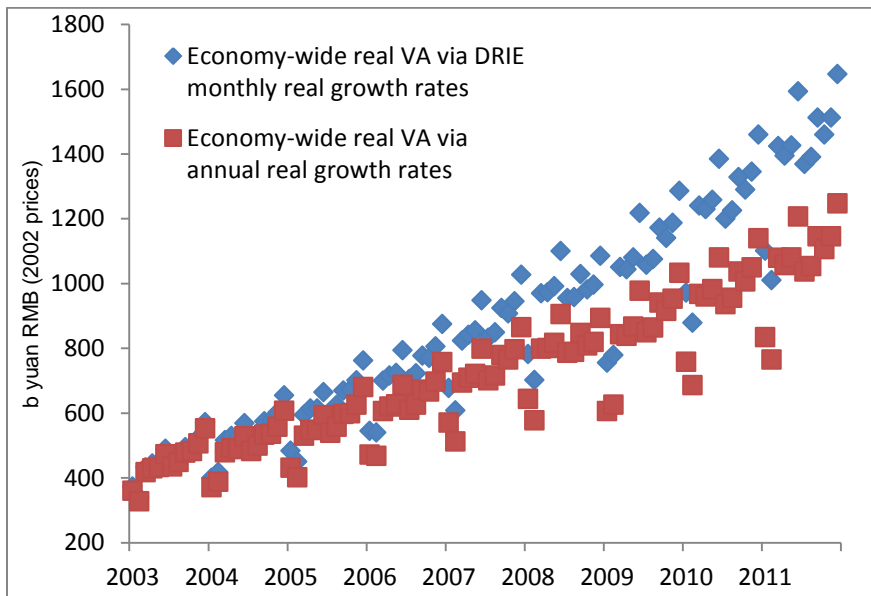
In the absence of long-run monthly industrial output series for China, this paper constructed economy-wide and public sector monthly nominal and constant price series for the period May 1983 through 2011, with the possibility to extend these series forward using regularly published official data. In contrast to the published monthly data, the series created here cover all industry (rather than just the DRIEs) and a consistently defined public sector (rather than operating with SOE vs. SOSCE series). The variable is value-added, as the most widely used measure of output.

The monthly economy-wide series can easily be further manipulated as well as extended into the future. Thus, the series can be subjected to a de-seasonalizing procedure or turned into month-on-month or yoy growth rates, and values for the non-public sector can be backed out. Looking forward, they can be extended into the future by using the annual nominal VA and VA real growth rates published as part of the national income and product accounts (published, for example, in the *Statistical Yearbook* series, or, with a time lag, on the NBS website) and applying the DRIE monthly output distribution to these annual values. In the case of nominal VA, the appropriate monthly DRIE data are the nominal GOV data (available in CEIC) or, alternatively, the sales value data (available in the *3 magazines* or CEIC); in the case of real VA, the appropriate DRIE data are the monthly yoy VA real growth rates (published, for example, in the *PBC Quarterly Statistical Bulletin*, in the *3 magazines*, on the NBS website, and in CEIC, all requiring an approximation of January data using the yoy monthly and cumulative monthly February real growth rates and assuming identical January and February nominal output values), applied to the constant price VA series (in 2002 prices) provided here.

Constant price public sector monthly VA can be extended into the future by applying the SOSCE VA real growth rates (published, for example, in the *PBC Quarterly Statistical Bulletin*, in the *3 magazines*, on the NBS website, and in CEIC, all requiring an approximation of January data) to the constant price public sector VA series (in 2002) prices provided here. Nominal public sector monthly VA can be extended into the future by applying a SOSCE share to the derived monthly economy-wide nominal values; where the SOSCE share is the ratio of (derived) SOSCE real VA in 2002 prices to (derived) economy-wide real VA in 2002 prices.

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The first series, based solely on monthly values, combines DRIE real GOV growth rates through 1998 with DRIE real VA growth rates since then, and anchors them to the 2002 nominal VA values of the second series. The second series is based on nominal annual 2002 VA and annual real VA growth rates, with annual values broken down into monthly values using the DRIE monthly distribution.

Figure 1. Monthly (YoY) VA Real Growth Rates

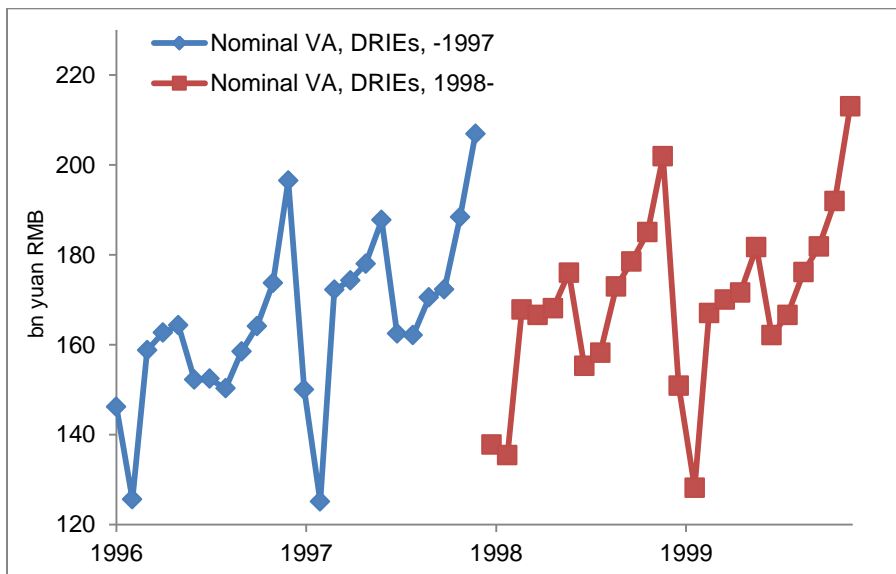


Figure 2. The 1998 Statistical Break in the DRIE VA Series

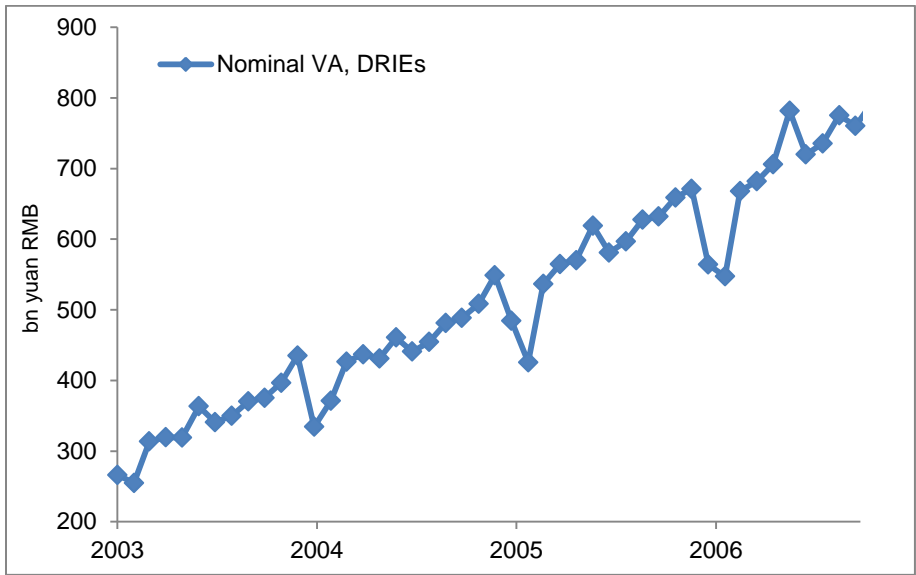


Figure 3. The 2004 and 2005 Statistical Breaks in the DRIE VA Series

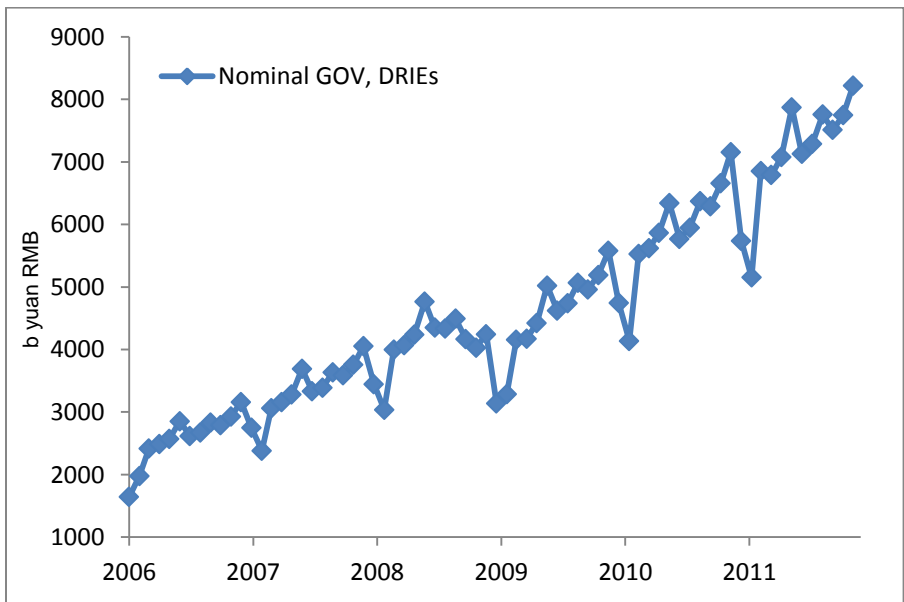
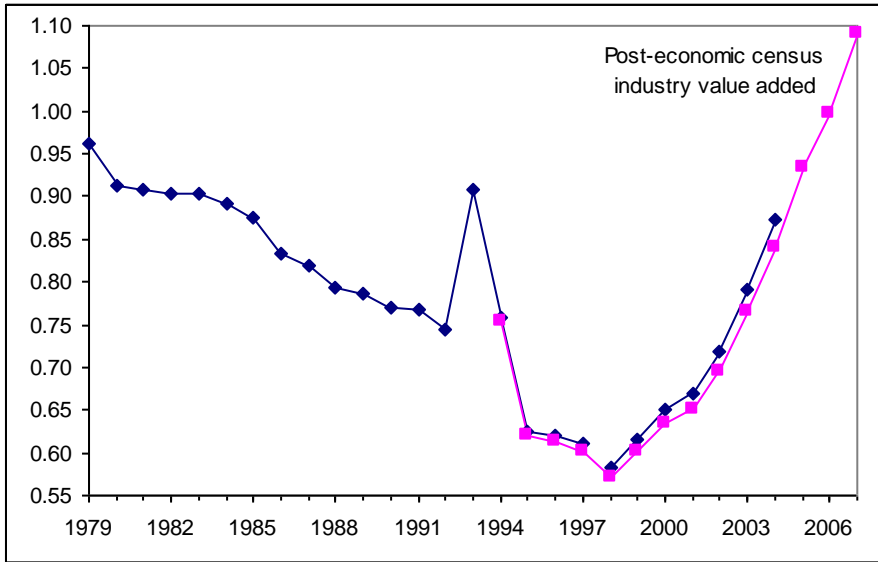


Figure 4 The 2007 and 2011 Statistical Breaks in the DRIE GOV Series



The second series (square markers) uses the post-economic census 2004 retrospectively revised economy-wide industrial VA data; DRIE VA values have never been revised.

