Investment Data

Independent investment data are provided in the investment in fixed asset statistics. These data have two shortcomings when used in the calculation of fixed asset values. First, the investment data do not cover the whole economy. Second, not all investment in fixed assets turns into an actual increase in fixed assets.

Investment in fixed assets defined

The official "total society" investment in fixed asset statistics comprise the following items:[1]

(i) capital construction (*jiben jianshe*) of 500,000 yuan RMB and above;
(ii) technological updating and transformation (*gengxin gaizao*) of 500,000 yuan RMB and above;
(iii) investment by urban collective-owned units of 500,000 yuan RMB and above (this category excludes township and village enterprises);
(iv) other investment by state-owned units, including investment with a value of 500,000 yuan RMB and above that does not constitute capital construction or technological updating and transformation;
(v) investment of 500,000 yuan RMB and above by joint enterprises, limited liability companies, stock companies, Hong Kong, Macao, and Taiwan-invested enterprises, foreign-funded enterprises, urban private enterprises and the urban individual-owned economy (*getihu*);
(vi) all real estate units (presumably investment in real estate through real estate units);
(vii) private investment in housing in urban and in industrial mining areas (*gongkuangqu*);
(viii) rural collective-owned and individual-owned investment (in housing and in productive assets).

These "total society" investment values fall short of measuring total economy-wide investment. (1) Prior to 1997, the value limit in items (i) through (v) was 50,000 rather than 500,000.[2] The published data of 1996 come according to both definitions; the new coverage eliminates 0.26% of the previous coverage.[3] In the calculations here, the statistical break is ignored (new data are used starting 1997).

(2) The total comes with a breakdown by ownership category (state, collective, individual, other). The revised 1996 value on the category "individual," which presumably covers both private and individual-owned enterprises, is identical to that using the earlier, lower cut-off point; this appears not credible in that much investment by the (urban) private and individual-owned economy (item v) is likely to be of small scale (below 500,000 yuan RMB). The revision in the cut-off point should have led to a significant reduction in the value of investment by the urban private and individual-owned economy. The fact that it didn't suggests that only the largest urban individual-owned investment projects were covered in the investment statistics in 1997.

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1 For the definition and explanations see Liu Chengxiang et al. (2000), pp. 74f.
2 See, for example, Liu Chengxiang et al. (2000), pp. 75.
3 See for example, *Statistical Yearbook 2004*, p. 188.

(3) A further explanatory note on the investment statistics states that prior to 1999, *urban* private and individual-owned investment are not included in the statistics.[4] Urban private and individual-owned investment since 1999 are presumably captured in items (v) and (vii).

(4) Non-real-estate investments below 500,000 yuan RMB by all types of enterprises and units except by state-owned units, rural collective-owned enterprises, and the rural individual-owned economy are not included ever.

It is further questionable if non-real-estate investment below 500,000 yuan RMB by state-owned units, rural collective-owned enterprises, and the rural individual-owned economy are indeed included (as items vi-viii imply). NBS (1997, p. 165) for the case of state-owned units states explicitly that the "odd" (*lingxing*) investment of state-owned units with a value below 50,000 yuan RMB (the relevant limit prior to 1997) is "currently not included in the investment in fixed asset statistics" (and therefore needs to be estimated in the compilation of gross fixed capital formation in the calculation of expenditure approach GDP); it is reported to have been included at some earlier point.[5] In the case of the rural collective-owned economy, these small investments are also to be estimated (in the compilation of gross fixed capital formation), which suggests that they are not part of the investment statistics (p. 169).[6]

(5) In general, it is highly questionable if truly all investment in fixed assets by rural collective-owned enterprises and the rural individual-owned economy are included. These data are collected by the rural survey teams of the National Bureau of Statistics (NBS) through surveys; these surveys are unlikely to be very reliable.[7] All other investment in fixed asset statistics are collected by the NBS Investment in Fixed Assets Division through complete statistical reporting, which raises additional questions as to how complete these data really are.[8]

(6) The definition is as of 2000, with the officially acknowledged changes (1) and (2) in 1996/97 and in 1999. The coverage of the investment data in the early reform period or even before the reform period may well have been much narrower. For example, a break-down of total investment by "channel of management" (*an guanli qudao*), i.e., by capital construction, technological updating and transformation, real estate development, and "others," shows real estate development to start in 1986 only; a break-down by ownership makes do with the categories state-owned, collective-owned, and individual-owned economy until 1993, when a fourth category "other types of ownership is introduced."[9]

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4 See Liu Chengxiang et al. (2000), pp. 75.

5 Another piece of evidence that not all such investment is included is a 1993 accounting regulation for industry, covering specific accounting issues, which, for example, requires individual test equipment with a value below 50,000 yuan RMB that was purchased for the purpose of developing new products or new technologies to be entered into the cost accounts. I.e., this equipment is not regarded as a fixed asset. (Finance Ministry, 1999, Vol. 1, p. 462)

6 In the case of the urban individual-owned economy, because the collection of data is "difficult," only real estate investment is covered in the compilation of gross fixed capital formation (p. 170); presumably, and as the definition of investment also suggests, non-real-estate investment of the urban individual-owned economy are not included in the official investment statistics.

7 The rural household surveys conducted by the same survey team, for example, are probably quite unreliable (Carsten Holz, 2004).

8 On who collects which statistics, see *Statistical Yearbook 2004*, p. 185.

9 See, for example, *Statistical Yearbook 2004*, pp. 188 and 193.

(7) Data on total investment in fixed assets by state-owned units (SOUs) are not available for the years prior to 1980; what is available for 1953-2003 are data on the funding sources of SOU investment, with a total for all sources. This second series is identical to the first in 1980 through 1993, but differs by a few percentage points every year since then.[10] Logically, the two series need not be identical; the first supposedly covers actual investment, the second the funding that is in place. The fact that the two series are identical through 1993 suggests that earlier total investment data could be based on funding data rather than on actual investment.

(8) Investment in fixed assets in China so far does not include intangible assets (NBS, 28 June 2006).

(9) The available definition of investment in fixed assets does not explicitly list land.[11] The *Statistical Yearbook* (for example, *2004*, p. 266) for the real estate units explicitly excludes land trade; land development, for example the construction of roads, on the other hand, is included.

The NBS offers detailed instructions on how to obtain gross fixed capital formation in the expenditure approach to the calculation of GDP (NBS, 1997, pp. 164-71), ownership form by ownership form. These instructions, issued in a completely different context, consistently take what data are available in the investment statistics, add estimates for investment on which no data are available in the investment statistics, and consistently subtract the purchase of *old structures*, *old equipment*, and *land*. Through the early 1990s, such purchases, supposedly included in the investment data (NBS, 1997, p. 167), are likely to be of negligible size. Since then they may have grown in size, but no data are available. Between 2001 and 2003, the ratio of gross fixed capital formation to investment in fixed assets fell from 0.9892 to 0.9223 (Figure 1 in the paper, or calculated from Table 2 below); this follows a value of around unity in 1986 through 2001 (with a rise in 1990/91 and a minor dip in 1998). Gross fixed capital formation falling short of total investment in fixed assets could reflect increasing purchases of old structures, old equipment, and land.

There is a good chance that the "effective investment" data—in the original labeled "newly increased fixed assets" (*xinzeng guding zichan*)—introduced below, and used in the paper to derive fixed asset values, nets out these purchases. After all, purchases of old structures, old equipment, and land do not lead to newly increased fixed assets. The drop in the transfer rates, i.e., the ratio of effective investment to investment, in 2001-03 (Figure 5) would support this conjecture.[12] A second safeguard in the derivation of economy-wide fixed assets here is that if industry is representative of the whole economy, the investment-based scrap rates used in the derivation of economy-wide fixed asset values correct for any mis-estimation of investment.

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[10] See *Investment 1950-2000*, p. 15, for total investment in fixed assets by SOUs for 1980 through 2000, supplemented by the *Statistical Yearbook 2004*, p. 188, for 2001-3, and *Investment 1950-2000*, p. 25, for investment in fixed assets of SOUs by "sources of funds -- total" for the years 1953-2000, supplemented by the *Statistical Yearbook 2004*, p. 189, for 2001-3. Relative to the total investment in fixed assets by SOUs, investment in fixed assets of SOUs in the sources of fund table are 4.57% larger in 1994, 1.13% larger in 1995, 0.31% larger in 1996, 0.30% smaller in 1997, 0.86% smaller in 1998, 2.26% smaller in 1999, 3.45% smaller in 2000, 2.39% smaller in 2001, 1.82% smaller in 2002, and 0.25% smaller in 2003.

