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A Revision of the Swedish Producer Price Index, 1968-1993*

Jonas Ljungberg

I. Introduction

Price indexes face two eternal problems. First, the quality problem concerns the comparability of price quotations for products which have been more or less changed. A general opinion is that official statistics take insufficient account of quality change, resulting in an upward bias of price indexes.

Second, there is also a quantity problem concerning how the price changes of different products should be weighted. That amounts to the choice of an appropriate index formula. Since different index formulas have their properties or characteristic biases, the aim and use of the price index should be considered before the choice is made. Moreover, for practical purposes the preferred index formula might not always and everywhere be easily employed, and therefore special adjustments might produce unexpected bias.

The present paper is primarily concerned with the last, special case of the quantity problem. It reports an estimate of the bias in the Swedish official producer price index (PPI) that is due to an adjustment error of the weights. In 1980 Statistics Sweden (henceforth SCB) changed PPI from a Laspeyres index with fixed base year weights to a chain index, though still of the Laspeyres type, that is, using the previous year as base for prices and weights.[1] However, since the weights are fetched from the official statistics for manufacturing and for foreign trade, and these are available with a lag of several years, the index makers faced a practical problem. SCB's solution

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1 Denominating an ordinary Laspeyres price index **L**, and a chain price index **K**, prices **p** and weights **q**, the base year $_o$ and the comparison year $_t$, they can be written:

$$\mathbf{L} = \Sigma\, \mathbf{p}_t \mathbf{q}_o \,/\, \Sigma\, \mathbf{p}_o \mathbf{q}_o \qquad \mathbf{K} = \Sigma\, \mathbf{p}_t \mathbf{q}_{t-1} \,/\, \Sigma\, \mathbf{p}_{t-1} \mathbf{q}_{t-1}$$

was to take old sales values and adjust them with the price change up through the base year. For 1980 the weights were based on the sales values of 1975, but from 1981 onwards they have a lag of three years. That is, the PPI of 1981 is based on sales values of 1978, adjusted by the price changes of 1979 and 1980. The weight of a commodity which in 1980 was 10 percent more expensive than in 1978 is consequently increased by 10 percent above its sales value of 1978. This method is still in use, that is, the weights used for the computation of PPI 1999, and which should represent sales values of 1998, are actually taken from 1996 and adjusted in proportion to price changes 1997 and 1998. The justification for this proceeding is the implicit assumption that sales values will change in proportion to prices. There are, however, strong reasons to doubt that assumption, and with the benefit of hindsight it is now possible to test its validity for more than a decade.

This paper presents such a test and a partial revision of the Swedish PPI. The paper is organized as follows: Section two describes the reconstruction and revision of the producer price index for the home market (HMPI). Section three analyses the results and discusses the assumption that sales values change in proportion to prices. That leads to section four and a discussion of the connection between the quantity problem and the quality problem. Section five discusses the extension backwards, to the late nineteenth century, of consistently constructed price indexes and comments a revised PPI for the period 1968-1979. Section six raises some critical points on the handling of the quality problem in PPI. Section seven briefly highlights the significant consequences of the weight bias in the current PPI for business, for economic forecasting and for the national accounts. Section eight evaluates the state of the art, as regards the Swedish PPI, and hints at some tasks. An appendix presents revised PPI series.

II. The Reconstruction and Revision of PPI

SCB publish five principal versions of PPI with different sets of weights. The main PPI is weighted with total sales values, while PPI for the home market (HMPI) is weighted with sales values less exports, and the latter constitutes weights for the export price index (EXPI). Moreover, imports provide weights for the import price index (IMPI), and the aggregate of IMPI and HMPI give a price index for domestic supply (ITPI). Of course these indexes are supplied not only at the aggregate level, which includes agriculture, mineral extraction and mining as well as manufacturing, but also for commodity groups or branches.

I have investigated the differences between SCB's method of computation and a conventional chain index for HMPI 1980-1993. The reason for restricting the investigation to the home market is simply practical – there is a huge mass of data to prepare and process. An extension forward in time is, of course, desirable, and it would now (spring 1999) be possible to also include 1994-1997, but that would require a nonproportional effort of work, not least due to changes in the organization of the data.