DRIE VA of the years prior to 1992 are estimated by applying the ratio of 'industry VA to industry net material product' to the net material product values of the DRIEs (not available for 1979 and 1981). 1979 and 1981 DRIE VA are interpolated based on the ratio of DRIE GOV to constructed DRIE VA in 1980 and 1982 and the available DRIE GOV values of 1979 and 1981.

Sources: *Statistical Yearbook* and *Industrial Yearbook*, numerous issues; *Seventeen Years*.

Figure 5. DRIE Share in VA of Industry

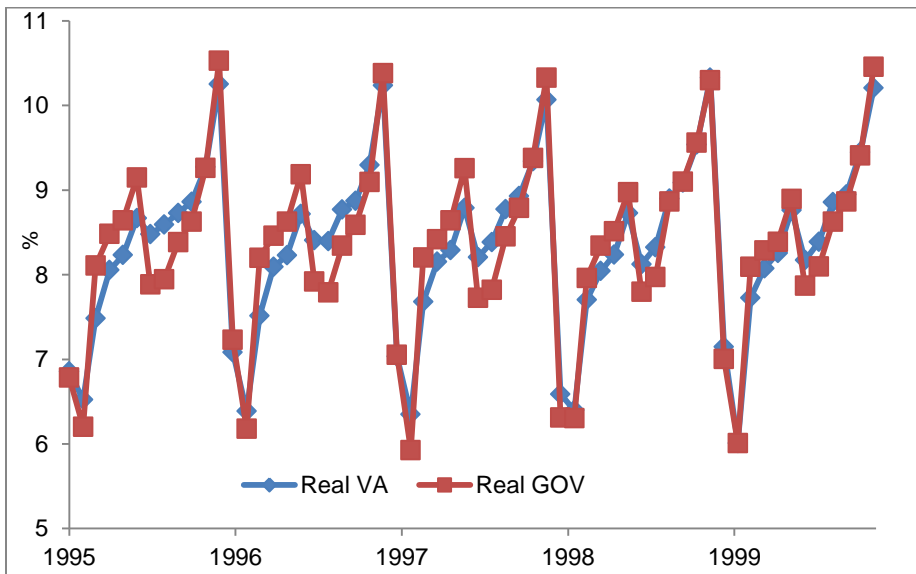
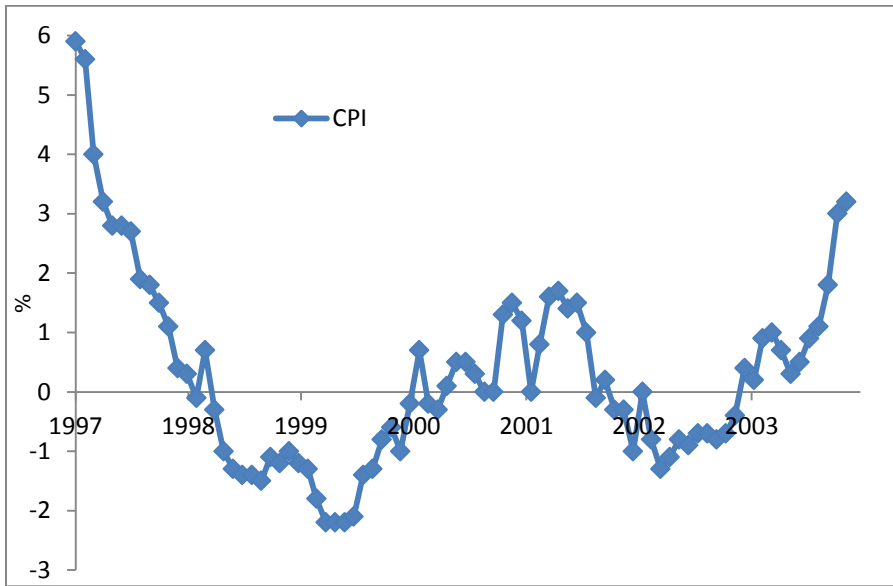


Figure 6. Monthly Shares in Annual DRIE Output



Source: 3 magazines.

Figure 7. YoY Monthly CPI (in percent)

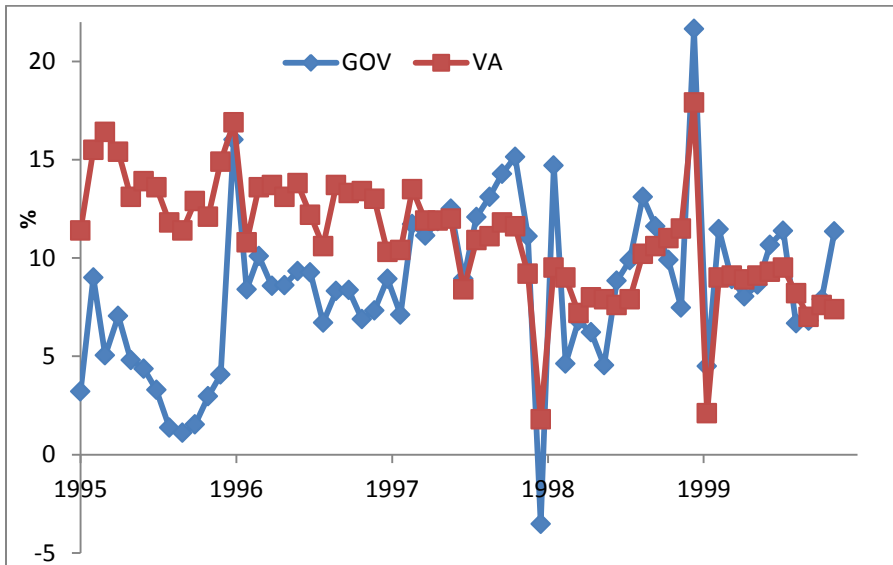
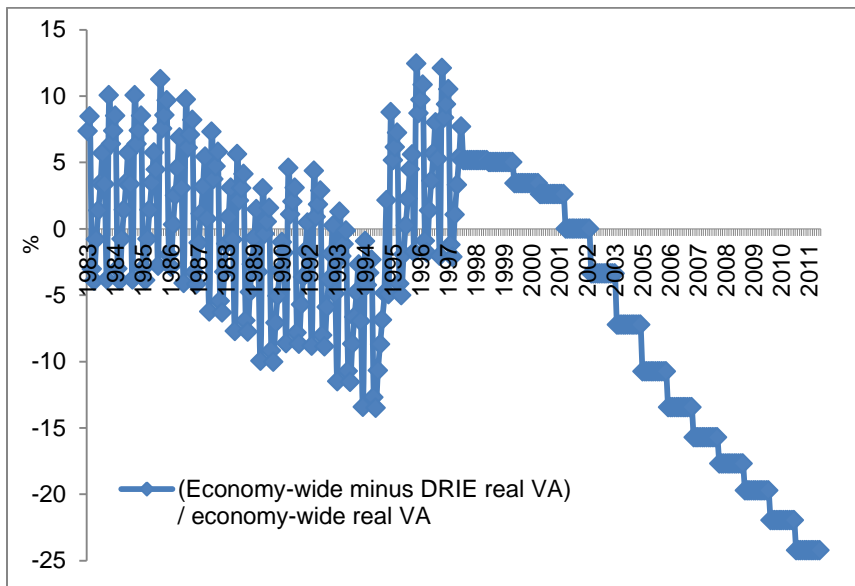


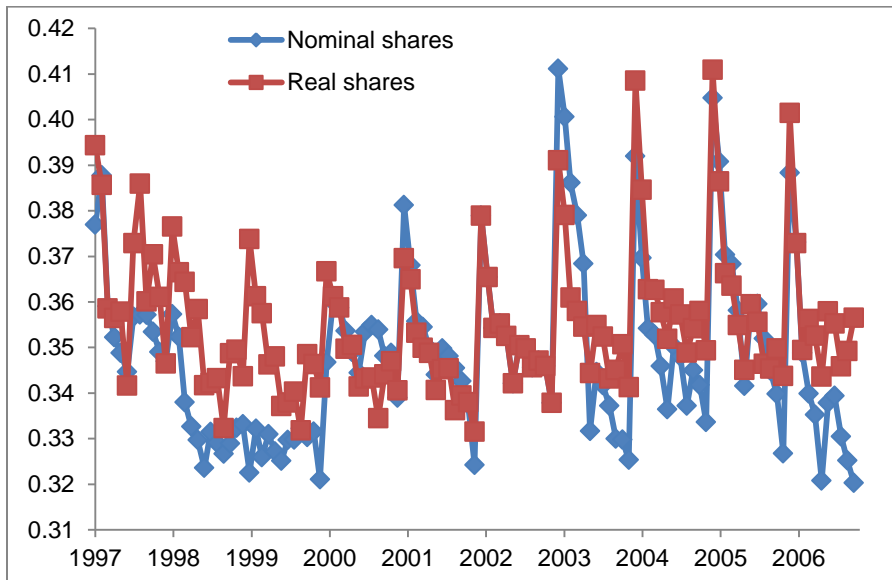
Figure 8. DRIE Real Growth Rates 1995-1999



The values are based on the difference of two series, relative to the first series. The first series is economy-wide monthly real VA (based on annual real VA in 2002 prices, with the 2002 monthly nominal VA assumed to also be real values). The second series uses the same 2002 monthly anchor as the first series, and derives values for other months based on the DRIE yoy monthly real growth rate of output (constant price GOV through 1997, real VA growth rates since 1998). The (monthly) data in the chart run from May 1983 through 2011.