[11] See above, or Liu Chengxiang et al. (2000), pp. 74ff.

[12] A drop of similar size in 1992-95 may be attributable to an investment boom; i.e., the denominator rises first, and then, as investment is completed, the numerator rises later. At least 2001 and 2002 are not investment boom years.

One complication in the use of SOU investment data is that they appear to exclude investment by state-controlled companies, i.e., what is labeled as SOU investment does not match the "state-owned and state-controlled" coverage used in other statistics, such as those on output, since 1998. Two pieces of evidence are the labels, which consistently refer to investment by *state-owned units* without any mentioning of state-controlled units, and the detailed investment classification in recent issues of the *Statistical Yearbook* (for example, *2004*, pp. 190f.) which shows investment by shareholding units to be more than half the size of the investment by SOUs, presumably too large to exclude investment by state-controlled units, and SOU investment appears too small to include investment by state-controlled units.[13]

Capital construction and technological updating and transformation

The two categories "capital construction" and "technological updating and transformation" are of particular interest here because data are available on investment in these two categories for all years (including the years prior to 1981) and also on the annual increase in fixed assets through investment in these two categories (in the second category only starting 1980).

The two terms "capital construction" and "technological updating and transformation" are traditional planned economy terms. Their coverage extends only to projects with investment of 500,000 yuan RMB or above (50,000 and above prior to 1997).[14] Capital construction comprises

(a) projects included in this year's central or local capital construction plan, and projects not included in this but in previous years' plan(s), in as far as the projects are continued this year;
(b) new construction with investment included in this year's capital construction plan as well as in this year's technological updating and transformation plan; extension projects to increase production capacity as long as these projects meet the large or medium size criterion; also includes the relocation of complete factories;
(c) any other new construction, extensions, resumption of projects with investment of 500,000 yuan RMB or above [50,000 prior to 1997], by SOUs, that is not part of the capital construction plan or the technological updating and transformation plan, including the relocation of complete factories; this also includes the construction of business premises by government and administrative facilities (*xingzheng, shiye danwei*), and the construction of welfare facilities (*shenghuo fuli shehi*) by government and administrative facilities.

Technological updating and transformation comprises

(a) projects included in this year's central or local technological updating and transformation plan, and projects not included in this but in last year's plan, in as far as the projects are continued this year;
(b) technological updating and transformation of enterprises' and administrative facilities' original equipment with investment included in this year's technological updating and transformation plan as well as in this year's capital construction plan;

[13] The individual categories add up to the total, ruling out double-counting of investment by state-controlled units in both categories, shareholding units and SOUs.
[14] For the definitions below see Liu Chengxiang (2000), pp. 76f., or *Statistical Yearbook 2004*, p. 266.

extension projects of main workshops or factory branches to increase production capacity as long as these projects do *not* meet the large or medium size criterion; also includes the relocation of complete factories due to urban environmental protection and production safety needs;

(c) any other technological updating and transformation project with investment of 500,000 yuan RMB or above [50,000 prior to 1997], by SOUs or administrative facilities, that is not part of the capital construction plan or the technological updating and transformation plan, including relocation of complete factories due to urban environmental protection and production safety needs.

The data reveal that between 1953 and 1980, SOU investment equals capital construction plus technological updating and transformation.[15] Between 1953 and 1985, SOU investment also equals capital construction plus a technological updating and transformation series that comes with the note "excludes other state-owned investment since 1994," i.e., presumably includes other state-owned investment prior to 1994. Between 1953 and 1980, the two series of technological updating and transformation, i.e., the not further defined series and the series with the note, are identical. The *Statistical Yearbook* (for example, *2002*, p. 181) confirms that the identical 1953-1980 data in both series include "other" SOU investment. Data on technological updating and transformation following the earlier definition to include "other" SOU investment, thus, are available for the years 1953-1993, while data following the new definition, to exclude "other" SOU investment, are available since 1981 with in some statistics also an alternative (lower) 1980 value which in all likelihood excludes "other" SOU investment.[16] (This also implies that data on "pure" technological updating and transformation, i.e., excluding "other" SOU investment, are not available for the years prior to 1980.)

The absolute difference between technological updating and transformation that includes "other" SOU investment and technological updating and transformation that does not is equal to 4.39% of total SOU investment in 1981, rising steadily to 11.20% in 1984, and then falling steadily back to 4.56% in 1993. Figure 1 implicitly shows "other" SOU investment in a comparison of the two time series of technological updating and transformation relative to capital construction.[17]

Overall, the data reveal the following coverage (also see Figure 1 for each individual point):

- between 1953 and 1985, SOU investment equals capital construction plus technological updating and transformation, the latter including "other" SOU investment;

[15] Data on capital construction are available for the years since 1950, data on technological updating and transformation for the years since 1953, and SOU investment data also for the years since 1953 (total of funding sources through 1979).

[16] The two 1980 data points are 18.701b yuan RMB and 13.738b yuan RMB. (Also see notes to Figure 1.) The smaller 1980 value appears only in tables that cover technological updating and transformation since 1980, with the years after 1981 showing these data to exclude "other" SOU investment (in contrast to the table that explicitly does not exclude "other" SOU investment until 1994).

[17] Presumably this difference consists of "other" SOU investment only; the phrasing in the sources, such as that technological updating and transformation prior to 1994 includes "other" SOU investment, is not perfectly exact. It does not rule out that yet other items are also included, although that is unlikely and probably not meant to be implied by the phrasing.

- between 1986 and 1992, SOU investment de facto equals capital construction, technological updating and transformation including "other" SOU investment, plus all (starting in 1986 newly reported) real estate development;
- starting in 1993, SOU investment falls short of the sum of capital construction, technological updating and transformation including "other" SOU investment, and all real estate development;
- starting in 1996, SOU investment for the first time falls below the sum of capital construction and technological updating and transformation.

The data, thus, also imply that through 1992 capital construction, technological updating and transformation, and real estate development only cover *state-owned* such investment. *Seventeen Years of Reform* claims that this is the case for 1985 through 1995, but the turning point may have come as early as 1993 or 1994.[18]

Newly increased fixed assets through investment ("effective investment")

What is of key interest here are the data on newly increased fixed assets ("effective investment"). After all, it is not the money spent on investment in a particular year (nor the investment funding in place) that increases fixed assets. The money could be spent (or be in place) but the investment may not be completed by end-year or may be unusable in part, or the money could be spent on fees and other costs that may not end up as part of the value of the completed fixed asset. What matters is the increase in fixed assets.

Data on economy-wide effective investment are available for the years 1981 through 2002 only, and data on SOU effective investment for the years 1981 through 2003 (*Investment 1950-2000*, *Statistical Yearbook*). For 1996, 1997, 1998, and 2002 only, a further breakdown of economy-wide effective investment into eight ownership forms is available (in individual issues of the *Investment Yearbook*).

Data on effective investment prior to 1981 are not immediately available. Such data can be estimated for SOUs via capital construction and technological updating and transformation. Data on effective capital construction are available for the years 1953-2002, but data on effective technological updating and transformation are only available for the years 1980 through 2002. (Both series are in *Investment 1950-2000* for the years through 2000, and then in the *Statistical Yearbook*.)

Data on SOU effective investment in 1953 through 1980 can be constructed. An estimate of *effective* technological updating and transformation in the years 1953 through 1980 can be obtained by, in each year, applying the ratio of 'effective capital construction to capital construction' ("transfer rate" of investment into effective investment) to the values of investment in technological updating and transformation.[19]

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[18] *Seventeen Years of Reform*, p. 134, with investment data for the years 1985-1995, lists capital construction and technological updating and transformation as sub-categories of SOU investment, where the data all match those in other sources, and the technological updating and transformation are those without "other" SOU investment.