The data used are SCB's tables with weights and indexed prices at the most basic level (*stat nr*). Since prices and weights of those tables do not directly correspond to each other it was necessary to prepare and edit the data before the processing. Moreover, it is impossible to know exactly how SCB solved all such practical issues when the official indexes were computed, and consequently it will be by mere chance if a reconstructed index exactly coincides with the official one. Therefore I have compared the revised indexes, not directly with the official ones, but with my own reconstruction of the official indexes, using SCB's weights. The ratio between the revised index and the reconstructed index gives a coefficient of deviation for the official index, which is used to estimate the corrected HMPI. Through this proceeding, irrelevant differences in the method of computing the indexes are eliminated, and the deviation coefficient displays only the difference that is due to the use of estimated weights instead of actual weights.

The actual weights for the revised index are taken from SCB's tables, but with a change of year and recalculated to the original price level.[2] The revised index starts in 1980, but since I, for parsimonious reasons, did not collect the SCB weights for the first years of the 1980s, these years are missing in the reconstructed series.

Table 1 presents an overview of the results at an aggregate level. For an evaluation of the accuracy of the new estimates, a comparison of the reconstructed index with the official HMPI is of interest. They are computed through the same method and should coincide, but there are three reasons why they do not.

The first is simply due to rounding. The annual change of the official HMPI is computed from the published figures, which were 278 in 1980 and 603 in 1993.[3] Since that actually means 277.5 to 278.4 and 602.5 to 603.4, respectively, the margin of error is 0.3 for the annual rate of change and 0.2 for the trend.

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2 Denominate actual weights **q** and the SCB weights **x** , then $\mathbf{q}_{t-1} = \mathbf{x}_{t+2} / \mathbf{p}_{t+1} * \mathbf{p}_{t-1}$

3 From 1994 onwards four digits are given.

The second reason is that some commodities have been omitted in my estimates. Items quoted in only a few years have been left out, since the marginal effort to include them should certainly have exceeded the marginal utility. The column to the right, "Coverage," shows the share of the sum of weights that I have actually used. However, one must presume that even SCB has omitted almost as many items as I have, since a sample test for a couple of years indicates that around 15 percent of the SCB weights lack matching price links. Thus, the actual coverage is probably over 90 percent and the difference beetween the samples can only explain a small part of the differential between my indexes and the official ones.[4]

The third and most important reason therefore seems to be the editing of the data. As already mentioned, the indexed prices do not easily match the weights in the source material. A brief description of the source seems not out of place. In the early 1990s, HMPI was said to be based on price quotations of about 1800 commodities (SCB, 1991b). However, those quotations are not available any more. The available tables contain indexed prices for broadly or more narrowly defined commodity groups. They correspond roughly to the items (*stat nr*) in the official statistics of manufacturing and trade. In 1991-1992 the number of price links, that is, items quoted in the whole year of both 1991 and 1992, were slightly over 800. There were weights for 650 of these, and these make up the basis for the official HMPI of 1992. The number of price links in 1984-85 were around 640, close to 100 of these lacked weights, thus the basis for HMPI in 1985 was about 540 items. At the start of the chain index, in 1980-81, the number of price links were less, about 440, but I have not collected the weights used for these years.

Even though the source material has been successively enlarged there are a considerable number of gaps in both price quotations and weights. In theory it is not necessary to have long continuous series of price quotations for a chain index, since annual links will suffice. However, if a large part of the price series is very short, one cannot refute the suspicion that the variations of the index is a random effect of the unsteady composition of the index, and not an adequate measure of the price level. The risk for such a random disturbance is, of course, greater the smaller the considered aggregate.

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[4] The revised Iron and steel price index presented in the appendix, was reworked after this analysis was undertaken (and the article for *Ekonomisk Debatt* written). In the original reconstruction and revision of the iron and steel index the coverage was too lean, since a lot of items were omitted due to their short endurance. In the new appendix version the included number of items for iron and steel have been largely increased. However, this does not change the conclusions here. On the contrary, while the earlier iron and steel index was higher than the official one, the new version is lower, similar to the case for most of the branches.

Fortunately, from my point of view, the historian has an advantage over the current index producer: the possibility to interpolate gaps in the data. This is more than a practical advantage, since deviations due to gaps are subsequently smoothed, while there is a risk with other methods that the index embodies errors that accumulate.