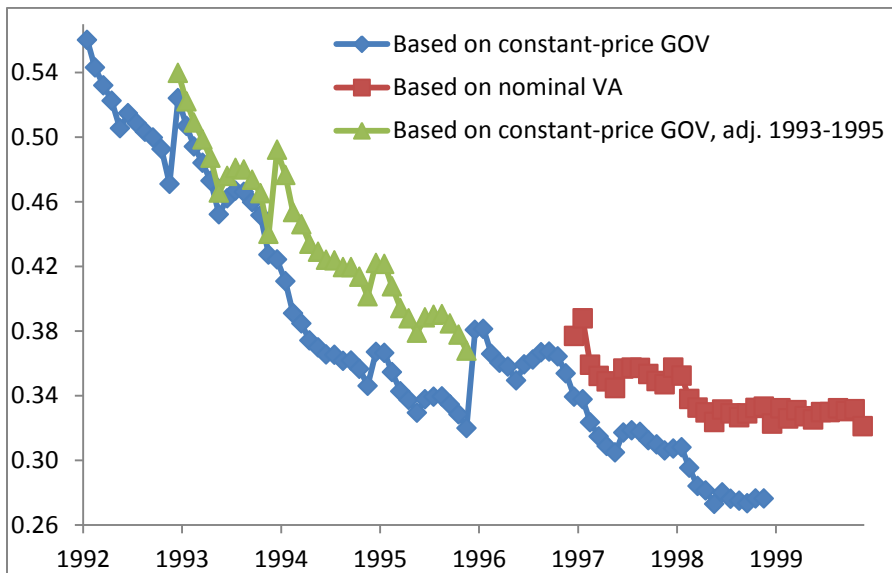
The different patterns up through 1997 and since 1998 are due to the way in which the series are constructed. The following provides a clue as to what is happening. Both series start with 2002 real VA: the second one with DRIE monthly real VA (taken to equal monthly nominal VA), the first one with economy-wide annual real VA that is broken down into monthly values using the monthly shares (in the summed monthly, 2002 value) inherent in the second series; i.e., the values of each month in 2002 of the first series is a (2002, one) fixed multiple of the value of each month of the second series. Other post-1997 monthly values for the second series are constructed by applying the yoy monthly real growth rates; the resulting monthly, post-1997 real values also provide the monthly shares for the first series. The first series relies on annual real VA that is broken down into monthly values using the monthly shares inherent in the second series. The combination of annual real VA in the first series with the proportions inherent in the second year (with in 2002 up to a scalar identical monthly values) translates into year-specific (rather than month-specific) differences in the yoy monthly real growth rates of the two series. Going back in time, this changes in 1997, when constant price GOV proportions are applied to the annual real value in the first series, while the second series relies on 1998 real values and 1998 vs. 1997 real growth rates of DRIE VA (before switching to constant price GOV real growth rates starting with the 1996 real values). The choice of switching year does not matter; the discrepancy between the pattern inherent in one year's monthly constant price GOV (first series) vs. the pattern inherent in yoy monthly growth rates (second series) causes the regularity with one series being a fixed multiple of the other across all months of a year to break.

Figure 9. Relative Difference between Economy-wide and DRIE Real Growth Rates



Nominal shares: Published nominal monthly SOSCE VA divided by derived nominal monthly economy-wide VA. Real shares: Derived monthly SOSCE real VA in 2002 prices divided by derived monthly economy-wide real VA in 2002 prices. 2002 shares are identical for the two series by construction (2002 nominal values are taken to be real values, too).

Figure 10. Monthly SOSCE Shares in Economy-wide VA



The constant price GOV series is the ratio (a)/(b), where (a) applies the monthly distribution of DRIE constant price GOV to break down economy-wide annual nominal GOV into monthly values, and (b) applies the monthly distribution of SOSCE constant price GOV to break down annual nominal SOSCE GOV into monthly values. Constant price data are in 1980 and 1990 prices; SOSCE value of 1993-1995 are adjusted SOE values. The nominal VA series is published monthly SOSCE nominal VA divided by the above derived monthly economy-wide nominal VA. The third series adjusts the second series in 1993-1995 by a multiplication factor. The multiplication factor is the ratio of (earlier derived) SOSCE monthly constant price GOV to SOE monthly constant price GOV.

Figure 11. Monthly SOSCE Shares in Economy-wide VA (Adjusted 1993-1995 Values)

Table 1. Availability of Monthly Data Across Different Sources

DRIEs	SOSCEs	SOEs
Nominal GOV		
<i>Max: 10/93-12/98, 1/03-12/11</i>		
(2) 11+12/90, 10/93-6/98 m, c (incl. growth rates)		(2) 11+12/90, 10/93-6/98 m, c (incl. growth rates)
(5) 3/92-12/98, 1/03-12/11 m (12/02-12/11 c)		(5) 3/92-12/98, 1/03-12/11 m (probably “pure” SOEs)
Constant price GOV		
<i>Max: 5/83-6/00, 1/03-12/11</i>	<i>Max: 1/97-12/98</i>	<i>Max: 5/83-12/98</i>
(1) 5/83-2/00 m (1980 prices through 1990, then 1990 prices)	(1) 1/97-12/98 m (in '90 prices)	(1) 5/83-12/98 m (1980 prices through 1990, then 1990 prices)
(2) 11/90-9/93 m, c ZGT; also c growth rates		(2) 11/90-9/93 m, c; also c growth rates
(5) 1/86-12/90 m (1980 prices)		(5) 1/86-12/90 m (1980 prices)
(5) 1/91-6/00 m (1990 prices)		(5) 1/91-12/98 m (1990 prices)
(5) 1/95-6/00 m c (-2/00) growth rates, 1/03-12/11 m c growth rates		
Nominal VA		
<i>Max: 1/94-11/06</i>	<i>Max: 1/97-11/06</i>	<i>Max: 1/97-12/98</i>
(1) 1/99-11/06 m, c (c value 12/06 not plausible)	(1) 1/99-11/06 m, c	(2) 7-11/98 m, c
(2) 7/98-11/06 m, c	(2) 11/98-11/06 m, c	(3) 1/97-12/98 m
(3) 1/94-11/06 m (incomplete 1994)	(3) 1/97-11/06 m	
(4) 1/01- 11/06 m, c	(4) 1/01- 11/06 m, c	
(5) 5/94-11/06 m, c (-12/06)	(5) 5/94-11/06 m, c (-12/06)	
VA real growth rates (yoy)		
<i>Max: 5/94-12/11</i>	<i>Max: 1/97-12/11</i>	<i>Max: 1/97-12/98</i>
(1) 1/99-12/11 m, c	(1) 1/99-12/11 m	(2) 7-11/98 c
(2) 7/98-12/11 c	(2) 11/98-12/11 c (also m 3/07-)	(3) 1/97-12/98 m
(3) 5/94-12/11 m (incomplete 1994)	(3) 1/97-12/11 m	
(4) 7/98-12/11 m, c	(4) 7/98-12/11 m, c	
(5) 1/95-12/11 m (9/97-12/11 c)	(5) 8/98-12/11 m (1/99-12/11 c)	
(5) mom seasonally adjusted 9/09-12/11 m (missing values -2010)		
Nominal sales value*		
<i>Max: 3/92-12/11</i>	<i>Max: 2/07-12/11</i>	<i>Max: 3/92-12/11</i>
(1) 2/07-12/11 m, c ** (no January values)	(1) 2/07-12/11 m, c ** (no January values)	(1) 2/07-12/11 m, c ** (no January values)
(2) 10/93-10/98 m, c		(2) 10/93-10/98 m, c
(5) 3/92-12/11 m		(5) 3/92-12/11 m
Sales value [de facto: nominal] growth rates (yoy)		
<i>Max: 10/93-12/11</i>		<i>Max: 10/93-10/98, 2/07-12/11</i>
(1) 2/07-12/11 m, c (no January values)	(1) 2/07-12/11 m, c (no January values)	(1) 2/07-12/11 m, c (no January values)
(2) 10/93-10/98 c ***		(2) 10/93-10/98 c
(5) 1/95-12/11 m		

Abbreviations: m: monthly, c: cumulative monthly, yoy: year-on-year, mom: month-on-month.

Sources: (1) 3 magazines; (2) China Statistics; (3) People's Bank of China Quarterly Statistical Bulletin; (4) NBS (website); (5) CEIC.

The most recent date for which the sources were checked is December 2011 (12/11). The same type of data are likely to be published in these sources in later months, too.

The SOE column reflects *guoyou qiye*, which could be either the unreformed (traditional, pure) SOEs only, or the sum of unreformed SOEs, SOE-SOE joint operation enterprises, and solely state-owned limited liability companies. The sources do not make this clear. Double-checks could occasionally be pursued against more elaborate annual data. If, in recent years, the SOE value is only a small fraction of the SOSCE value (say, one-fifth), “SOEs” in this source likely means the unreformed SOEs only.

In working with the data, a very few obvious typos were corrected. Different sources may at times report slightly different values. For example, constant price GOV in sources (1) and (5) differ by small amounts in a few months. Often, such differences cannot be reconciled. January data are sometimes not available but can then typically be backed out from monthly and cumulative monthly February data.

Occasional differences between the values provided by CEIC vs. other sources typically hint at data errors in the CEIC database. Thus, for example, the SOSCE VA values reported by CEIC for August through October 1998 match the SOE (not SOSCE) values published in the *PBC Quarterly Statistical Bulletin*. (Starting November 1988, the CEIC SOSCE values match the SOSCE values in the *PBC Quarterly Statistical Bulletin*). GOV values reported in the *3 magazines* vs. CEIC for April 1986, February 1988, and May 1994 are 73.96b vs. 78.96b yuan, 78.19 vs. 78.91b yuan, and 364.26 vs. 368.26b yuan, i.e., one digit differs in each of these instances; presumably the CEIC database relies on the *3 magazines* for its data, rather than the CEIC somehow obtaining correct data from the NBS while the NBS in its publications (over several issues) continuously published one and the same erroneous data point.

- * The labeling varies across sources. CEIC calls this series “industrial sales” (*gongye xiaoshou*). Labels encountered in other sources include “industrial sales value” (*gongye xiaoshou chanzhi*) and “industrial sales volume value” (*gongye xiaoshou chanliang zhi*). The SOSCE category is labeled “state share-holding” in the source, which could suggest the *difference* between SOSCEs and SOEs; comparing the summed monthly “state share-holding” value of 2010 to the annual SOSCE value (published in the *Industrial Yearbook 2011*, p. 106) yields two near-identical figures (18,160.9b yuan vs. 18,359.117b yuan), implying that these monthly values are SOSCE values.
- ** Monthly and cumulative monthly values are never fully consistent. (I.e., this month’s cumulative value less the previous month’s cumulative value is not identical to this month’s value, though very close.)
- *** Early sources do not specify if these are nominal or real growth rates. In the magazine *China Monthly Statistics* in the late 2000s and early 2010s, the reported growth rates are explicitly marked as being at current prices. These published growth rates do not perfectly match the growth rates implicit in the nominal values; they come close.