The ratio of SOU investment to capital construction and technological updating and transformation rises from unity in 1980 (and earlier years) to a maximum of 1.2291 in 1992, before falling rapidly to 1.1636, 1.0747, 1.0298, and 0.9885 in 1993-96.

[19] In 1980, the available data point on technological updating and transformation excludes "other" SOU investment (included in the data on technological updating and transformation in prior years, and therefore included in the estimated effective technological updating and transformation in earlier years); in 1980, the

This procedure is justified if one assumes, first, that the ratio of effective capital construction to capital construction investment is the same as the ratio of (unknown) effective technological updating and transformation to technological updating and transformation investment, i.e., that the transfer rate of investment into effective investment is the same for capital construction as for technological updating and transformation. A second necessary assumption is that the very small "other" SOU investment that is included in pre-1981 technological updating and transformation also has the same transfer rates as capital construction.

The first assumption can be tested with data. Figure 2 shows that the two transfer rates largely move in step. (The figure ends with the year 2000; all data then are from the same source.) Figure 1 furthermore shows that the further back in the pre-reform period, the less the accuracy of the match matters, because, going backwards in time, technological updating and transformation becomes very small relative to capital construction. In 1953, technological updating and transformation (including "other" SOU investment) was equivalent to just 1.27% of capital construction; at the highest pre-1980 level, the percentage was 43.40% in 1977, before falling back to 33.46% in 1980.

The estimated time series of effective technological updating and transformation in 1980 through 2000, when actual values are also available, varies within a maximally 20% band from the actual values (Figure 3). In 1980, effective technological updating and transformation (excluding "other" SOU investment) was equivalent to 20.94% of effective capital construction; in 1979, *estimated* effective technological updating and transformation, now including "other" SOU investment, was equivalent to 33.60% of effective capital construction. This implies that the sum of effective capital construction plus estimated effective technological updating and transformation could be up to approximately 7% off in 1980 (33.60% of 20%). With the smaller size of technological updating and transformation relative to capital construction in most earlier years, the scope for misestimating SOU newly increased fixed assets is even smaller.

Since capital construction and technological updating prior to 1981 add up to SOU investment, effective capital construction and technological updating and transformation by definition must add up to SOU effective investment in the years prior to 1981. The data show that from 1981 through 1992, effective capital construction and technological updating and transformation—not including effective "other" SOU investment—account for the vast majority of SOU effective investment (Figure 3), with a near-equivalence between the two values in 1981 through 1983. If the 1981-1985 effective technological updating and transformation had included "other" SOU effective investment and, in addition, between 1986 and 1992 real estate development, the ratio would presumably be unity. After 1992 "capital construction" and "technological updating and transformation" at some point, possibly starting in 1993, are no longer limited to SOUs.

The data on effective capital construction and technological updating and transformation in any given year during the period 1980 through 2000 are consistently equivalent to only around 80% of investment expenditures (Figure 3). In other words, only 80% of investment expenditures in any given year end up in the form of fixed assets in that particular year. This

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transfer rate based on capital construction and technological updating and transformation is applied to total SOU investment to obtain the value of effective investment by SOUs. Data for the years after 1980 are official data on effective investment by SOUs.

suggests that the use of investment data to derive fixed asset data overestimates the increase in fixed assets by one-quarter. The ratio of economy-wide effective investment to total investment is slightly higher than in the case of capital construction and technological updating and transformation, but consistently follows the same pattern (Figure 3).

For the years 1981-2003, economy-wide (and SOU) data on effective investment are available. These data are ready for use in the equations linking investment to the original value of fixed assets (except that the coverage of the economy-wide data, as suggested by Figure 1 in the paper, may not cover the whole economy). But for the years 1953-1980, the only data on effective investment that are available are those constructed as described above for SOUs. Table 1 has the detailed data on SOU investment and effective investment.

What is yet missing are non-SOU values. In the pre-reform economy, these values may have been small, but not necessarily negligible; the share of SOU effective investment in economy-wide effective investment fell from close to 0.7 in 1981 to approximately 0.5 in 2000. (See Figure 4 for a comparison of SOU, non-SOU, and economy-wide effective investment values). Non-SOU investment and effective investment values are available for the years since 1981 as difference of economy-wide and SOU values, and are derived for earlier years using five different methods as described in the paper (and in the notes to Table 3). Table 2 reports economy-wide investment effective investment data, while Table 3 does so for non-SOUs. The data underlying the third method of calculating pre-1986 non-SOU investment are presented in Table 4.

Transfer rates

The ratio of effective investment to investment constitutes the transfer rate. It states, for each year, the value of newly increased fixed assets through investment relative to the investment expenditures of that year. Figure 5 reports the transfer rates economy-wide, for SOUs, and for non-SOUs based on official data in the years since 1981. (Non-SOU investment and effective investment are obtained as the difference between the economy-wide total and the SOU values.) It also shows the SOU transfer rates for the years 1953 through 1980 where effective investment in technological updating and transformation is estimated as explained above and all other data (effective investment in capital construction, and SOU investment) are official data.

Economy-wide and non-SOU transfer rates for the years prior to 1981 can be established by estimating the following hypothesized relationship for the years 1981 through 1992:

economy-wide transfer rate =
constant a_0
+ a_1 * SOU transfer rate
+ a_2 * ratio of non-SOE to SOE industrial gross output value,

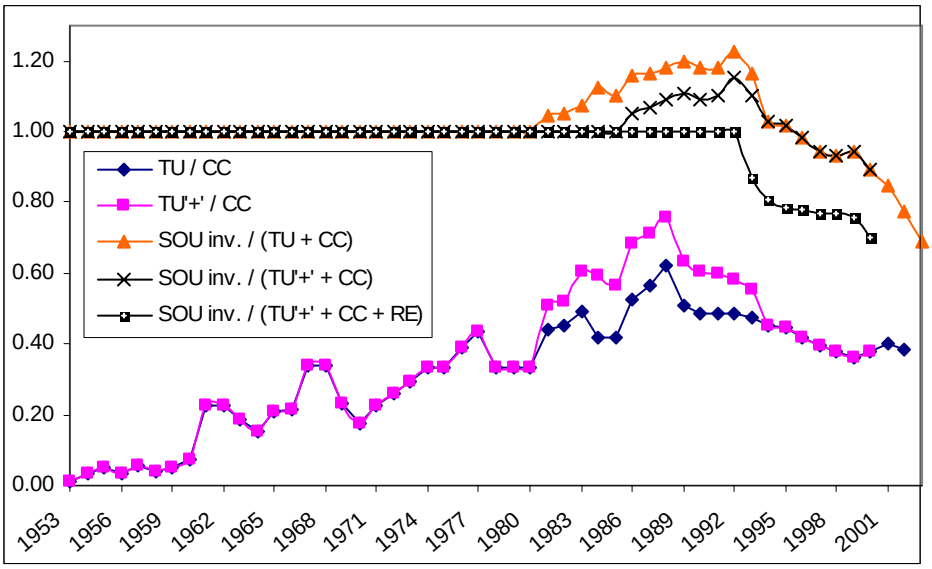
and similarly for non-SOUs as

non-SOU transfer rate =
constant b_0
+ b_1 * SOU transfer rate
+ b_2 * ratio of non-SOE to SOE industrial gross output value.

The relationship is estimated for the years 1981 through 1992 because economy-wide and non-SOU transfer rates are only available since 1981, and because the ratio of non-SOE to SOE industrial gross output value is only available through 1992. The particular coefficient values in the regressions are reported in the notes to Table 2 and Table 3 (Table 1 through Table 3 report the values of all transfer rates.)

The coefficients of the two equations combined with the pre-1981 SOU transfer rate and the ratio of non-SOE to SOE industrial gross output value can be used to estimate pre-1981 transfer rates in each case. Figure 6 shows the estimated and actual transfer rates both economy-wide and for non-SOUs.

One may wonder as to which of the three series effective investment, investment, and transfer rates the NBS compiles independently. It probably compiles the first two independently and obtains the third as residual. If the transfer rate were exogenous, perhaps derived from a subset of the economy, then the investment data presumably constitute the other independent variable and the effective investment data the dependent variable. These considerations matter if one ponders the implications of potentially inaccurate effective investment data. If effective investment data are inaccurate, are the investment data also inaccurate (compiled through the same channels)? Or are effective investment data inaccurate due to a poor transfer rate (in which case the investment data may still but need not be accurate).