Moreover, it would be no sense in trying to automatically run the list of prices against the list of weights, since the fact is that the items have changing identification numbers with the passing of time, and the changes are not synchronized between prices and weights. Consequently an "automatic" computation would make the loss of observations still larger. To reconstruct, exact in all detail, the computation of any of the indexes of PPI therefore seems impossible. A not inconsiderable amount of handicraft work with the tables was therefore necessary before the “run” button could be pressed. I will not go into further details concerning the data, but assert that it is not unambigously sure that the official HMPI is more correct than the reconstructed version.[5]

In this context the important conclusion is that the reconstructed HMPI is sufficiently close to the official HMPI, in order to make probable that a correction of weights would have the same impact on the official indexes. Therefore, the difference between the revised and the reconstructed indexes is an indication of the estimation error of the official weights. Thus, the deviation coefficient or the differential between the revised and the reconstructed HMPI can be applied to the official HMPI, producing a corrected HMPI.

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[5] In a few cases, where weights are missing or display a conspicuous volatility, I have corrected them against the statistics for industry and foreign trade, but several dubious cases remain. One such case, although occurring after the period considered here, should not be concealed from the reader: In 1995 the layout of industrial statistics was redesigned from *SNI69* to *SNI92*. This implied a rearrangement of commodity groups, but a closer student of the weights might surmise that every second Swede became a vegetarian in 1995, well before the mad cow disease appeared in the headlines. In 1995 the home market for different items of beef, veal and pork were reduced to less than a half, but fortunately, it was a momentary whim and the market recovered in 1996. Seriously speaking, though, this shaky move of the weights were big enough to be seen in the PPI for foodstuffs. My computations do not go through to 1995, so I cannot exactly measure the effect. Simulating a matching dip in meat consumption for 1992, would, however, elevate the 0.2 percent increase of the official HMPI for all foodstuffs (*SNI 31*) to 0.7 percent.

Table 1. Percentage annual rate of change in industrial (SNI 2+3) producer prices on the home market according to different estimates, deviation in the cumulated index (1983=100), and share of weights represented.

	Official HMPI	Reconstr.	Revised	Cumulat. Index Deviation	Corrected HMPI	Coverage
1983	10.1	10.5	10.3	1.000	9.9	0.75
1984	9.7	12.8	12.8	0.999	9.6	0.83
1985	6.5	3.7	3.4	0.996	6.2	0.86
1986	2.7	2.9	2.1	0.989	1.9	0.81
1987	2.6	2.9	2.8	0.988	2.5	0.82
1988	6.8	7.8	7.2	0.982	6.2	0.80
1989	8.6	9.8	8.9	0.974	7.7	0.78
1990	5.5	5.9	3.5	0.952	3.1	0.81
1991	2.8	0.9	-0.9	0.935	1.0	0.82
1992	0.0	1.1	-0.6	0.920	-1.6	0.87
1993	2.2	2.2	1.0	0.909	1.0	0.79
Average 1983-93	5.2	5.5	4.6		4.3	0.81
1989-93	3.8	4.0	2.4		2.2	0.81

Note: Figures in the table take account of the reworked iron and steel index (see footnote 4).

III. The Margin of Error

In most years of the 1980s, the difference between the official and the revised HMPI is marginal, but from 1988 onwards the differences are not insignificant. At the bottom line of table 1 it is shown that the general increase in the producer prices on the home market, 1989-1993, was on

average 1.3 percentage points lower than the official index. That this is more than a marginal error will be argued below in section eight. What is also of importance is the distribution of the error at the disaggregate level among the branches of industry.

Table 2 explores the distribution of the deviation coefficient, as defined above, for 42 branches, covering the whole of industry. According to a well known rule of thumb, one third of the observations, that is, 14 branches, differ more than one standard deviation from the mean. On average, 14 branches are either (-.26-1.93)=2.19 percentage points or more below the reconstructed index, or (-.26+1.93)=1.67 percentage points or more above the reconstructed index. However, the deviations are not evenly distributed around the mean but in nine out of eleven years, and the bias is negatively skewed. The columns for maximum negative and positive error, respectively, emphasize that the negative deviations tend to be larger. A further conclusion is that the reliability of HMPI diminishes at the disaggregate level.

Moreover, there is no obvious trend in the standard deviation. Although the deviation coefficient at the aggregate level, as seen in table 1, grows larger later on in the period, at the disaggregate level the errors are rather evenly distributed over time. In other words, the positive and negative errors tend to cancel each other in the early years, while the negative errors outweigh the positive in the later years.

There exist several index formulas giving different results. Why could it be stated that the official computation is *wrong*?

The idea of a Laspeyres chain index is to tell how much the price of a basket of commodities, representative of the trade in the previous year, has changed since last year. A traditional Laspeyres fixed weight index tell the current price of the base year's basket of commodities. The principal reason to prefer a chain index is that the basket is of greater relevance to today's market. This advantage is, of course, sacrificed if we cannot find an adequate measure of the basket of commodities that was traded last year.