Table 2 Summed Monthly (Annual) Absolute Percentage Differences in DRIE Monthly Output Distributions*

Series 1	VA nominal	VA nominal	VA nominal	VA nominal	VA real	VA real	VA real	GOV nominal	GOV nominal	GOV real
<i>Availability:</i>	'95-'06	'95-'06	'95-'06	'95-'06	'94-'11	'94-'11	'94-'11	'93-'98, 03-11	'93-'98, 03-11	'05/83 – '99
Series 2	VA real	GOV nominal	GOV real	Sales nominal	GOV nominal	GOV real	Sales nominal	GOV real	Sales nominal	Sales nominal
1993								2.4	3.0	4.4
1994					4.9	4.4	5.6	2.2	2.7	4.7
1995	5.2	2.6	2.5	3.9	4.2	4.4	4.8	1.2	1.7	2.4
1996	5.1	2.4	2.6	3.8	4.1	4.4	4.1	0.7	2.0	1.9
1997	4.3	1.0	2.1	2.3	3.5	3.9	3.8	1.4	1.6	1.8
1998	3.6	0.5	2.9	1.9	3.2	2.2	2.5	2.4	1.6	2.0
1999	2.4		1.1	7.4		2.2	7.1			7.1
2000	1.1			1.1			1.3			
2001	2.7			1.0			2.4			
2002	(a)0.0			1.2			1.2			
2003	2.0	1.6		1.0	0.9		1.7		0.9	
2004	1.4	0.7		1.0	1.2		1.9		0.9	
2005	2.2	1.5		1.8	1.5		1.6		0.8	
2006	1.9	2.5		1.1	3.0		2.0		2.2	
2007					1.9		2.2		0.5	
2008					3.5		3.4		0.3	
2009					3.2		3.6		0.4	
2010					2.8		3.0		0.4	
2011					2.4		2.3		0.3	
Ave 95-98	4.5	1.6	2.5	3.0	3.7	3.7	3.8	1.4	1.7	2.0
Ave 03-06	1.9	1.6		1.2	1.7		1.8		1.2	

* The value 5.2 in the row labeled '1995' and the column with Series 1 "VA nominal" and Series 2 "VA real" means the sum across the twelve months of 1995 of each month's absolute difference between (i) this month's share in annual (summed monthly) nominal VA of the DRIEs (in percent) and (ii) this month's share in annual (summed monthly) real VA of the DRIEs (in percent).

(a) The value is zero by design: real monthly 2002 VA was set equal to nominal monthly 2002 VA.

Real GOV: GOV in 1990 prices; real VA: VA in 2002 prices. Nominal sales value data are available for the complete years 1993-2011.

The two rows of average values at the bottom report the average *annual* absolute difference in the period specified.

Appendix 1. Final Monthly Value-added Series (b yuan)

		<i>May 1983 – December 1997</i>					<i>January 1998 – December 2011</i>					
<i>Month</i>	<i>Year</i>	Economy-wide			SOSCEs		Economy-wide			SOSCEs		
		in 2002 con- stant prices	Ref.: in 2002 prices via DRIE real growth	in current prices	in 2002 con- stant prices	in current prices	<i>Year</i>	in 2002 con-stant prices	Ref.: in 2002 prices via DRIE real growth	in current prices	in 2002 con- stant prices	in current prices
<i>May</i>	1983	44.26	41.22	20.50	29.01	14.80						
<i>June</i>	1983	44.85	41.34	20.77	28.14	14.81						
<i>July</i>	1983	41.22	42.51	19.09	27.50	13.74						
<i>Aug</i>	1983	42.05	43.77	19.48	28.63	14.01						
<i>Sept</i>	1983	45.10	45.46	20.89	28.84	15.12						
<i>Oct</i>	1983	44.99	44.37	20.84	30.26	15.22						
<i>Nov</i>	1983	46.33	44.80	21.46	30.96	15.73						
<i>Dec</i>	1983	45.10	42.67	20.89	28.23	14.97						
<i>Jan</i>	1984	45.06	43.60	21.33	29.79	15.53	1998	219.48	208.71	233.98	82.64	83.60
<i>Feb</i>	1984	39.73	41.31	18.81	26.21	13.91	1998	213.13	202.67	229.90	78.11	81.00
<i>March</i>	1984	49.25	44.74	23.31	31.60	16.50	1998	256.61	244.03	284.92	93.50	96.30
<i>April</i>	1984	48.56	45.64	22.99	28.65	15.90	1998	267.93	254.79	282.88	94.38	94.10
<i>May</i>	1984	49.57	46.15	23.46	31.54	16.25	1998	274.45	260.99	285.43	98.37	94.10
<i>June</i>	1984	49.78	45.88	23.57	30.47	16.20	1998	290.75	276.49	298.84	99.35	96.70
<i>July</i>	1984	47.08	48.54	22.29	30.47	15.38	1998	270.63	257.36	263.69	92.61	87.40
<i>Aug</i>	1984	48.21	50.16	22.82	31.77	15.71	1998	277.32	263.72	268.62	95.20	88.40
<i>Sept</i>	1984	51.62	52.01	24.43	31.69	16.77	1998	296.39	281.85	293.58	98.48	95.90
<i>Oct</i>	1984	51.80	51.07	24.52	32.82	16.67	1998	302.74	287.89	303.08	105.58	99.70
<i>Nov</i>	1984	54.14	52.33	25.63	33.50	17.18	1998	317.78	302.19	314.12	111.06	104.40
<i>Dec</i>	1984	54.36	51.41	25.73	31.31	16.76	1998	344.06	327.19	342.82	118.25	114.20
<i>Jan</i>	1985	56.11	54.29	27.79	34.86	18.80	1999	258.42	246.07	262.58	96.61	84.70
<i>Feb</i>	1985	48.48	50.41	24.01	29.56	16.23	1999	217.31	206.93	223.08	78.50	74.10
<i>March</i>	1985	60.25	54.74	29.84	36.44	19.69	1999	279.34	265.99	290.59	99.86	94.70
<i>April</i>	1985	60.61	56.96	30.02	33.43	19.20	1999	291.92	277.97	295.82	101.08	97.90
<i>May</i>	1985	60.75	56.56	30.09	36.04	19.21	1999	298.48	284.22	298.60	103.88	97.70
<i>June</i>	1985	61.18	56.38	30.30	34.89	19.19	1999	316.78	301.65	316.17	106.81	102.80
<i>July</i>	1985	56.59	58.34	28.03	34.40	17.97	1999	295.40	281.29	282.07	99.83	93.00
<i>Aug</i>	1985	56.60	58.88	28.03	35.30	18.06	1999	303.27	288.78	289.90	103.19	95.60
<i>Sept</i>	1985	59.11	59.56	29.28	34.64	18.97	1999	320.27	304.96	306.43	106.26	101.80
<i>Oct</i>	1985	57.86	57.04	28.65	35.34	18.58	1999	323.50	308.04	316.35	112.76	104.50
<i>Nov</i>	1985	58.89	56.91	29.16	35.63	18.91	1999	341.47	325.16	333.92	118.28	110.70

<i>Dec</i>	1985	59.93	56.67	29.68	34.19	18.94	1999	369.03	351.40	370.64	125.93	119.00
<i>Jan</i>	1986	59.89	57.33	31.11	36.27	20.26	2000	277.15	267.97	277.71	101.63	96.30
<i>Feb</i>	1986	49.46	50.88	25.69	29.83	16.96	2000	239.69	231.76	251.34	86.58	90.50
<i>March</i>	1986	64.57	58.04	33.54	38.42	21.50	2000	307.83	297.64	318.11	110.45	114.10
<i>April</i>	1986	63.64	59.17	33.05	34.57	20.56	2000	320.26	309.66	326.05	112.00	115.30
<i>May</i>	1986	64.50	59.42	33.50	37.79	20.86	2000	327.75	316.91	331.80	114.89	115.80
<i>June</i>	1986	66.13	60.29	34.35	36.99	21.07	2000	350.03	338.45	353.60	119.52	121.80
<i>July</i>	1986	60.58	61.78	31.46	36.12	19.54	2000	328.15	317.29	331.29	112.61	117.10
<i>Aug</i>	1986	62.18	64.01	32.29	37.81	20.02	2000	336.89	325.74	340.08	115.68	120.70
<i>Sept</i>	1986	65.97	65.76	34.26	37.34	21.17	2000	353.25	341.56	353.77	118.16	125.20
<i>Oct</i>	1986	66.72	65.08	34.65	39.06	21.26	2000	354.90	343.16	354.11	122.12	123.30
<i>Nov</i>	1986	69.10	66.07	35.89	39.96	21.96	2000	371.93	359.63	366.95	129.04	128.00
<i>Dec</i>	1986	71.05	66.48	36.90	38.33	21.99	2000	401.22	387.94	398.56	136.64	135.10
<i>Jan</i>	1987	62.47	60.61	33.13	37.27	20.82	2001	281.31	274.14	274.10	103.97	104.50
<i>Feb</i>	1987	60.34	62.92	32.01	35.08	19.95	2001	283.02	275.80	312.75	103.29	115.10
<i>March</i>	1987	72.50	66.06	38.45	41.84	23.42	2001	342.39	333.66	362.07	120.94	128.80
<i>April</i>	1987	72.30	68.14	38.35	38.44	22.87	2001	354.31	345.27	366.43	123.99	129.90
<i>May</i>	1987	73.24	68.39	38.85	41.88	23.13	2001	358.37	349.23	368.54	125.00	128.90
<i>June</i>	1987	76.22	70.44	40.43	41.66	23.74	2001	382.39	372.63	387.78	130.27	133.40
<i>July</i>	1987	69.85	72.21	37.05	40.78	22.06	2001	351.97	343.00	355.92	121.51	124.50
<i>Aug</i>	1987	70.90	73.98	37.60	42.13	22.32	2001	361.34	352.12	361.10	124.82	125.70
<i>Sept</i>	1987	75.33	76.13	39.96	41.77	23.70	2001	383.80	374.01	380.34	129.04	131.40
<i>Oct</i>	1987	75.53	74.68	40.06	43.46	23.67	2001	383.13	373.36	377.11	130.05	129.20
<i>Nov</i>	1987	76.92	74.56	40.80	43.61	23.97	2001	398.19	388.04	386.32	134.59	130.40
<i>Dec</i>	1987	78.98	74.91	41.89	42.38	24.32	2001	432.73	421.70	425.62	143.47	138.00
<i>Jan</i>	1988	76.33	75.75	44.25	44.74	26.53	2002	325.13	325.13	325.13	123.20	123.20
<i>Feb</i>	1988	65.71	70.08	38.09	38.14	23.03	2002	283.24	283.24	283.24	103.50	103.50
<i>March</i>	1988	81.22	75.69	47.08	46.51	27.63	2002	370.03	370.03	370.03	131.10	131.10
<i>April</i>	1988	82.88	79.90	48.04	43.46	27.45	2002	387.05	387.05	387.05	137.50	137.50
<i>May</i>	1988	84.44	80.65	48.95	47.31	27.74	2002	394.28	394.28	394.28	139.00	139.00
<i>June</i>	1988	87.69	82.89	50.83	46.67	28.23	2002	418.84	418.84	418.84	143.30	143.30
<i>July</i>	1988	78.88	83.41	45.73	44.90	25.79	2002	386.90	386.90	386.90	135.60	135.60
<i>Aug</i>	1988	82.00	87.52	47.53	47.29	26.60	2002	396.84	396.84	396.84	138.80	138.80
<i>Sept</i>	1988	88.52	91.50	51.32	47.61	28.67	2002	425.62	425.62	425.62	147.10	147.10
<i>Oct</i>	1988	88.89	89.89	51.53	49.81	28.79	2002	426.37	426.37	426.37	148.00	148.00
<i>Nov</i>	1988	88.70	87.93	51.42	49.13	28.67	2002	444.30	444.30	444.30	153.70	153.70
<i>Dec</i>	1988	91.34	88.61	52.95	47.85	29.15	2002	484.53	484.53	484.53	163.70	163.70
<i>Jan</i>	1989	81.26	81.93	50.32	46.38	29.37	2003	360.70	373.25	356.35	141.06	146.50
<i>Feb</i>	1989	69.54	75.34	43.07	38.82	25.03	2003	327.92	339.33	340.96	124.30	136.60
<i>March</i>	1989	91.78	86.88	56.84	50.88	32.28	2003	418.02	432.56	419.54	150.90	162.00
<i>April</i>	1989	92.77	90.85	57.45	47.21	31.84	2003	429.77	444.72	427.97	153.86	162.20