TU: technological updating and transformation; until 1980 includes "other" SOU investment. (*Investment 1950-2000*, p. 21; *Statistical Yearbook 2002*, p. 181, *2004*, p. 193).

CC: capital construction. (*Investment 1950-2000*, p. 21; *Statistical Yearbook 2004*, p. 193).

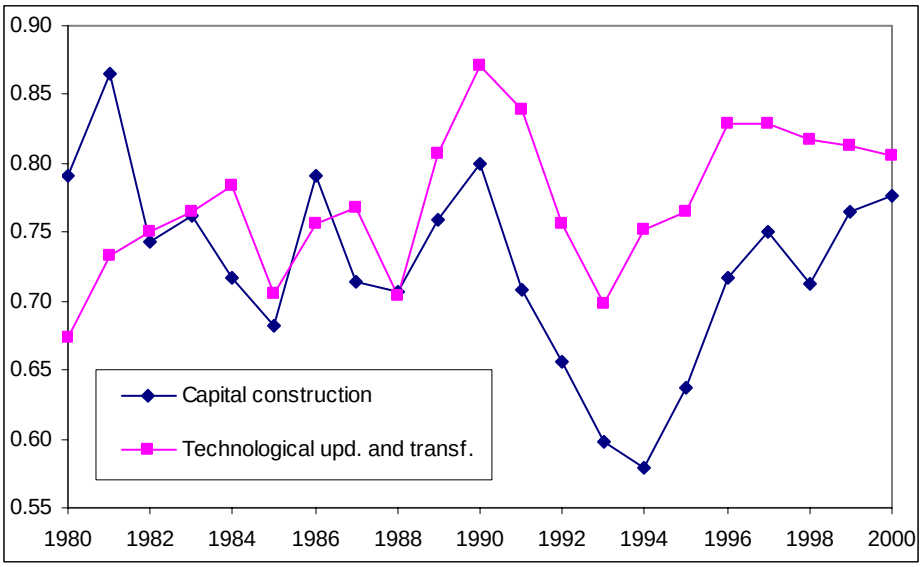
TU'+': technological updating and "other" SOU investment (*Investment 1950-2000*, p. 241).

SOU inv.: total investment in fixed assets by SOUs for 1980 through 2003 (*Investment 1950-2000*, p. 15; *Statistical Yearbook 2004*, p. 188), and investment in fixed assets of SOUs by "sources of funds -- total" for years 1953-1979 (*Investment 1950-2000*, p. 25; *Statistical Yearbook 2002*, p. 178, *2004*, p. 192). The source of fund data would also have been available for the years 1980-2003; they are identical to the total investment in fixed assets by SOUs data in 1980 through 1993. Relative to the total investment in fixed assets by SOUs, investment in fixed assets of SOUs in the sources of fund table are 4.57% larger in 1994, 1.13% larger in 1995, 0.31% larger in 1996, 0.30% smaller in 1997, 0.86% smaller in 1998, 2.26% smaller in 1999, 3.45% smaller in 2000, 2.39% smaller in 2001, 1.82% smaller in 2002, and 0.25% smaller in 2003.

RE: real estate development (investment). (*Investment 1950-2000*, p. 21; *Statistical Yearbook 2004*, p. 193).

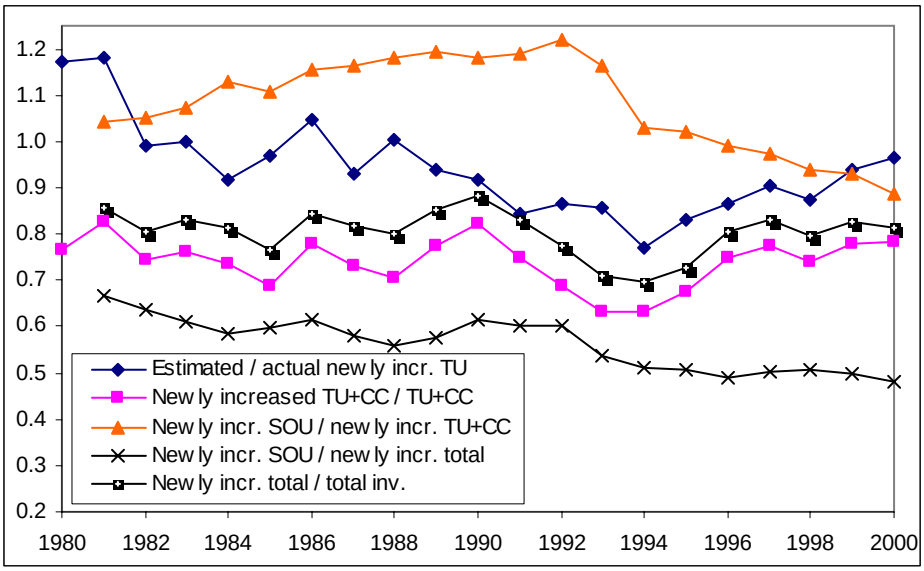
For 1980, two values of technological updating and transformation are 18.701b yuan RMB vs. 13.738b yuan RMB, in the main tables at the front of *Investment 1950-2000* (and in the table on technological updating and transformation which includes "other" SOU investment) vs. in a table within the section technological updating and transformation of the same source or in the *Statistical Yearbook*. (*Investment 1950-2000*, p. 21 and p. 241 vs. p. 298 in the same source or the *Statistical Yearbook 2004*, p. 193) The larger value, presumably including "other" SOU investment, is used.

Figure 1. Technological Updating and Transformation, Capital Construction, and SOU Investment



Sources: capital construction: *Investment 1950-2000*, p. 202 (both for newly increased fixed assets through capital construction, and for capital construction investment); technological updating and transformation (excluding "other" SOU investment): *Investment 1950-2000*, p. 298 (both for newly increased fixed assets through technological updating and transformation, and for technological updating and transformation investment).

Figure 2. Ratio of Newly Increased Fixed Assets to Investment



(Actual) Newly incr. TU: newly increased fixed assets through ("pure") technological updating and transformation (i.e., not including "other" SOU newly increased investments). (*Investment 1950-2000*, p. 298)

Estimated newly incr. TU: newly increased fixed assets through ("pure") technological updating and transformation estimated as the ratio of ("pure") technological updating and transformation (*Investment 1950-2000*, p. 298) to capital construction (*Investment 1950-2000*, p. 202), times newly increased fixed assets through capital construction (*Investment 1950-2000*, p. 202).

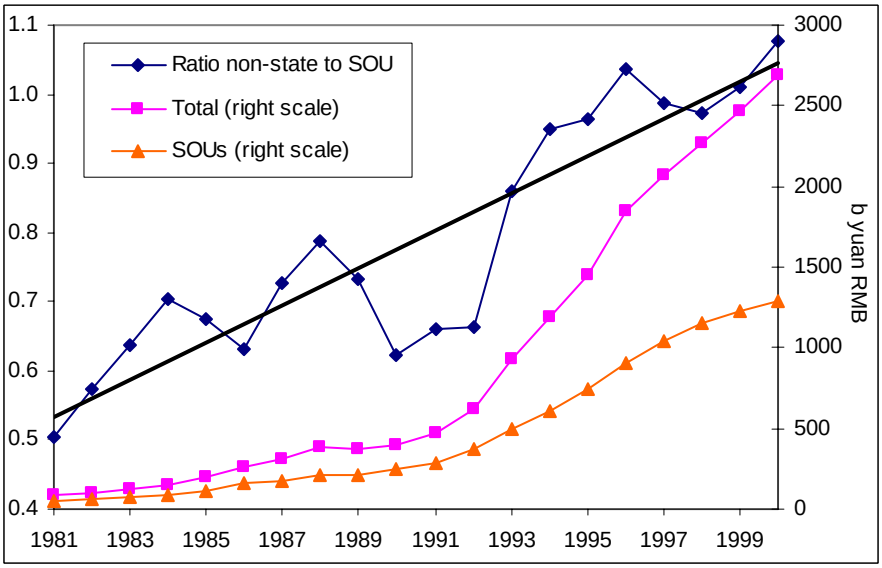
TU: ("pure") technological updating and transformation. (*Investment 1950-2000*, p. 298)

CC: capital construction. (*Investment 1950-2000*, p. 202; same source for newly increased CC)

Newly incr. SOU and newly incr. total: newly increased investment in fixed assets by SOUs, and economy-wide. (*Investment 1950-2000*, p. 77)

Total inv.: total investment in fixed assets. (*Investment 1950-2000*, p. 15)

Figure 3. Newly Increased Fixed Assets: Various Ratios



Source: *Investment* 1950-2000, p. 77.