From a theoretical point of view, it is hard to argue for the SCB method to substitute last year's basket with an old basket, inflated with the price changes since the origin. As soon as we leave the static world, it is an exception that increasing output is a response to higher prices propelled by demand. Those exceptions are due to temporary technological monopolies, regulations and the like. Instead, it is a clear tendency that expanding products are becoming relatively cheaper. In particular during periods of crises and economic transformation, changes of relative prices and volumes are pertinent (Ljungberg 1990, 1991). That is why the aggregate PPI departs with the onset of the deflationary crisis around 1990.

Table 2. Deviations between annual percentage changes of the revised HMPI and the reconstructed HMPI for 42 branches encompassing the whole industry (SNI 2 + 3)

	Standard deviation	Mean deviation	Maximum deviation negative	positive
1983	3.2	0.14	-7.0	16.5
1984	1.2	-0.17	-5.2	3.7
1985	1.7	-0.38	-10.1	1.5
1986	3.2	0.14	-7.0	16.5
1987	1.2	-0.17	-5.2	3.7
1988	1.7	-0.38	-10.1	1.5
1989	1.3	-0.18	-4.6	3.8
1990	2.1	-0.51	-8.6	6.1
1991	1.5	-0.10	-5.8	2.9
1992	2.2	-0.70	-9.1	2.0
1993	1.9	-0.56	-10.2	2.1
Average:	*1.93*	*-0.26*	*-7.53*	*5.47*

IV. The Connection Between the Quantity and the Quality Problem

As mentioned above, different index types produce different results. Hence the search for an ideal index (e.g. Fisher 1922) or exact and superlative indexes (Diewert 1976). The data, for example the supply of weights, however often constrain the operational possibilities. Moreover, knowing the features of the index type chosen, it is also possible to use the differences between different indexes as a tool for the analysis of economic processes (Gerschenkron 1962; Krantz & Nilsson 1975; Schön 1978; Ljungberg 1990, 1991).

In principle, quality changes are not allowed to influence a price index. Operationally this is hard to achieve. The collection and preparation of the price series which are used for the computation of the index are fundamental. In the construction of price series there are two opposing principles to treat quality changes, although real world and refined methods provide infinite

complications. In the first, the quality difference between the old and the new product is conceived equal to the price difference, at the same point in time. This is basically the linking or splicing method, and in principle a hedonic price regression is performing the same. In the second principle, a subjective standard is construed. For example, Richard Stone (1956) proposed, in the case of beer, that the alcoholic content should be taken as a standard. When the fat content of milk was reduced to a standardised level during World War II, this was conceived in the CPI computation as a deterioration of quality proportional to the decrease in caloric content. The beer and milk cases highlight that it seems hard to escape arbitrariness and historical prejudice in the construction of quality standards.

However, one should be explicit about the aim when chosing a standard. Focussing on the environment and natural resources, that obviously are recognized by the market with a considerable time lag, it is useful to measure price in relation to the energy efficiency, like Gordon (1990) in a pioneering study of durables in the U.S.

Official statistics are not that sophisticated, and every step that increases the aptitude to let price differentials reflect quality differences is considered progress. One objection might be that those deficiencies are common in most price indexes, and consequently they are of no importance, at least not in international comparisons. However, quality changes are a manifestation of technological change, and since the technological structure and development do not keep pace in all countries, the quality bias of price indexes digresses between countries.

Our account of quality changes and prices is also influenced by the type of index chosen. In general, the older the weights, the more technological change, and indirectly quality changes are ignored. A conventional Laspeyres index, like the Swedish PPI before 1980, tends to indicate higher values than a chain index or a Paasche index with more up to date weights.[6] While a chain index estimates the price change of a basket of the preceding year, a Paasche index estimates what the price change of a basket of the current year would have been since the base year. The measurement of inflation or annual price changes with a Paasche type index could therefore be objected to, since every annual value is only comparable with the base year. Yet, a corresponding objection against a chain index is that only adjacent observations are actually compared. Hence a chain index is adequate only for measuring the inflation rate while more distant observations can fictitiously

[6] Using the same denominations as previously, then **P** is a Paasche price index:

$$\mathbf{P} = \Sigma \mathbf{p}_t \mathbf{q}_t / \Sigma \mathbf{p}_o \mathbf{q}_t$$

display the same value (Diewert 1987). For the analysis of long term economic change there are robust arguments for the use of Paasche price indexes, and they have been used in the historical national accounts of Sweden (Schön 1988, 1995; Ljungberg 1988).