<i>May</i>	1989	92.38	89.63	57.21	50.61	31.68	2003	433.23	448.30	427.03	153.60	157.30
<i>June</i>	1989	93.92	90.19	58.17	49.09	31.71	2003	473.16	489.62	486.34	162.93	161.30
<i>July</i>	1989	85.07	91.37	52.68	47.79	29.31	2003	435.58	450.74	456.48	154.58	157.30
<i>Aug</i>	1989	85.67	92.88	53.06	49.39	29.67	2003	449.08	464.70	468.26	158.23	160.00
<i>Sept</i>	1989	87.94	92.33	54.46	47.74	30.70	2003	478.35	495.00	495.84	164.16	167.20
<i>Oct</i>	1989	85.65	87.99	53.04	48.33	29.83	2003	482.91	499.71	502.40	166.65	165.80
<i>Nov</i>	1989	88.07	88.69	54.54	48.95	30.51	2003	506.22	523.83	530.91	177.52	175.10
<i>Dec</i>	1989	92.95	91.60	57.56	48.68	31.66	2003	552.99	572.23	582.45	188.75	189.50
<i>Jan</i>	1990	74.44	76.93	47.17	43.36	27.50	2004	371.20	400.12	405.12	151.64	158.80
<i>Feb</i>	1990	71.62	79.55	45.39	40.42	26.09	2004	387.83	418.05	449.35	149.16	166.10
<i>March</i>	1990	90.81	88.13	57.55	50.88	32.32	2004	479.14	516.48	516.65	173.83	183.00
<i>April</i>	1990	92.29	92.65	58.49	47.55	32.11	2004	491.37	529.66	529.45	178.17	186.80
<i>May</i>	1990	93.92	93.41	59.52	51.61	32.35	2004	488.67	526.75	522.07	174.79	180.60
<i>June</i>	1990	96.99	95.48	61.47	50.44	32.63	2004	527.81	568.94	558.21	185.74	187.80
<i>July</i>	1990	85.42	94.06	54.14	47.69	29.29	2004	482.97	520.60	534.12	174.22	187.10
<i>Aug</i>	1990	87.43	97.17	55.41	49.97	30.05	2004	499.66	538.59	550.53	178.49	191.60
<i>Sept</i>	1990	92.22	99.26	58.45	49.15	31.65	2004	533.14	574.69	582.98	186.00	196.60
<i>Oct</i>	1990	94.13	99.13	59.65	52.01	32.15	2004	536.37	578.16	591.80	189.98	204.20
<i>Nov</i>	1990	98.76	101.96	62.59	53.59	33.44	2004	557.89	601.36	615.87	199.71	210.50
<i>Dec</i>	1990	104.11	105.17	65.98	53.81	35.05	2004	607.30	654.63	664.83	212.15	221.80
<i>Jan</i>	1991	93.44	95.15	61.04	51.23	36.08	2005	431.75	483.75	536.84	177.42	217.30
<i>Feb</i>	1991	78.98	86.43	51.59	42.82	30.71	2005	401.47	449.82	471.64	155.13	184.30
<i>March</i>	1991	100.68	96.27	65.77	51.37	37.94	2005	530.57	594.46	594.84	194.34	220.30
<i>April</i>	1991	104.71	103.57	68.41	53.31	38.54	2005	548.37	614.41	625.82	199.38	230.50
<i>May</i>	1991	108.11	105.94	70.63	55.86	39.47	2005	548.18	614.19	631.93	194.54	226.30
<i>June</i>	1991	111.80	108.43	73.03	54.93	40.13	2005	593.10	664.52	686.21	204.69	234.40
<i>July</i>	1991	98.68	107.06	64.46	52.52	36.58	2005	539.45	604.42	644.05	193.90	231.50
<i>Aug</i>	1991	101.79	111.46	66.49	55.21	37.31	2005	557.61	624.77	661.40	198.30	237.80
<i>Sept</i>	1991	107.50	114.00	70.23	54.44	39.30	2005	597.55	669.51	695.51	207.02	244.80
<i>Oct</i>	1991	108.72	112.81	71.02	56.90	39.28	2005	599.10	671.25	700.46	206.89	241.60
<i>Nov</i>	1991	110.00	111.88	71.86	55.94	39.29	2005	625.82	701.18	730.41	218.89	248.20
<i>Dec</i>	1991	113.55	113.02	74.18	54.78	39.61	2005	680.67	762.64	743.96	234.00	243.10
<i>Jan</i>	1992	105.26	107.41	72.17	55.67	40.43	2006	472.22	545.54	599.28	189.59	240.60
<i>Feb</i>	1992	96.14	105.43	65.92	49.94	36.93	2006	467.63	540.24	581.58	174.37	216.86
<i>March</i>	1992	120.67	115.62	82.74	58.99	44.93	2006	606.16	700.28	709.80	211.84	248.05
<i>April</i>	1992	123.54	122.45	84.71	60.45	45.07	2006	620.12	716.40	724.69	220.91	258.16
<i>May</i>	1992	125.89	123.62	86.32	61.91	45.11	2006	626.81	724.13	750.20	221.00	264.51
<i>June</i>	1992	133.46	129.71	91.51	61.39	46.25	2006	687.38	794.11	830.74	236.21	285.47
<i>July</i>	1992	121.37	131.96	83.22	59.65	42.84	2006	610.56	705.36	765.07	218.53	273.83
<i>Aug</i>	1992	123.12	135.11	84.42	61.64	42.95	2006	625.70	722.85	781.61	222.29	277.68
<i>Sept</i>	1992	129.49	137.62	88.79	60.03	44.69	2006	672.84	777.30	823.97	232.68	284.95

<i>Oct</i>	1992	132.76	138.05	91.03	63.91	45.49	2006	666.44	769.92	807.74	232.75	282.09
<i>Nov</i>	1992	138.39	141.06	94.89	64.55	46.75	2006	697.38	805.66	843.30	248.66	300.68
<i>Dec</i>	1992	149.80	149.42	102.71	64.90	48.39	2006	757.19	874.75	913.11	270.97	326.77
<i>Jan</i>	1993	112.20	117.96	88.38	57.02	47.71	2007	571.16	677.70	758.08	228.89	303.79
<i>Feb</i>	1993	124.02	140.12	97.69	59.87	51.00	2007	512.68	608.31	656.79	191.98	245.94
<i>March</i>	1993	147.74	145.85	116.37	67.52	59.25	2007	694.06	823.53	844.22	240.65	292.71
<i>April</i>	1993	150.18	153.36	118.29	68.66	58.98	2007	708.83	841.05	871.22	250.07	307.36
<i>May</i>	1993	155.60	157.43	122.57	71.13	59.72	2007	720.76	855.20	905.01	249.73	313.57
<i>June</i>	1993	168.60	168.83	132.80	71.27	61.86	2007	799.11	948.16	1018.08	267.63	340.96
<i>July</i>	1993	147.41	165.12	116.11	66.81	55.28	2007	701.47	832.32	919.36	245.84	322.20
<i>Aug</i>	1993	147.47	166.73	116.16	69.59	55.86	2007	715.83	849.35	935.02	252.52	329.85
<i>Sept</i>	1993	149.73	163.94	117.94	66.01	56.61	2007	778.92	924.22	1002.71	268.98	346.27
<i>Oct</i>	1993	149.92	160.62	118.09	68.21	55.93	2007	765.03	907.74	989.39	264.40	341.94
<i>Nov</i>	1993	159.68	167.69	125.78	70.13	58.51	2007	796.47	945.04	1035.59	283.96	369.22
<i>Dec</i>	1993	188.67	193.90	148.62	76.15	65.41	2007	865.51	1026.96	1118.01	307.83	397.63
<i>Jan</i>	1994	146.20	157.16	132.97	73.17	65.44	2008	643.76	782.06	912.98	256.12	363.24
<i>Feb</i>	1994	126.59	146.23	115.13	60.24	54.86	2008	577.84	701.98	804.30	214.06	297.95
<i>March</i>	1994	171.67	173.28	156.13	75.49	70.81	2008	798.55	970.11	1059.22	275.06	364.85
<i>April</i>	1994	176.23	184.01	160.28	77.87	71.50	2008	801.00	973.10	1078.29	278.33	374.67
<i>May</i>	1994	183.43	189.75	166.83	80.69	72.41	2008	816.59	992.03	1123.16	281.20	386.77
<i>June</i>	1994	194.96	199.61	177.31	81.99	76.06	2008	905.36	1099.87	1262.28	300.81	419.40
<i>July</i>	1994	169.86	194.54	154.48	74.06	65.50	2008	785.84	954.67	1152.06	274.85	402.94
<i>Aug</i>	1994	174.41	201.61	158.62	78.32	67.21	2008	788.63	958.07	1148.43	277.02	403.40
<i>Sept</i>	1994	184.45	206.49	167.75	76.75	70.36	2008	847.49	1029.58	1190.12	288.89	405.68
<i>Oct</i>	1994	189.01	207.04	171.91	82.27	72.11	2008	808.47	982.17	1103.93	276.30	377.27
<i>Nov</i>	1994	200.08	214.84	181.97	84.39	75.26	2008	819.92	996.07	1067.01	285.95	372.13
<i>Dec</i>	1994	225.05	236.47	204.68	89.49	82.17	2008	893.52	1085.49	1124.22	305.98	384.98
<i>Jan</i>	1995	165.70	162.22	169.35	71.89	71.48	2009	606.57	755.47	780.52	241.78	311.12
<i>Feb</i>	1995	151.53	159.41	167.30	64.47	70.51	2009	625.62	779.20	817.55	221.76	289.79
<i>March</i>	1995	198.01	182.01	212.20	79.12	86.52	2009	843.55	1050.63	1034.28	282.48	346.35
<i>April</i>	1995	207.15	196.98	214.66	81.74	84.60	2009	838.33	1044.13	1038.58	284.73	352.74
<i>May</i>	1995	211.11	198.89	217.13	83.89	84.23	2009	867.39	1080.32	1100.15	287.95	365.21
<i>June</i>	1995	223.43	208.33	225.48	83.89	85.43	2009	977.57	1217.56	1249.66	317.96	406.45
<i>July</i>	1995	192.64	200.94	200.15	77.77	77.73	2009	849.29	1057.78	1149.50	295.19	399.54
<i>Aug</i>	1995	194.12	204.36	199.33	81.13	77.76	2009	863.85	1075.91	1178.88	300.84	410.55
<i>Sept</i>	1995	204.76	208.76	201.93	80.17	78.84	2009	941.55	1172.69	1260.93	322.98	432.53
<i>Oct</i>	1995	210.71	210.20	207.13	85.02	79.69	2009	915.55	1140.30	1234.35	314.15	423.55
<i>Nov</i>	1995	226.21	221.21	224.52	88.06	84.79	2009	953.30	1187.32	1291.99	340.28	461.18
<i>Dec</i>	1995	257.17	246.09	255.87	94.71	94.12	2009	1032.78	1286.31	1387.60	372.38	500.31
<i>Jan</i>	1996	198.72	188.19	225.96	79.69	86.01	2010	758.18	971.54	1082.80	309.72	442.33
<i>Feb</i>	1996	169.78	172.79	194.12	66.98	74.02	2010	685.92	878.94	943.92	251.26	345.76