Figure 4. Newly Increased Fixed Assets

Table 1. SOU Investment and Effective Investment, b yuan RMB

	Investment			Effective investment			SOU
	SOU total	Capital construc-tion	Techn. updating & transf.	SOU total	Capital construc-tion	Techn. updating & transf.	transfer rate
1953*				*40.605*			
1953	9.159	9.044	0.115	*7.508*	7.414	*0.094*	*0.8198*
1954	10.268	9.907	0.361	*8.347*	8.054	*0.293*	*0.8130*
1955	10.524	10.036	0.488	*9.067*	8.647	*0.420*	*0.8616*
1956	16.084	15.528	0.556	*12.130*	11.711	*0.419*	*0.7542*
1957	15.123	14.332	0.791	*14.131*	13.392	*0.739*	*0.9344*
1958	27.906	26.900	1.006	*20.869*	20.117	*0.752*	*0.7478*
1959	36.802	34.972	1.830	*25.474*	24.207	*1.267*	*0.6922*
1960	41.658	38.869	2.789	*28.655*	26.737	*1.918*	*0.6879*
1961	15.606	12.742	2.864	*11.622*	9.489	*2.133*	*0.7447*
1962	8.728	7.126	1.602	*6.898*	5.632	*1.266*	*0.7903*
1963	11.666	9.816	1.850	*9.559*	8.043	*1.516*	*0.8194*
1964	16.589	14.412	2.177	*13.729*	11.927	*1.802*	*0.8276*
1965	21.690	17.961	3.729	*20.299*	16.809	*3.490*	*0.9359*
1966	25.480	20.942	4.538	*17.938*	14.743	*3.195*	*0.7040*
1967	18.772	14.017	4.755	*9.498*	7.092	*2.406*	*0.5060*
1968	15.157	11.306	3.851	*6.958*	5.190	*1.768*	*0.4590*
1969	24.692	20.083	4.609	*13.013*	10.584	*2.429*	*0.5270*
1970	36.808	31.255	5.553	*24.029*	20.404	*3.625*	*0.6528*
1971	41.731	34.084	7.647	*22.713*	18.551	*4.162*	*0.5443*
1972	41.281	32.798	8.483	*22.979*	18.257	*4.722*	*0.5566*
1973	43.812	33.810	10.002	*30.097*	23.226	*6.871*	*0.6870*
1974	46.319	34.771	11.548	*29.348*	22.031	*7.317*	*0.6336*
1975	54.494	40.932	13.562	*34.840*	26.169	*8.671*	*0.6393*
1976	52.394	37.644	14.750	*30.871*	22.180	*8.691*	*0.5892*
1977	54.830	38.237	16.593	*39.166*	27.313	*11.853*	*0.7143*
1978	66.872	50.099	16.773	*49.694*	37.230	*12.464*	*0.7431*
1979	69.936	52.348	17.588	*58.519*	43.802	*14.717*	*0.8367*
1980	74.590	55.889	18.701	*57.275*	44.206	*10.866*	*0.7679*
1981	66.751	44.291	19.530	54.862	38.340	14.324	0.8219
1982	84.531	55.553	25.037	63.129	41.310	18.795	0.7468
1983	95.196	59.413	29.113	72.574	45.310	22.261	0.7624
1984	118.518	74.315	30.928	87.469	53.328	24.246	0.7380
1985	168.051	107.437	44.914	116.467	73.316	31.679	0.6930
1986	207.940	117.611	61.921	161.569	92.988	46.858	0.7770
1987	244.880	134.310	75.859	179.497	95.909	58.262	0.7330
1988	302.000	157.431	98.055	212.910	111.213	69.017	0.7050
1989	280.820	155.174	78.878	216.793	117.903	63.688	0.7720
1990	298.630	170.381	83.019	246.369	136.261	72.294	0.8250
1991	371.380	211.580	102.323	280.020	149.873	85.830	0.7540
1992	549.870	301.265	146.110	376.111	197.500	110.505	0.6840
1993	792.590	461.550	219.585	498.539	275.893	153.193	0.6290
1994	961.50	643.674	291.861	610.603	372.978	219.257	0.6351
1995	1089.82	740.362	329.935	738.986	471.267	252.487	0.6781
1996	1205.62	861.084	362.274	907.953	616.814	300.269	0.7531
1997	1309.17	991.702	392.194	1042.060	744.315	325.055	0.7960
1998	1536.93	1191.642	451.675	1147.131	849.982	369.036	0.7464
1999	1594.78	1245.528	448.508	1225.269	951.930	364.467	0.7683
2000	1650.44	1342.727	510.760	1292.463	1043.166	411.151	0.7831
2001	1760.70	1482.010	592.380	1251.263	1011.267	441.149	0.7107
2002	1887.74	1766.660	675.060	1301.440	1198.969	469.316	0.6894
2003	2166.10	2290.860	862.490	1383.042			0.6385

Values in italics are estimated values (more decimals are used than reported in the table).

* The value in line "1953*" is the 1953 value augmented by (1+g)/g, where g is the average annual (nominal) growth rate of 1953-58.

Lacking SOU investment data for 1953-1979, the reported data are the SOU "source of funds" totals; the source of funds values are also available (but not used) through 2003. The two times series differ starting in 1994. In 1994, the source of funds total exceeds the "regular" total by 4.57%, in 1995 by 1.13%, in 1996 by 0.31%; in 1997 it falls short of the "regular" total by 0.30%, in 1998 by 0.86%, in 1999 by 2.26%, in 2000 by 3.45%, in 2001 by 2.39%, in 2002 by 1.82%, and in 2003 by 0.25%.

Capital construction and technological updating and transformation exhibit a statistical break in 1997, when the minimum value of fixed asset investment to be included was raised from previously 50,000 yuan RMB to 500,000 yuan RMB. The 1996 values following the new coverage were 857.079b yuan RMB and 361.500b yuan RMB. The same statistical break affects effective investment, with 1996 values following the new coverage being 612.965b yuan RMB and 299.531b yuan RMB.

From 1953 through 1980, capital construction plus technological updating and transformation equal SOU investment. In these years, technological updating and transformation includes "other" SOU investment. Technological updating and transformation values which include "other" SOU investment would also have been available for 1981-93, but then starting 1986 the two values no longer add up to the SOU total with the introduction of a new category "real estate investment" in 1986; the difference between SOU investment and 'capital construction and technological updating and transformation (including "other" SOU investment)' equals real estate investment in 1986 through 1992. A value for technological updating and transformation excluding "other" SOU investment of 13.738b yuan RMB would have been available for 1980.

The 1980 SOU effective investment value is obtained by multiplying SOU investment with the transfer rate, where the 1980 transfer rate is the sum of effective capital construction and technological updating and transformation divided by the sum of capital construction and technological updating and transformation (technological updating and transformation in this calculation does not include "other" SOU investment). SOU effective investment of years prior to 1980 are the sum of effective capital construction and technological updating and transformation.

Effective technological updating and transformation of the years 1953-1979 is estimated as technological updating and transformation (including "other" SOU investment) times the transfer rate in capital construction (effective capital construction divided by capital construction). For 1980, a value for effective technological updating and transformation of 9.258b yuan RMB would have been available, but it excludes (the then unknown) "other" SOU effective investment.

Sources:

SOU investment: 1980-2000: *Investment 1950-2000*, p. 15; 2001-03: *Statistical Yearbook 2004*, p. 188; 1953-79: total source of funds values from *Investment 1950-2000*, p. 25 (with comparison values for 1980-2000 in the same source and for 2001-03 in *Statistical Yearbook 2002*, p. 178, and *2003*, p. 192).

Capital construction: 1953-2000: *Investment 1950-2000*, p. 87; 2001-03: *Statistical Yearbook 2004*, p. 193.