However, the aim of PPI is to show short term changes and therefore Paasche is no solution, and, moreover, is not even possible due to the requisite of current weights. This latter requirement also excludes ideal and superlative indexes.

In retrospect, however, Paasche indexes are useful. Both at the aggregate and disaggregate levels they show a development close to the revised chain indexes, as can be seen in the appendix. In certain branches, the Paasche index are even lower. Products that are growing in volume and, as often is the case, face decreasing relative prices make the Paasche index depart downwards. It should come as no surprise that this is especially highlighted by electrical engineering (SNI 383), for which the Paasche index decreases 13 percent relative to the revised chain index over the period 1980-1992. This is a case for the connection between the quality and the quantity problem in price indexes.

Observe that the prices of electrical engineering are notably lower than for total industry or other branches. Although computers are not represented in the HMPI (but in the import price index), this is clearly the effect of the innovative transformation in the wake of the microchip. Computerization is far from the first evidence of the connection between innovations, supply effects and falling relative prices. From the late nineteenth century until 1969, electrical engineering had the lowest increase in prices of all branches, together with energy production (Ljungberg 1990, 1991). This is emphasized by the Paasche index, thereby substituting for the shortcomings as regards quality changes in the underlying data.

The SCB construction of the weights implies, on the contrary, that more weight is loaded on products with increasing relative prices, and less on those with decreasing relative prices, quite independent of whether the volume grows, stagnates, or drops. Therefore the official PPI worsens the general bias of price indexes as regards quality change.

V. A Long Term PPI?

Before 1980, the official PPI was a conventional Laspeyres index, and from the early 1970s the base year was 1968. For long term analysis, it is of course not desirable to mix different index types for different periods with a risk that properties of the index are mistaken for features of changing economic conditions. The aim of the present venture was to reconstruct consistent price indexes for the 1970s to the 1990s, making possible a linking to available price indexes for the period 1888-1969 (Ljungberg 1990), but that was not possible to achieve. While the official data since 1980 could be used, though conditioned by secrecy, down to commodity groups (*stat nr:* eight digits), data at a more aggregate level must be used for the period 1968-1979.[7] That is, there are price indexes for the home market, for the exports, and for the combined total at the three, four and, in a few cases, at the six digit level of the *SNI 69 standard*, with corresponding weights pertaining to 1968. The number of indexes at commodity group or branch level sums up to 80.

Each index is weighted from a number of items at the commodity level with the weights of 1968. Consequently there is an index problem locked up in each series: quantity change cannot influence the movement of these indexes before 1980. First at a higher level of aggregation, quantity change has an influence on the weights of the present chain and Paasche indexes, for which annual weights have been collected from the official industry and trade statistics.

Figure 1 shows the ratios, at the aggregate level, between a conventional chain index with one year links and the official PPI, and also between a Paasche price index and the official PPI. The divergences from the official PPI are not that big, although it is not improbable that they would be magnified if prices and weights at a lower level of aggregation were employed. However, what is interesting with the present comparison is that the chain index grows relative to the official PPI, while the Paasche index is rather close to the official Laspeyres PPI. It is useful to recall that the long term trend of the ratio between a Paasche and a Laspeyres producer and wholesale

[7] Communicating with Statistics Sweden in the mid-1990s, I was told that price data at the commoditiy level was not preserved for the 1970s, so I had to contemplate intermediate data, made available at the then regional office of Statistics Sweden in Malmö. *Nevertheless*, in a visit to the headquarters in Stockholm in March 1999, collecting data for the linking of the series before and after 1980, I found on the shelves the price data for the very commodity level, 1968-1980, that was held not to exist! Hence, the aim is still possible to achieve.

Figure 1.

1.06 -

value weights change accordingly. This is what happened. The structure was rigid, keeping the Paasche/Laspeyres ratio close to unity, but relative prices changed and inflated the chain index.

Provided that we prefer a chain index, and that we accept the underlying data, it seems as if the official PPI was negatively biased before 1980, and changed to a positive bias from 1980. Using PPI in analysis of long term economic development, for example for deflating purposes, therefore opens the risk that index deficiences are mistaken for real economic change. The desired revision of PPI thus ought to be pushed further backwards than 1980. For the period 1888-1969 there are consistent Paasche price indexes for about forty branches of industry in Ljungberg (1990). The division into branches is the historical one, with nine main branches of industry.