<i>March</i>	1996	225.35	200.40	245.44	82.79	89.77	2010	968.31	1240.80	1261.12	333.90	434.86
<i>April</i>	1996	232.50	213.88	251.46	85.97	90.61	2010	959.87	1229.99	1282.48	334.84	447.38
<i>May</i>	1996	237.03	216.02	253.94	89.06	90.88	2010	982.18	1258.57	1338.67	336.32	458.39
<i>June</i>	1996	252.48	227.75	235.23	89.58	82.17	2010	1080.34	1384.36	1447.27	360.25	482.60
<i>July</i>	1996	217.59	219.56	235.54	83.28	84.62	2010	936.09	1199.52	1316.53	328.85	462.49
<i>Aug</i>	1996	214.13	218.08	232.30	85.18	84.16	2010	956.34	1225.46	1357.48	336.04	476.99
<i>Sept</i>	1996	229.27	226.13	244.97	86.43	89.85	2010	1036.87	1328.65	1454.50	358.50	502.90
<i>Oct</i>	1996	236.04	227.79	253.63	93.17	93.13	2010	1006.45	1289.68	1435.15	347.45	495.45
<i>Nov</i>	1996	249.95	236.45	268.46	96.19	97.80	2010	1049.80	1345.23	1519.23	377.37	546.12
<i>Dec</i>	1996	285.30	264.12	303.70	103.58	107.46	2010	1139.34	1459.96	1633.07	408.87	586.06
<i>Jan</i>	1997	215.82	205.02	240.89	85.11	90.80	2011	834.04	1100.75	1270.57	342.86	522.32
<i>Feb</i>	1997	181.30	185.09	200.90	69.93	77.90	2011	765.20	1009.90	1140.59	277.64	413.84
<i>March</i>	1997	250.98	223.88	276.54	89.99	99.30	2011	1079.29	1424.44	1516.71	376.97	529.75
<i>April</i>	1997	257.57	237.67	279.91	91.81	98.60	2011	1056.84	1394.81	1503.11	369.66	525.76
<i>May</i>	1997	264.34	241.66	285.85	94.59	99.70	2011	1080.45	1425.96	1566.59	366.25	531.04
<i>June</i>	1997	283.19	256.24	301.43	96.74	103.90	2011	1207.31	1593.40	1742.78	398.79	575.66
<i>July</i>	1997	236.30	239.18	260.96	88.11	93.10	2011	1037.02	1368.65	1578.10	360.09	547.96
<i>Aug</i>	1997	239.25	244.41	260.32	92.34	93.00	2011	1053.88	1390.90	1614.01	367.63	563.02
<i>Sept</i>	1997	258.51	255.76	273.81	93.08	97.80	2011	1145.64	1512.01	1717.49	394.00	590.66
<i>Oct</i>	1997	268.89	260.30	276.70	99.60	97.80	2011	1106.17	1459.92	1662.87	378.38	568.80
<i>Nov</i>	1997	286.90	272.25	302.56	103.60	105.60	2011	1145.67	1512.04	1714.88	406.81	608.93
<i>Dec</i>	1997	316.00	293.44	332.27	109.49	115.30	2011	1247.80	1646.84	1819.32	446.49	650.99

Appendix 2. Raw and Supporting Data

	DRIEs						SOSCEs					
	<i>Publ.</i>	<i>Publ.</i>	<i>Derived</i>	<i>Publ.</i>	<i>Publ.</i>	<i>Publ.</i>	<i>Publ.</i>	<i>Publ.</i>	<i>Derived</i>	<i>Publ.</i>	<i>Publ.</i>	<i>Derived</i>
	GOV			VA			GOV			VA		
	1980	1990	1990	curr.	curr.	real	1980	1990	1990	curr.	real	curr.
	prices	prices	prices	prices	prices	growth	prices	prices	prices	prices	growth	prices
	b yuan	b yuan	b yuan	b yuan	b yuan	yoy	b yuan	b yuan	b yuan	b yuan	yoy	share in
						in %					in %	econ.wide
May	1983	52.70		79.13			4.04		67.08			0.72
June	1983	54.50		80.19			4.12		67.25			0.71
July	1983	49.47		73.70			3.78		62.65			0.72
Aug	1983	50.25		75.19			3.83		63.29			0.72
Sept	1983	53.65		80.63			4.12		68.12			0.72
Oct	1983	53.35		80.44			4.13		68.33			0.73
Nov	1983	55.36		82.85			4.30		71.14			0.73
Dec	1983	54.39		80.64			4.13		66.78			0.72
Jan	1984	51.86		80.55			4.05		68.64			0.73
Feb	1984	46.09		71.02			3.66		61.50			0.74
March	1984	56.87		88.03			4.32		76.38			0.71
April	1984	57.05		86.80			4.24		67.76			0.69
May	1984	59.00		88.59			4.39		72.93			0.69
June	1984	60.48		88.98			4.46		72.83			0.69
July	1984	56.49		84.16			4.19		69.42			0.69
Aug	1984	57.59		86.18			4.26		70.24			0.69
Sept	1984	61.39		92.26			4.53		74.85			0.69
Oct	1984	61.40		92.58			4.48		74.11			0.68
Nov	1984	64.67		96.78			4.66		76.98			0.67
Dec	1984	65.53		97.16			4.58		74.07			0.65
Jan	1985	64.57		100.29			4.74		80.32			0.68
Feb	1985	56.24		86.66			4.13		69.35			0.68
March	1985	69.57		107.69			4.98		88.06			0.66
April	1985	71.20		108.33			4.95		79.09			0.64
May	1985	72.31		108.58			5.01		83.31			0.64
June	1985	74.32		109.35			5.11		83.39			0.63
July	1985	67.89		101.14			4.73		78.38			0.64
Aug	1985	67.60		101.15			4.73		78.05			0.64
Sept	1985	70.30		105.65			4.95		81.82			0.65
Oct	1985	68.58		103.41			4.83		79.80			0.65
Nov	1985	70.33		105.25			4.95		81.86			0.65
Dec	1985	72.24		107.11			5.01		80.89			0.64
Jan	1986	68.19		105.91			4.94		83.57			0.65
Feb	1986	56.76		87.46			4.17		69.99			0.66
March	1986	73.77		114.19			5.26		92.86			0.64
April	1986	73.96		112.53			5.11		81.78			0.62
May	1986	75.96		114.06			5.26		87.37			0.62
June	1986	79.48		116.94			5.42		88.41			0.61
July	1986	71.90		107.12			4.96		82.31			0.62
Aug	1986	73.48		109.95			5.06		83.58			0.62
Sept	1986	77.62		116.65			5.33		88.19			0.62
Oct	1986	78.25		117.99			5.34		88.20			0.61
Nov	1986	81.65		122.19			5.55		91.81			0.61

Dec	1986	84.74	125.64	5.61	90.67	0.60
Jan	1987	72.09	111.97	5.07	85.88	0.63
Feb	1987	70.20	108.17	4.90	82.31	0.62
March	1987	83.96	129.96	5.72	101.12	0.61
April	1987	85.18	129.60	5.69	90.94	0.60
May	1987	87.43	131.29	5.83	96.83	0.60
June	1987	92.86	136.63	6.10	99.57	0.59
July	1987	84.04	125.20	5.60	92.91	0.60
Aug	1987	84.93	127.09	5.64	93.14	0.59
Sept	1987	89.85	135.04	5.96	98.66	0.59
Oct	1987	89.79	135.39	5.94	98.15	0.59
Nov	1987	92.14	137.89	6.06	100.20	0.59
Dec	1987	95.49	141.58	6.20	100.25	0.58
Jan	1988	90.10	139.94	6.09	103.08	0.60
Feb	1988	78.19	120.48	5.33	89.48	0.60
March	1988	96.20	148.90	6.36	112.41	0.59
April	1988	99.87	151.95	6.43	102.81	0.57
May	1988	103.10	154.82	6.58	109.37	0.57
June	1988	109.27	160.77	6.84	111.55	0.56
July	1988	97.07	144.62	6.17	102.30	0.56
Aug	1988	100.47	150.34	6.33	104.54	0.56
Sept	1988	107.99	162.30	6.80	112.45	0.56
Oct	1988	108.08	162.97	6.80	112.48	0.56
Nov	1988	108.67	162.63	6.83	112.88	0.56
Dec	1988	112.95	167.46	7.01	113.19	0.55
Jan	1989	97.44	151.34	6.31	106.86	0.58
Feb	1989	84.06	129.52	5.42	91.08	0.58
March	1989	110.43	170.93	6.96	122.96	0.57
April	1989	113.56	172.78	6.98	111.68	0.55
May	1989	114.58	172.05	7.04	117.00	0.55
June	1989	118.89	174.92	7.19	117.34	0.55
July	1989	106.34	158.43	6.56	108.89	0.56
Aug	1989	106.63	159.56	6.62	109.20	0.56
Sept	1989	108.98	163.79	6.82	112.75	0.56
Oct	1989	105.79	159.51	6.60	109.14	0.56
Nov	1989	109.60	164.02	6.80	112.48	0.56
Dec	1989	116.76	173.11	7.13	115.15	0.55
Jan	1990	91.50	142.12	5.90	99.92	0.58
Feb	1990	88.75	136.75	5.64	94.83	0.57
March	1990	112.01	173.38	6.96	122.96	0.56
April	1990	115.81	176.20	7.03	112.48	0.55
May	1990	119.42	179.32	7.18	119.31	0.54
June	1990	125.86	185.18	7.39	120.57	0.53
July	1990	109.47	163.09	6.55	108.67	0.54
Aug	1990	111.55	166.92	6.69	110.47	0.54
Sept	1990	117.16	176.08	7.02	116.09	0.54
Oct	1990	119.19	179.72	7.10	117.44	0.54
Nov	1990	126.00	188.56	7.45	123.13	0.53
Dec	1990	134.06	198.76	7.88	127.28	0.53
Jan	1991	175.78	175.78	11.80	118.03	0.59
Feb	1991	148.57	148.57	10.05	100.46	0.60