Technological updating and transformation: 1953-80 (including "other" SOU investment): *Investment 1950-2000*, p. 241 (with values through 2000, and those of 1981-93 continuing to include "other" SOU investment); 1981-2000: *Investment 1950-2000*, p. 298; 2001-03: *Statistical Yearbook 2004*, p. 193.

SOU effective investment: 1981-2000: *Investment 1950-2000*, p. 77; 2001: *Statistical Yearbook 2002*, p. 180; 2002-03: *Statistical Yearbook 2004*, p. 192.

Effective capital construction: 1953-2000: *Investment 1950-2000*, p. 202; 2001-02: *Statistical Yearbook 2004*, p. 204.

Effective technological updating and transformation: 1981-2000: *Investment 1950-2000*, p. 298; *Statistical Yearbook 2004*, p. 226.

Transfer rates are derived as SOU effective investment divided by SOU investment, except in 1980, when the value is based on the joint transfer rate of capital construction and technological updating and transformation (excluding "other" SOU investment).

Table 2. Economy-wide Investment and Effective Investment, b yuan RMB

	Investment	Effective investment	Transfer rate	Gross fixed capital formation	Effective gross fixed capital form.
1953*					*54.98*
1952				8.07	
1953			*0.8602*	11.53	*9.92*
1954			*0.8556*	14.09	*12.06*
1955			*0.8940*	14.55	*13.01*
1956			*0.8162*	21.96	*17.92*
1957			*0.9561*	18.70	*17.88*
1958			*0.8057*	33.30	*26.83*
1959			*0.7631*	43.57	*33.25*
1960			*0.7590*	47.30	*35.90*
1961			*0.8035*	22.76	*18.29*
1962			*0.8389*	17.51	*14.69*
1963			*0.8607*	21.53	*18.53*
1964			*0.8669*	29.03	*25.17*
1965			*0.9501*	35.01	*33.26*
1966			*0.7716*	40.68	*31.39*
1967			*0.6198*	32.37	*20.06*
1968			*0.5837*	30.02	*17.52*
1969			*0.6359*	40.69	*25.87*
1970			*0.7332*	54.59	*40.02*
1971			*0.6503*	60.30	*39.21*
1972			*0.6602*	62.21	*41.07*
1973			*0.7609*	66.45	*50.56*
1974			*0.7205*	74.81	*53.90*
1975			*0.7255*	88.03	*63.86*
1976			*0.6882*	86.51	*59.53*
1977			*0.7851*	91.11	*71.53*
1978			*0.8070*	107.39	*86.66*
1979			*0.8786*	115.12	*101.15*
1980	91.09		*0.8268*	131.80	*108.98*
1981	96.10	82.453	0.8580	125.30	*107.51*
1982	123.04	99.247	0.8066	149.32	*120.45*
1983	143.01	118.723	0.8302	170.90	*141.88*
1984	183.29	149.096	0.8134	212.56	*172.91*
1985	254.32	195.003	0.7668	264.10	*202.50*
1986	312.06	263.352	0.8439	309.80	*261.44*
1987	379.17	310.073	0.8178	374.20	*306.01*
1988	475.38	380.864	0.8012	462.40	*370.46*
1989	441.04	375.843	0.8522	433.90	*369.76*
1990	451.70	399.534	0.8845	473.20	*418.55*
1991	559.45	464.980	0.8311	594.00	*493.70*
1992	808.01	625.437	0.7740	831.70	*643.77*
1993	1307.23	927.863	0.7098	1298.00	*921.31*
1994	1704.21	1191.150	0.6989	1685.63	*1178.16*
1995	2001.93	1452.172	0.7254	2030.05	*1472.57*
1996	2297.40	1848.499	0.8046	2333.61	*1877.63*
1997	2494.11	2070.671	0.8302	2515.42	*2088.36*
1998	2840.62	2262.919	0.7966	2763.08	*2201.15*
1999	2985.47	2463.409	0.8251	2947.55	*2432.12*
2000	3291.77	2684.219	0.8154	3262.38	*2660.25*
2001	3721.349	2818.488	0.7574	3681.33	*2788.18*
2002	4349.991	3230.420	0.7426	4191.83	*3112.97*
2003	5556.661	3773.201	0.6790	5124.83	*3479.97*

Values in italics are estimated values (more decimals are used than reported in the table).

* The value in line "1953*" is the 1953 value augmented by (1+g)/g, where g is the average annual (nominal) growth rate of 1953-58.

Effective gross fixed capital formation is obtained by multiplying gross fixed capital formation by the economy-wide transfer rate. The economy-wide transfer rate of 1981-2003 is obtained by dividing economy-wide effective investment by economy-wide investment.

Sources:

Economy-wide investment: 1980-2000: *Investment 1950-2000*, p. 15; 2001-02: *Investment Yearbook 2003*, p. 3; 2003: *Investment Yearbook 2004*, p. 3.

Economy-wide effective investment: 1981-2000: *Investment 1950-2000*, p. 77; 2001-02: *Investment Yearbook 2003*, p. 3; 2003: *Investment Yearbook 2004*, p. 3.

Gross fixed capital formation: 1953-95: *GDP 1952-1995*, p. 50; 1996-2003: *Statistical Yearbook 2004*, p. 66.

Estimated economy-wide transfer rate (through 1980) = 0.226504 + 0.769739 * SOU transfer rate + 0.029341 * ratio of non-SOE to SOE industrial gross output value, where the intercept is significant at the 0.1% level, the coefficient of the SOU transfer rate at below the 0.005% level, and the coefficient of the ratio at the 5% level; the R^2 is 0.9502. The regression is run for 1981-92 (with 1992 being the last year for which the ratio of non-SOE to SOE industrial gross output value is available). Non-SOE industrial gross output value refers to such output by collective industry in 1949 through 1957 and by collective, individual (*chengxiang geti*), and "other" industry in the years thereafter. (Also see Table 4.)