In the appendix to this paper I present a somewhat provisional continuation of those previous indexes through to 1993. The provisional character is due to two reasons. First, the alleged lack (see footnote 7) of data at the lowest level for the 1970s, which explains why the 1968-1979 series were reconstructed from intermediate data; second, that all series pertain to the home market only. Moreover, also these revised indexes suffer from insufficient adjustment for quality change. For the 1888-1969 period, all the underlying price series are documented, as are the adjustments for quality change which are carried out along the linking or splicing method (Ljungberg 1990).

VI. Can Quality Change Be Adjusted For?

As already mentioned, the price quotations that have constituted the official PPI are not preserved. Neither is it documented in detail how quality change has been adjusted for. Since the early 1990s, hedonic regressions have been used for estimating prices, but solely for personal computers, which are only represented in the import price index (Dalén 1992). Hedonic price regressions assume that the price is a function of the properties of a product. That is, price differences at the same point in time are defined as quality differences, and this method is in principle an elaborate mode of splicing.[8]

For other products, quality changes are dealt with in diverse ways. Dalén (1992) gives figures for how big a share of the renewals of the price indexes are adjusted by different methods. Splicing is used for 35 percent. No comparison between old and new products is deemed possible for 50 percent,

[8] Ljungberg 1996 compares early 20th century prices for electrical motors in Britain, Germany and Sweden by means of hedonic regressions. The underlying Swedish data was, however, constructed through "handicraft" splicing, but it turns out quite compatible with the British and German hedonic indexes.

and these items are "linked in", that is, no price change is assumed at the first observation.[9] "Direct comparison" is used for the remaing 15 percent, but what is meant by that is left to the reader. Almost contemporaneously with Dalén's paper, quality adjustment was described in a memorandum about the PPI. The only method described there, however, is to perceive quality change as proportionate to the change in cost of production, and hence the price is considered stable if, but only if, it does not change in relation to cost (SCB 1991a p. 20, 1991b p.10).[10] Even if this method is not rare in official price statistics, it is hard to believe in. Decreasing relative prices are typical for innovative products, and this is a supply effect reflecting falling costs. Quality improvement will be nullified and the index biased upwards.

Even if such "direct comparison" adjustments only apply to 15 percent of quality changes, it should not be seen as a minor problem. At a disaggregate level such comparisons may have importance, and also at the aggregate level if they consider crucial products with heavy weight. Hence, taking quality change seriously requires new research, based on price data from business records covering the period from the 1960s. On the basis of a selection of sensitive products, a critical examination and adjustment of the official indexes could be performed.

VII. The Consequences of the PPI Weight Bias

PPI is used for long term contracts in business, for economic forecasting and for deflation of national accounts. In business, the future development of indexes at a low level determines payment of forthcoming deliveries. Even if this sort of contract is not very common, they exist, for example, in the chemical industry and in the paper industry.[11] Obviously, there are winners and losers from the distorted construction of weights in the PPI.

The National Institute of Economic Analysis and the Bank of Sweden have a major influence on economic policy, and PPI is important in their

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[9] According to Dalén (1992 p. 8) “there is a rather great pontential for error with [link-in] since large price changes could be ‘linked off’ this way.” However, that seems to be a problem of representativity and not of linking methods. Innovative products are often introduced lately into price indexes, why the price reductions of their childhood are ignored.

[10] Although it is not explained in the referred memoranda, there is the possibility that quality is not perceived as changing when costs are reduced, only when they are increased, as according to the practice of the American PPI (Gordon 1990 p.XX). See also Gordon (1990) for a criticism of the method.

[11] This proposition is based on a few telephone calls to marketing departments of large firms. To my knowledge the current use of indexed contracts is not investigated.

Table 3. Annual growth rate of industrial value added (SNI 2 + 3) in constant prices, according to official national accounts, and after corrrection of the deflator

	Official	Corrected
1983	5.5	- -
1984	7.9	8.0
1985	2.1	2.3
1986	1.0	1.8
1987	2.5	2.6
1988	2.3	2.9
1989	1.7	2.6
1990	-2.0	0.3
1991	-5.1	-3.4
1992	-3.3	-1.7
1993	1.5	2.7
Trend		
1983-93	*0.45*	*1.43*

Note: Compared to Ljungberg (1999), the corrected figures is somewhat altered, resulting in a trend growth 1983-1993 of 1.43 instead of 1.33 percent. The reason is that the iron and steel index has been reworked here (see footnote 4 above)

economic forecasting. The National Institute of Economic Analysis estimates, for example, profit expectations on the basis of PPI. Some prices influence costs and some revenues, and it is therefore hard to judge in what direction the PPI bias influences the forecasts.