March	1991	189.39	189.39				12.41	124.14		0.58
April	1991	196.98	196.98				12.61	126.10		0.56
May	1991	203.37	203.37				12.91	129.14		0.56
June	1991	210.30	210.30				13.13	131.29		0.55
July	1991	185.63	185.63				11.97	119.67		0.57
Aug	1991	191.47	191.47				12.21	122.06		0.56
Sept	1991	202.22	202.22				12.86	128.57		0.56
Oct	1991	204.51	204.51				12.85	128.50		0.55
Nov	1991	206.92	206.92				12.85	128.53		0.55
Dec	1991	213.60	213.60				12.96	129.59		0.53
Jan	1992	198.42	198.42				12.83	128.28		0.56
Feb	1992	181.24	181.24				11.72	117.16		0.56
March	1992	227.47	227.47	215.53			14.26	142.57		0.54
April	1992	232.89	232.89	232.89			14.30	142.99		0.53
May	1992	237.31	237.31	237.89			14.31	143.13		0.52
June	1992	251.58	251.58	251.63			14.67	146.74		0.51
July	1992	228.80	228.80	232.57			13.59	135.92		0.51
Aug	1992	232.10	232.10	237.25			13.63	136.26		0.51
Sept	1992	244.11	244.11	251.08			14.18	141.79		0.50
Oct	1992	250.26	250.26	261.54			14.43	144.33		0.50
Nov	1992	260.88	260.88	270.84			14.83	148.32		0.49
Dec	1992	282.38	282.38	302.32			15.35	153.53		0.47
Jan	1993	217.91	217.91	232.05			13.12	131.18		0.54
Feb	1993	240.87	240.87	265.50			13.96	139.61		0.52
March	1993	286.94	286.94	320.01			16.29	162.86		0.51
April	1993	291.67	291.67	329.40			16.22	162.16		0.50
May	1993	302.21	302.21	346.04			16.42	164.22		0.49
June	1993	327.45	327.45	376.69			17.03	170.27		0.47
July	1993	286.29	286.29	338.45			15.23	152.33		0.48
Aug	1993	286.42	286.42	340.12			15.38	153.85		0.48
Sept	1993	290.80	290.80	342.26			15.62	156.23		0.48
Oct	1993	291.18	291.18	342.62			15.44	154.43		0.47
Nov	1993	310.13	310.13	362.18			16.17	161.73		0.47
Dec	1993	366.44	366.44	431.25			18.07	180.70		0.44
Jan	1994	290.33	290.33	343.49	124.0		16.51	165.08		0.49
Feb	1994	251.38	251.38	299.18	122.2		13.95	139.50		0.48
March	1994	340.90	340.90	406.80			18.15	181.45		0.45
April	1994	349.95	349.95	427.29			18.31	183.11		0.45
May	1994	364.26	364.26	451.89	144.7	17.3	18.56	185.58		0.43
June	1994	387.14	387.14	481.43	135.2		19.55	195.52		0.43
July	1994	337.30	337.30	425.52	132.0	15.0	17.01	170.13		0.42
Aug	1994	346.34	346.34	434.56		7.6	17.37	173.72		0.42
Sept	1994	366.27	366.27	458.01	140.0	11.8	18.28	182.76		0.42
Oct	1994	375.34	375.34	472.58	142.6	24.3	18.68	186.81		0.42
Nov	1994	397.32	397.32	499.00	149.8	23.6	19.59	195.90		0.41
Dec	1994	446.90	446.90	577.29			21.41	214.12		0.40
Jan	1995	299.67	299.67	421.92	123.7	11.4	16.34	163.44		0.42
Feb	1995	274.03	274.03	416.76	122.2	15.5	14.89	148.88		0.42
March	1995	358.09	358.09	531.35	155.0	16.4	19.00	190.04		0.41
April	1995	374.63	374.63	550.87	156.8	15.4	19.20	192.04		0.39
May	1995	381.79	381.79	566.46	158.6	13.1	19.30	193.01		0.39

June	1995	404.06	404.06	594.17	164.7	13.9	20.05	200.48					0.38
July	1995	348.39	348.39	529.18	146.2	13.6	17.83	178.32					0.39
Aug	1995	351.06	351.06	529.61	145.6	11.8	18.00	180.00					0.39
Sept	1995	370.31	370.31	554.13	147.5	11.4	19.07	190.70					0.39
Oct	1995	381.07	381.07	569.79	151.3	12.9	19.32	193.17					0.38
Nov	1995	409.10	409.10	603.20	164.0	12.1	20.42	204.21					0.38
Dec	1995	465.08	465.08	686.55	186.9	14.9	22.59	225.92					0.37
Jan	1996	347.66	347.66	477.37	146.2	16.9	18.36	183.61					0.38
Feb	1996	297.03	297.03	410.25	125.6	10.8	15.71	157.15					0.38
March	1996	394.26	394.26	534.88	158.8	13.6	20.01	200.09					0.37
April	1996	406.76	406.76	553.63	162.7	13.7	20.34	203.36					0.36
May	1996	414.69	414.69	565.94	164.3	13.1	20.59	205.91					0.36
June	1996	441.73	441.73	599.32	152.2	13.8	21.41	214.10					0.35
July	1996	380.68	380.68	525.81	152.4	12.2	18.98	189.76					0.36
Aug	1996	374.63	374.63	517.35	150.3	10.6	18.83	188.31					0.36
Sept	1996	401.11	401.11	547.63	158.5	13.7	20.41	204.13					0.37
Oct	1996	412.96	412.96	563.52	164.1	13.3	21.04	210.40					0.37
Nov	1996	437.29	437.29	592.51	173.7	13.4	22.10	221.02					0.36
Dec	1996	499.15	499.15	667.48	196.5	13.0	24.50	245.04					0.35
Jan	1997	378.75	378.75	513.96	150.0	10.3	19.61	196.10	90.8	6.8			0.38
Feb	1997	318.18	318.18	438.90	125.1	10.4	16.41	164.06	77.9	4.4			0.39
March	1997	440.45	440.45	587.07	172.2	13.5	21.75	217.50	99.3	8.7			0.36
April	1997	452.02	452.02	598.32	174.3	11.9	21.72	217.19	98.6	6.8			0.35
May	1997	463.90	463.90	610.77	178.0	11.9	21.87	218.68	99.7	6.2			0.35
June	1997	496.99	496.99	649.30	187.7	12.0	23.12	231.23	103.9	8.0			0.34
July	1997	414.69	414.69	558.83	162.5	8.4	20.08	200.77	93.1	5.8			0.36
Aug	1997	419.87	419.87	559.43	162.1	10.9	20.41	204.13	93.0	8.4			0.36
Sept	1997	453.68	453.68	600.30	170.5	11.1	21.99	219.85	97.8	7.7			0.36
Oct	1997	471.89	471.89	615.68	172.3	11.8	22.49	224.92	97.8	6.9			0.35
Nov	1997	503.49	503.49	651.15	188.4	11.6	23.80	238.04	105.6	7.7			0.35
Dec	1997	554.57	554.57	716.75	206.9	9.2	25.90	259.01	115.3	5.7			0.35
Jan	1998	365.37	365.37	475.10	137.8	1.8	18.29	182.92	83.6	-2.9			0.36
Feb	1998	364.96	364.96	468.32	135.4	9.5	18.32	183.17	81.0	11.7			0.35
March	1998	460.85	460.85	583.44	167.8	9.0	22.18	221.78	96.3	3.9			0.34
April	1998	482.79	482.79	581.70	166.6	7.2	22.35	223.45	94.1	2.8			0.33
May	1998	492.75	492.75	592.34	168.1	8.0	22.58	225.84	94.1	4.0			0.33
June	1998	519.55	519.55	618.09	176.0	7.9	23.11	231.13	96.7	2.7			0.32
July	1998	451.35	451.35	545.85	155.3	7.6	20.59	205.93	87.4	5.1			0.33
Aug	1998	461.36	461.36	556.72	158.2	7.9	20.76	207.62	88.4	3.1			0.33
Sept	1998	513.15	513.15	608.94	172.9	10.2	22.98	229.83	95.9	5.8			0.33
Oct	1998	526.68	526.68	626.97	178.5	10.6	23.46	234.57	99.7	6.0			0.33
Nov	1998	553.32	553.32	650.65	185.0	11.0	24.91	249.05	104.4	7.2			0.33
Dec	1998	596.06	596.06	707.23	201.9	11.5	26.85	268.46	114.2	8.0			0.33
Jan	1999	444.44	444.44		150.9	17.9			84.7	16.9			0.32
Feb	1999	381.35	381.35		128.2	2.1			74.1	0.5			0.33
March	1999	513.64	513.64		167.0	9.0			94.7	6.8			0.33
April	1999	525.86	525.86		170.0	9.1			97.9	7.1			0.33
May	1999	532.36	532.36		171.6	8.9			97.7	5.6			0.33
June	1999	564.50	564.50		181.7	9.1			102.8	7.5			0.33
July	1999	499.51	499.51		162.1	9.3			93.0	7.8			0.33
Aug	1999	513.87	513.87		166.6	9.5			95.6	8.4			0.33