Table 3. Non-SOU Investment and Effective Investment, b yuan RMB

	Investment: gross fixed cap. form. minus SOU investment	Transfer rate	Effective investment					
			Method 0	Method 1	Method 2	Method 3	Method 4	Method 5
53*					*15.00*	*0.50*	*15.16*	*14.38*
1953	2.37	*0.9432*			*1.64*	*0.25*	*2.24*	*2.41*
1954	3.82	*0.9427*			*1.82*	*0.40*	*3.60*	*3.71*
1955	4.03	*0.9623*			*1.96*	*0.58*	*3.87*	*3.94*
1956	5.88	*0.9386*			*2.19*	*1.67*	*5.52*	*5.79*
1957	3.58	*1.0040*			*2.36*	*1.99*	*3.59*	*3.75*
1958	5.39	*0.9210*			*2.66*	*1.76*	*4.97*	*5.96*
1959	6.77	*0.9024*			*3.23*	*2.74*	*6.11*	*7.78*
1960	5.64	*0.8989*			*3.61*	*2.49*	*5.07*	*7.25*
1961	7.15	*0.9206*			*3.98*	*1.85*	*6.59*	*6.67*
1962	8.78	*0.9370*			*4.80*	*1.76*	*8.23*	*7.79*
1963	9.86	*0.9454*			*5.65*	*1.75*	*9.33*	*8.97*
1964	12.44	*0.9481*			*6.21*	*2.01*	*11.80*	*11.44*
1965	13.32	*0.9848*			*6.73*	*2.33*	*13.12*	*12.96*
1966	15.20	*0.9048*			*7.41*	*2.73*	*13.75*	*13.45*
1967	13.60	*0.8384*		*0.18*	*8.35*	*2.78*	*11.40*	*10.56*
1968	14.86	*0.8222*		*0.36*	*9.05*	*2.56*	*12.22*	*10.56*
1969	16.00	*0.8454*		*1.08*	*9.92*	*3.27*	*13.52*	*12.86*
1970	17.78	*0.8898*		*2.76*	*11.13*	*4.76*	*15.82*	*15.99*
1971	18.57	*0.8543*		*3.33*	*12.63*	*6.28*	*15.86*	*16.50*
1972	20.93	*0.8597*		*4.10*	*14.35*	*7.29*	*17.99*	*18.09*
1973	22.64	*0.9056*		*6.32*	*16.13*	*8.44*	*20.50*	*20.46*
1974	28.49	*0.8890*		*7.10*	*18.12*	*9.36*	*25.33*	*24.55*
1975	33.54	*0.8926*		*9.53*	*20.59*	*11.77*	*29.94*	*29.02*
1976	34.12	*0.8789*		*9.43*	*23.26*	*13.90*	*29.98*	*28.66*
1977	36.28	*0.9237*		*13.21*	*26.50*	*17.14*	*33.51*	*32.36*
1978	40.52	*0.9328*		*18.34*	*29.91*	*19.05*	*37.80*	*36.97*
1979	45.18	*0.9640*		*23.45*	*34.29*	*20.37*	*43.56*	*42.63*
1980	57.21	*0.9436*		*24.77*	*39.67*	*25.62*	*53.99*	*51.71*
1981	58.55	0.9401	27.591	*25.47*	*45.94*	*28.96*	*55.04*	*52.65*
1982	64.79	0.9379	36.118	*31.32*	*52.75*	*32.34*	*60.77*	*57.32*
1983	75.70	0.9652	46.149	*38.31*	*60.67*	*38.41*	*73.07*	*69.31*
1984	94.04	0.9514	61.627	*48.95*	*70.85*	*53.93*	*89.48*	*85.44*
1985	96.05	0.9104	78.536	*68.88*	*85.23*	*79.77*	*87.44*	*86.03*
1986	101.86	0.9776	101.783	101.78	101.78	101.78	*99.58*	*99.87*
1987	129.32	0.9723	130.576	130.58	130.58	130.58	*125.74*	*126.51*
1988	160.40	0.9687	167.954	167.95	167.95	167.95	*155.38*	*157.55*
1989	153.08	0.9927	159.050	159.05	159.05	159.05	*151.96*	*152.97*
1990	174.57	1.0006	153.165	153.17	153.17	153.17	*174.67*	*172.18*
1991	222.62	0.9835	184.960	184.96	184.96	184.96	*218.95*	*213.68*
1992	281.83	0.9659	249.326	249.33	249.33	249.33	*272.22*	*267.66*
1993	505.41	0.8342	429.324	429.32	429.32	429.32	*421.61*	*422.77*
1994	724.13	0.7817	580.547	580.55	580.55	580.55	*566.05*	*567.56*
1995	940.23	0.7819	713.186	713.19	713.19	713.19	*735.17*	*733.58*
1996	1127.99	0.8615	940.546	940.55	940.55	940.55	*971.76*	*969.68*
1997	1206.25	0.8681	1028.611	1028.61	1028.61	1028.61	*1047.15*	*1046.30*
1998	1226.15	0.8559	1115.788	1115.79	1115.79	1115.79	*1049.46*	*1054.02*
1999	1352.77	0.8903	1238.140	1238.14	1238.14	1238.14	*1204.37*	*1206.85*
2000	1611.94	0.8479	1391.756	1391.76	1391.76	1391.76	*1366.76*	*1367.79*
2001	1920.63	0.7993	1567.225	1567.23	1567.23	1567.23	*1535.16*	*1536.92*
2002	2304.09	0.7834	1928.980	1928.98	1928.98	1928.98	*1805.02*	*1811.53*
2003	2958.73	0.7049	2390.159	2390.16	2390.16	2390.16	*1879.09*	*2096.93*

For data on gross fixed capital formation, economy-wide investment, SOU investment, economy-wide effective investment, and SOU effective investment see Table 1 and Table 2. Values in italics are estimated values (more decimals are used than reported in the table). The economy-wide transfer rate of 1981-2003 is obtained by dividing non-SOU effective investment by non-SOU investment (with both values obtained as differences between economy-wide and SOU values).

* Values in line "1953*," method 2 and 4 are 1953 values augmented by (1+g)/g, where g is the average annual real growth rate of 1986-2000 in method 2, and the average annual nominal growth rate of 1953-58 in method 4. The value in line "1953*," method 3, is the sum of 1949 through 1952 real values turned into nominal values at the 1953 price level.

Method 0: non-SOU effective investment is obtained as difference of economy-wide and SOU effective investment (as reported in Table 1 and Table 2).

Method 1: ratio of non-SOU to SOU effective investment (for data see previous and this table) obtained for years 1986-2000 and regressed on constant and time to yield non-SOU effective investment = -62.4947 + 0.0318 * year (with both coefficients significant at below 0.005% level). Positive non-SOU effective investment values start 1967.

Method 2: the average annual real growth rate of non-SOU effective investment in 1986-2000 is 12.24% (real growth rates are obtained using nominal non-SOU effective investment, as reported in this table, and the investment deflator in the paper); this real growth rate is applied to the 1986 and earlier values regressively. Real values of pre-1986 are translated into current year prices.

Method 3: real non-SOE industrial gross output value growth rates are applied to 1986 non-SOU effective investment, and the resulting non-SOU real effective investment value of each year is turned into a nominal value using the gross fixed capital formation deflator. Nominal industrial gross output values for 1949 through 1992 by ownership form are from the *Industrial Yearbook 1995*, p. 35; annual real growth rates in total industrial gross output value to yield an implicit deflator (available only for all industry) are from the same source on p. 34. Non-SOE industrial gross output value refers to such output by collective industry in 1949 through 1957 and by collective, individual (*chengxiang geti*), and "other" industry in the years thereafter. (Also see Table 4.) Non-SOE *real* industrial gross output value growth rates are obtained by applying the total industrial gross output value deflator to the nominal non-SOE data.

Method 4: non-SOU investment values are obtained as the difference of gross fixed capital formation and SOU investment and are multiplied by the estimated non-SOU transfer rate (for these data see first two columns of table). Values since 1986 (or 1981) could be replaced by the effective investment values (obtained as difference of economy-wide and SOU effective investment values).

Method 5: difference of effective gross fixed capital formation (Table 1) and SOU effective investment (Table 2).

Estimated non-SOU transfer rate (through 1980) = 0.653515 + 0.344485 * SOU transfer rate + 0.080913 * ratio of non-SOE to SOE industrial gross output value, where the intercept is significant at below the 0.005% level, the coefficient of the SOU transfer rate at the 5% level, and the coefficient of the ratio at the 1% level; the R^2 is 0.6890. The estimated non-SOU transfer rate very slightly exceeds unity in 1957 and 1990. This is plausible when investment expenditures of one year turn into finished investment in fixed assets in another year, especially when investment expenditures fall in absolute terms, as was the case in both 1957 and 1990. Non-SOE industrial gross output value is defined as in method 3 above. The regression is run for 1981-92 (with 1992 being the last year for which the ratio of non-SOE to SOE industrial gross output value is available).