PPI is also used in forecasts of inflation, and a positive bias increases the expectations about the inflation. The quarterly reports of the Bank of Sweden analyse PPI and for certain commodities the producer prices are considered an indicator of coming consumer prices. The substantial margin of error in the disaggregate PPI series is of course a handicap in forecasting. The producer prices are only one of several determinants, but it should be observed that both PPI and the forecasts are positively biased.[12]

[12] A comparison of the inflation forecast, according to the Bank of Sweden last quarterly report of the preceding year, with the actual development of the CPI (SCB, P14 SM 9902) reports one moderate underestimation and overestimation for three of the last five years:

In the national accounts as well as for the production volume index of manufacturing that are published monthly by SCB, PPI is used for deflation to constant prices. PPI does not exactly match the deflator for industry, partly due to differences in aggregation, but also due to the substitution of unit values for PPI.[13] There is, however, a rough correlation between the implicit deflator and the PPI for industry. Assuming that the deflator should be corrected proportional to HMPI, table 3 reports the impact on the growth of industry.

Apparently the retardation of industry in the early 1990s has been exaggerated. The accumulated growth of industry was a meagre 8 percent over the period 1983-1993 according to the official figures. After correction of the deflator, the growth should be elevated to 19 percent. Over the period 1989-1993 official figures state a decrease of 8.7 percent, but three fourths of the decrease was due to the bias of the deflator. After correction of the deflator the drop is reduced to 2.2 percent.

Productivity estimates are equally influenced with substantial relevance for economic analysis. It should also be observed that at a lower level of aggregation the bias of the deflator has a more substantial impact. A case in point is the pulp, paper and printing industries (*SNI 34*), which 1983-1993 increased their output 51 percent according to official figures. However, after a correction of the deflator like that for HMPI, the growth was 93 percent! This is not the place for further explorations of the consequences, it suffices to conclude that analyses of the Swedish industrial development in the 1980s and 1990s must be deficient as long as they are built upon the biased PPI

The present investigation ends with 1993 and it is not impossible that the weight bias of the PPI was particularly emphasized during the turbulent years around 1990. The trend 1988-1993 should therefore not be extrapolated forwards in time. However, there must be a high level of demand for the SCB weights to approximate the real economy, and that is why one must expect PPI to be inadequate also after 1993. This is beyond doubt the case at a disaggregate level.

	Forecast	Actual CPI
1994	2.5	2.6
1995	"increasing [above 2.6] inflation rate"	2.4
1996	2.5 to 3.0	0.1
1997	1.5	1.9
1998	2.0	-0.6

[13] Unit values are average sales values according to statistics of industry and foreign trade. There are no published reports about the construction of the deflators. It must, however, be disputed that the use of unit values is adequate, since most bulk products today contain different qualities and their composition changes from one year to the next.

VIII. Progress Possible?

The criticism of the official PPI must not only be laid down at the door step of SCB, but is also a reminder for the users of official statistics who more often must query about the construction of the data. Neither PPI, nor the national accounts have yet any description in detail of the methods used. If scholars really had demanded such descriptions they would probably exist today. Such descriptions are of mutual interests for users and producers of statistical data and would enhance methodological progress.

As regards PPI, the dilemma is that SCB has to produce fresh price series without relevant weights for chain indexes. A common solution abroad is to stick to the traditional Laspeyres-index with fixed weights, though with a change of the basket every fifth year. Such a solution should, however, not be desired and would further debilitate the account of quality change.

I would advocate a test of another model for estimation of the weights. Relative prices and relative volumes are in general negatively correlated. The present PPI (implicitly) assumes that they are positively correlated and the result is a bias. Maybe the price elasticity over recent years in each branch of industry could be used for an updating of the two-year old weights.

Whatever is done with the PPI that is published monthly, it must be seen as a preliminary series. Presently, SCB consider PPI as “definitive” as soon it is published (SCB 1991a p.16). That is an unreasonable pretention. On the contrary, a new version of PPI ought to be constructed as soon as relevant weights are available, and it should be extended backwards at least to 1980.