Sept	1999	547.37	547.37	176.1	8.2	101.8	7.9	0.33
Oct	1999	562.56	562.56	181.8	7.0	104.5	6.8	0.33
Nov	1999	597.03	597.03	191.9	7.6	110.7	6.5	0.33
Dec	1999	663.67	663.67	213.0	7.4	119.0	6.5	0.32
Jan	2000	502.89	502.89	164.3	8.9	96.3	5.2	0.35
Feb	2000	445.75	445.75	148.7	12.0	90.5	10.3	0.36
March	2000	580.60	580.60	188.2	11.9	114.1	10.6	0.36
April	2000	597.40	597.40	192.9	11.4	115.3	10.8	0.35
May	2000	610.35	610.35	196.3	11.5	115.8	10.6	0.35
June	2000	651.03	651.03	209.2	12.2	121.8	11.9	0.34
July	2000			196.0	12.8	117.1	12.8	0.35
Aug	2000			201.2	12.8	120.7	12.1	0.35
Sept	2000			209.3	12.0	125.2	11.2	0.35
Oct	2000			209.5	11.4	123.3	8.3	0.35
Nov	2000			217.1	10.6	128.0	9.1	0.35
Dec	2000			235.8	10.4	135.1	8.5	0.34
Jan	2001			169.5	2.3	104.5	2.3	0.38
Feb	2001			193.4	19.0	115.1	19.3	0.37
March	2001			223.9	12.1	128.8	9.5	0.36
April	2001			226.6	11.5	129.9	10.7	0.35
May	2001			227.9	10.2	128.9	8.8	0.35
June	2001			239.8	10.1	133.4	9.0	0.34
July	2001			220.1	8.1	124.5	7.9	0.35
Aug	2001			223.3	8.1	125.7	7.9	0.35
Sept	2001			235.2	9.5	131.4	9.2	0.35
Oct	2001			233.2	8.8	129.2	6.5	0.34
Nov	2001			238.9	7.9	130.4	4.3	0.34
Dec	2001			263.2	8.7	138.0	5.0	0.32
Jan	2002			215.8	18.6	123.2	18.5	0.38
Feb	2002			188.0	2.7	103.5	0.2	0.37
March	2002			245.6	10.9	131.1	8.4	0.35
April	2002			256.9	12.1	137.5	10.9	0.36
May	2002			261.7	12.9	139.0	11.2	0.35
June	2002			278.0	12.4	143.3	10.0	0.34
July	2002			256.8	12.8	135.6	11.6	0.35
Aug	2002			263.4	12.7	138.8	11.2	0.35
Sept	2002			282.5	13.8	147.1	14.0	0.35
Oct	2002			283.0	14.2	148.0	13.8	0.35
Nov	2002			294.9	14.5	153.7	14.2	0.35
Dec	2002			321.6	14.9	163.7	14.1	0.34
Jan	2003		927.0	266.2	14.8	146.5	14.5	0.41
Feb	2003		888.0	254.7	19.8	136.6	20.1	0.40
March	2003		1096.2	313.4	16.9	162.0	15.1	0.39
April	2003		1120.4	319.7	14.9	162.2	11.9	0.38
May	2003		1119.2	319.0	13.7	157.3	10.5	0.37
June	2003		1227.7	363.3	16.9	161.3	13.7	0.33
July	2003		1150.8	341.0	16.5	157.3	14.0	0.34
Aug	2003		1181.1	349.8	17.1	160.0	14.0	0.34
Sept	2003		1250.5	370.4	16.3	167.2	11.6	0.34
Oct	2003		1268.0	375.3	17.2	165.8	12.6	0.33
Nov	2003		1339.9	396.6	17.9	175.1	15.5	0.33

Dec	2003	1467.8	435.1	18.1	189.5	15.3	0.33
Jan	2004	1125.6	334.42	7.2	158.8	7.5	0.39
Feb	2004	1275.9	370.93	23.2	166.1	20.0	0.37
March	2004	1482.4	426.48	19.4	183.0	15.2	0.35
April	2004	1513.9	437.05	19.1	186.8	15.8	0.35
May	2004	1496.2	430.96	17.5	180.6	13.8	0.35
June	2004	1598.8	460.79	16.2	187.8	14.0	0.34
July	2004	1500.9	440.90	15.5	187.1	12.7	0.35
Aug	2004	1554.9	454.45	15.9	191.6	12.8	0.35
Sept	2004	1657.6	481.24	16.1	196.6	13.3	0.34
Oct	2004	1676.3	488.52	15.7	204.2	14.0	0.35
Nov	2004	1742.2	508.39	14.8	210.5	12.5	0.34
Dec	2004	1896.7	548.80	14.4	221.8	12.4	0.33
Jan	2005	1679.4	484.37	20.9	217.3	17.0	0.40
Feb	2005	1523.2	425.54	7.6	184.3	4.0	0.39
March	2005	1901.3	536.70	15.1	220.3	11.8	0.37
April	2005	1978.9	564.65	16.0	230.5	11.9	0.37
May	2005	2003.6	570.16	16.6	226.3	11.3	0.36
June	2005	2184.9	619.14	16.8	234.4	10.2	0.34
July	2005	2036.8	581.10	16.1	231.5	11.3	0.36
Aug	2005	2092.0	596.75	16.0	237.8	11.1	0.36
Sept	2005	2206.3	627.53	16.5	244.8	11.3	0.35
Oct	2005	2221.3	631.99	16.1	241.6	8.9	0.34
Nov	2005	2326.6	659.02	16.6	248.2	9.6	0.34
Dec	2005	2544.6	671.24	16.5	243.1	10.3	0.33
Jan	2006	1641.9	563.96	12.8	232.7	6.9	0.40
Feb	2006	1978.7	547.31	20.1	217.0	12.4	0.37
March	2006	2417.7	667.97	17.8	247.6	9.0	0.35
April	2006	2488.1	681.98	16.6	246.3	10.8	0.36
May	2006	2570.6	705.99	17.9	251.5	13.6	0.35
June	2006	2853.0	781.78	19.5	266.5	15.4	0.34
July	2006	2616.2	719.98	16.7	258.5	12.7	0.36
Aug	2006	2670.5	735.55	15.7	265.3	12.1	0.36
Sept	2006	2830.0	775.41	16.1	272.3	12.4	0.35
Oct	2006	2791.7	760.14	14.7	262.7	12.5	0.35
Nov	2006	2928.6	793.60	14.9	270.1	13.6	0.36
Dec	2006	3159.7		14.7		15.8	0.36
Jan	2007	2748.3		24.2		20.7	0.40
Feb	2007	2381.1		12.6		10.1	0.37
March	2007	3060.6		17.6		13.6	0.35
April	2007	3158.5		17.4		13.2	0.35
May	2007	3281.0		18.1		13.0	0.35
June	2007	3690.9		19.4		13.3	0.33
July	2007	3333.0		18.0		12.5	0.35
Aug	2007	3389.8		17.5		13.6	0.35
Sept	2007	3635.2		18.9		15.6	0.35
Oct	2007	3586.9		17.9		13.6	0.35
Nov	2007	3754.4		17.3		14.2	0.36
Dec	2007	4053.2		17.4		13.6	0.36
Jan	2008	3446.8		15.4		11.9	0.40
Feb	2008	3036.5		15.4		11.5	0.37

March 2008	3998.9	17.8	14.3	0.34
April 2008	4070.9	15.7	11.3	0.35
May 2008	4240.3	16.0	12.6	0.34
June 2008	4765.5	16.0	12.4	0.33
July 2008	4349.4	14.7	11.8	0.35
Aug 2008	4335.7	12.8	9.7	0.35
Sept 2008	4493.1	11.4	7.4	0.34
Oct 2008	4167.7	8.2	4.5	0.34
Nov 2008	4028.3	5.4	0.7	0.35
Dec 2008	4244.3	5.7	-0.6	0.34
Jan 2009	3136.5	-3.4	-5.6	0.40
Feb 2009	3285.3	11.0	3.6	0.35
March 2009	4156.2	8.3	2.7	0.33
April 2009	4173.5	7.3	2.3	0.34
May 2009	4420.9	8.9	2.4	0.33
June 2009	5021.7	10.7	5.7	0.33
July 2009	4619.2	10.8	7.4	0.35
Aug 2009	4737.3	12.3	8.6	0.35
Sept 2009	5067.0	13.9	11.8	0.34
Oct 2009	4960.2	16.1	13.7	0.34
Nov 2009	5191.8	19.2	19.0	0.36
Dec 2009	5576.0	18.5	21.7	0.36
Jan 2010	4744.2	28.6	28.1	0.41
Feb 2010	4135.7	12.8	13.3	0.37
March 2010	5525.5	18.1	18.2	0.34
April 2010	5619.1	17.8	17.6	0.35
May 2010	5865.3	16.5	16.8	0.34
June 2010	6341.1	13.7	13.3	0.33
July 2010	5768.3	13.4	11.4	0.35
Aug 2010	5947.7	13.9	11.7	0.35
Sept 2010	6372.8	13.3	11.0	0.35
Oct 2010	6288.0	13.1	10.6	0.35
Nov 2010	6656.4	13.3	10.9	0.36
Dec 2010	7155.2	13.5	9.8	0.36
Jan 2011	5738.8	13.3	10.7	0.41
Feb 2011	5151.7	14.9	10.5	0.36
March 2011	6850.5	14.8	12.9	0.35
April 2011	6789.1	13.4	10.4	0.35
May 2011	7075.8	13.3	8.9	0.34
June 2011	7871.6	15.1	10.7	0.33
July 2011	7127.8	14.1	9.5	0.35
Aug 2011	7290.0	13.5	9.4	0.35
Sept 2011	7757.4	13.8	9.9	0.34
Oct 2011	7510.7	13.2	8.9	0.34
Nov 2011	7745.6	12.4	7.8	0.36
Dec 2011	8217.3	12.8	9.2	0.36

Publ.: published data (as is), with approximated January real VA growth rates for DRIEs and SOSCEs starting 2006. Derived data: manipulations are described in the text of the article. Thus, the derived data on DRIE and SOSCE GOV in 1990 prices involve bridging the published series in 1980 and 1990 prices, assumptions about the aggregate share of the first four months of 1983 in the annual total, and, in the case of the SOSCEs, the derivation of 1993-1996 values.

Appendix 3. Annual Data

	<i>Value-added</i>		<i>GOV</i>	
	Nominal	Real growth 1978=100	Economy- wide	SOSCEs
1983	2375.6	144.5	6461	4739.4
1984	2789.0	166.0	7617	5262.7
1985	3448.7	196.2	9716	6302.1
1986	3967.0	215.2	11194	6971.1
1987	4585.8	243.6	13813	8250.1
1988	5777.2	280.8	18224	10351.3
1989	6484.0	295.0	22017	12342.9
1990	6858.0	304.9	23924	13063.8
1991	8087.1	348.8	26625	14954.6
1992	10284.5	422.6	34599	17824.2
1993	14188.0	507.5	48402	22724.7
1994	19480.7	603.5	70176	26200.8
1995	24950.6	688.2	91894	31220.0
1996	29447.6	774.3	99595	36173.0
1997	32921.4	861.9	113733	35968.0
1998	34018.4	938.6	119048	33621.0
1999	35861.5	1018.6	126110	35571.0
2000	40033.6	1118.3		
2001	43580.6	1215.2		
2002	47431.3	1336.4		
2003	54945.5	1506.8		
2004	65210.0	1680.2		
2005	77230.8	1874.7		
2006	91310.9	2116.1		
2007	110534.9	2431.5		
2008	130260.2	2673.0		
2009	135239.9	2906.4		
2010	160722.2	3257.0		
2011	188470.2	3595.0		

Sources: Value-added: *China Statistical Yearbook* 2012, p. 44; GOV: *Industrial Yearbook* 2011, p. 21.