Table 4. Industrial Gross Output Value, 1949-1992

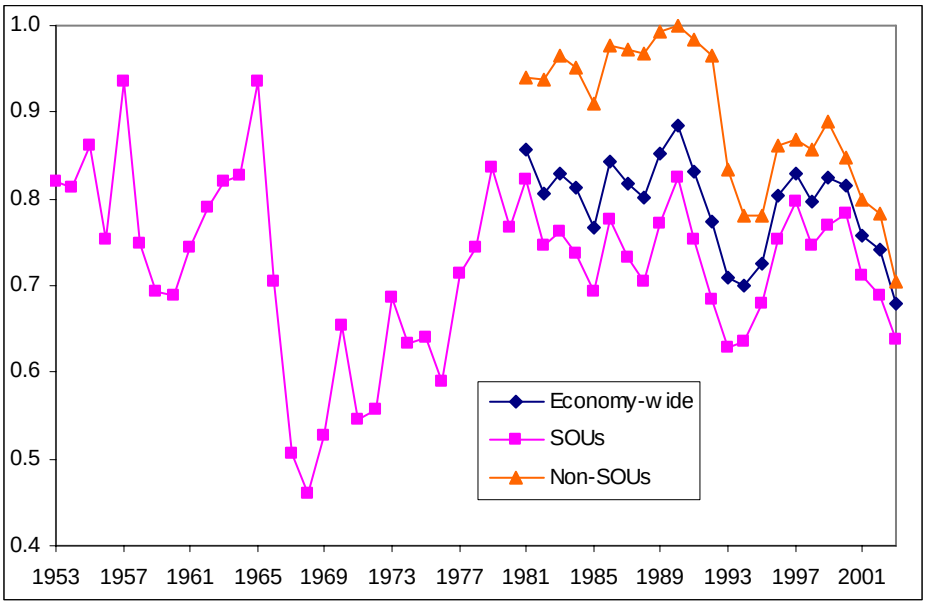
	Industrial gross output value (100m yuan RMB)					Ratios		Real
	Total	State-owned	Collective-owned	Individual-owned	Others	Non-SOE / total	Non-SOE / SOE	growth (total)
1949	140	36.75	0.7	32.16	70.39	0.0050	0.0190	
1950	191	62.43	1.49	50.25	76.83	0.0078	0.0239	136.4
1951	264	90.97	3.41	60.22	109.4	0.0129	0.0375	138.2
1952	349	144.97	11.38	71.79	120.86	0.0326	0.0785	129.9
1953	450	193.69	17.42	86.67	152.22	0.0387	0.0899	130.3
1954	515	242.69	27.45	92.08	152.78	0.0533	0.1131	116.3
1955	534	273.86	40.48	78.93	140.73	0.0758	0.1478	105.6
1956	642	350.20	109.59	7.58	174.63	0.1707	0.3129	128.1
1957	704	378.54	133.97	5.84	185.65	0.1903	0.3539	111.5
1958	1083	965.71	117.29			0.1083	0.1215	154.8
1959	1483	1313.20	169.80			0.1145	0.1293	136.1
1960	1637	1483.12	153.88			0.0940	0.1038	111.2
1961	1062	939.98	122.02			0.1149	0.1298	61.8
1962	920	807.76	112.24			0.1220	0.1390	83.4
1963	993	887.05	105.95			0.1067	0.1194	108.5
1964	1164	1042.25	121.75			0.1046	0.1168	119.6
1965	1402	1262.78	139.22			0.0993	0.1102	126.4
1966	1624	1464.52	159.48			0.0982	0.1089	120.9
1967	1382	1222.52	159.48			0.1154	0.1305	86.2
1968	1285	1136.20	148.80			0.1158	0.1310	95.0
1969	1665	1477.02	187.98			0.1129	0.1273	134.3
1970	2117	1854.70	262.30			0.1239	0.1414	132.6
1971	2414	2073.87	340.13			0.1409	0.1640	114.7
1972	2565	2177.17	387.83			0.1512	0.1781	106.9
1973	2794	2347.52	446.48			0.1598	0.1902	109.5
1974	2792	2300.89	491.11			0.1759	0.2134	100.6
1975	3207	2600.56	606.44			0.1891	0.2332	115.5
1976	3278	2567.66	710.34			0.2167	0.2766	102.4
1977	3725	2869.37	855.63			0.2297	0.2982	114.6
1978	4237	3289.18	947.82			0.2237	0.2882	113.5
1979	4681.3	3673.60	1007.70			0.2153	0.2743	108.8
1980	5154.26	3915.60	1213.36	0.81	24.49	0.2403	0.3163	109.3
1981	5399.78	4037.10	1329.38	1.90	31.40	0.2524	0.3375	104.3
1982	5811.22	4326.00	1442.42	3.40	39.40	0.2556	0.3433	107.8
1983	6460.44	4739.40	1663.14	7.50	50.40	0.2664	0.3631	111.2
1984	7617.29	5262.70	2263.09	14.80	76.70	0.3091	0.4474	116.3
1985	9716.47	6302.12	3117.19	179.75	117.41	0.3514	0.5418	121.4
1986	11194.26	6971.12	3751.54	308.54	163.06	0.3773	0.6058	111.7
1987	13812.99	8250.09	4781.74	502.39	278.77	0.4027	0.6743	117.7
1988	18224.58	10351.28	6587.49	790.49	495.32	0.4320	0.7606	120.8
1989	22017.06	12342.91	7858.05	1057.66	758.44	0.4394	0.7838	108.5
1990	23924.34	13063.75	8522.73	1290.3	1047.56	0.4540	0.8314	107.8
1991	28248.01	14954.58	10084.75	1609.1	1599.58	0.4706	0.8889	114.5
1992	37065.71	17824.15	14101.19	2506.8	2633.57	0.5191	1.0795	127.5

Individual-owned (economy) denotes *chengxiang geti*, "others" denotes *qita jingji leixing*.

According to the source, the data include the village and below-village economy (*cun ji cun yixia*); "others" in 1949-57 "are" (*wei*) public-private joint enterprises and private enterprises (since 1958 these are presumably included in the category SOEs).

In the ratios, non-SOEs in 1949 through 1957 only cover the collective-owned economy (because output by individual-owned enterprises and "others" presumably turns into SOE output in 1958); in the years since 1980 the group of non-SOEs covers all three non-SOE categories. SOEs in the second ratio are always limited to SOEs (individual-owned and "others" are not included in 1949-57 or at any other time).

Sources: *Industrial Yearbook 1993*, p. 35 (nominal values), p. 34 (real growth rates for total industry, with no such values available by ownership category; used to establish an industrial gross output value deflator).



Transfer rates are effective investment divided by investment.

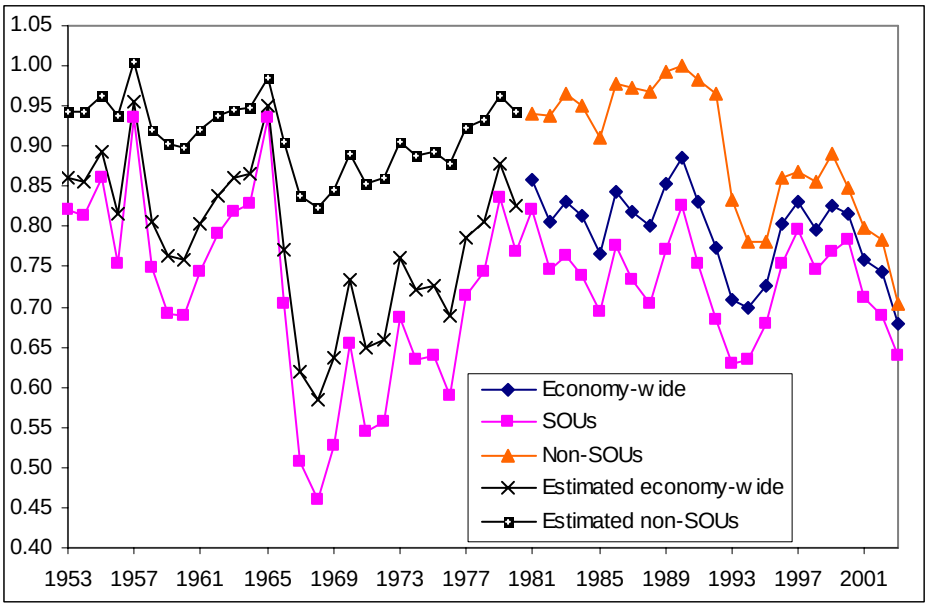
Sources:

Effective investment 1981-2003 economy-wide and SOUs: *Investment 1950-2000*, p. 77, *Investment Yearbook 2003*, p. 3 (for economy-wide values of 2001 and 2002), *Investment Yearbook 2004*, p. 27 (for economy-wide value of 2003), *Statistical Yearbook 2002*, p. 180 (for SOU value of 2001), and *2004*, p. 192 (for SOU values of 2002 and 2003); non-SOU values are residuals.

Effective investment 1953-1980, SOUs: sum of capital construction and technological updating (where the latter data are estimates through 1979 and include "other" SOU investment); for explanations and sources see Figure 3.

Investment: economy-wide: *Investment 1950-2000*, p. 15, *Statistical Yearbook 2004*, p. 188; SOUs: *Investment 1950-2000*, p. 15 (source of funds table used for 1953-1979) and p. 25 (for 1980-2000, with identical data as in the source of funds table for 1980-1993), *Statistical Yearbook 2004*, p. 188.

Figure 5. Transfer Rates



For the regression equations underlying the estimated values see notes to Table 2 and Table 3. For actual values see Figure 5.

Figure 6. Transfer Rates (including estimates)

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