It should not be forgotten that as long as a roughly satisfactory picture of the movement of prices is missing, most economic analyses are blunt tools.

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Appendix: Producer Price Indexes for the Home Market, 1968-1993

Below are three tables displaying producer price indexes for the home market, 1968-1993, at different levels of aggregation, that is, Swedish producer prices for the output destined for the home market. There are also three different types of indexes:

KS (for the years 1983-1993 only) are chain indexes computed with the weights used by SCB, that is, old sales values that are adjusted by price changes during the two following years; the value in 1983 are set equal to the corresponding KI series.

KI are chain indexes of Laspeyres type, with price and weight base in the preceding years and recalculated to 1980=100. See text for explanation more in detail. Due to the underlying data, one set of indexes are computed for 1968-1979 and another for 1980-1993, and they are linked according to values as of December 1979.

PP are indexes of Paasche type with price base in 1968 (for 1968-1979) and in 1980 (for 1980-1993), linked according to values as of December 1979, and set to 1980=100.

*The indexes are only roughly consistent before and after 1980. Before 1980 the chain (KI) and Paasche (PP) indexes are built up from the official Laspeyres indexes at an intermediate level, why the features of the index type are not satisfactorily manifest. Some indexes for the years 1968-1979 (*in italics*) are actually the official Laspeyres series, only recalculated by the linking to my computations from 1980.*

The grouping of branches are those used in historical national accounts and, for example, in Ljungberg (1990). By linking of the present PP series with corresponding indexes in Ljungberg (1990) roughly consistent Paasche indexes can be provided for the period 1888-1993. However, while Ljungberg (1990) consider total sales value, it must be kept in mind that the present indexes only consider the home market.

The standard grouping of Statistics Sweden for the relevant period was *SNI* (1969), and the corresponding groups are mentioned in table headings.

Table A1: Price indexes for Manufacturing and Mining

(SNI 2+3)

(1980=100)	KS	KI	PP
1968	- -	34.54	36.64
1969	- -	35.53	37.39
1970	- -	37.96	39.56
1971	- -	39.19	41.07
1972	- -	41.37	43.33
1973	- -	45.47	46.64
1974	- -	55.19	56.04
1975	- -	60.08	61.38
1976	- -	66.22	66.95
1977	- -	74.02	74.75
1978	- -	79.41	79.81
1979	- -	87.85	88.35
1980	- -	100.0	100.0
1981	- -	111.2	111.1
1982	- -	125.3	124.5
1983	138.3	138.2	137.1
1984	156.1	155.9	154.1
1985	161.8	161.2	159.1
1986	166.4	164.5	162.1
1987	171.2	169.2	166.6
1988	184.6	181.4	182.5
1989	202.8	197.6	201.0
1990	214.7	204.4	200.0
1991	216.5	202.5	201.1
1992	218.9	201.3	207.7
1993	223.6	203.3	- -

Table A2: Price Indexes for Main Branches of Industry

	Mining and Metalworking *(SNI 23+37+38)*			**Stone and Glass** *(SNI 36)*		
(1980=100)	KS1	KI1	PP1	KS2	KI2	PP2
1968	- -	34.85	38.85	- -	23.32	32.31
1969	- -	36.62	40.01	- -	23.85	33.05
1970	- -	39.87	42.38	- -	24.96	34.57
1971	- -	40.90	44.16	- -	26.60	36.83
1972	- -	43.15	46.69	- -	28.54	39.51
1973	- -	47.91	49.17	- -	30.30	41.93
1974	- -	58.17	56.55	- -	36.00	49.79
1975	- -	64.01	64.20	- -	41.53	57.39
1976	- -	70.43	71.17	- -	45.35	46.40
1977	- -	75.87	76.88	- -	74.36	74.52
1978	- -	82.91	82.50	- -	81.34	81.55
1979	- -	90.09	89.77	- -	88.57	88.67
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	105.7	105.6	- -	116.7	116.1
1982	- -	116.9	117.6	- -	129.7	127.8
1983	128.1	128.1	127.5	140.9	140.9	138.7
1984	141.6	142.5	143.1	156.7	157.2	154.9
1985	146.9	147.9	146.6	163.3	164.3	161.8
1986	152.9	153.1	151.9	173.2	174.8	171.6
1987	157.3	158.5	157.7	180.7	182.2	178.6
1988	169.3	171.2	171.7	193.2	194.8	185.8
1989	183.7	184.2	183.8	209.2	210.5	200.9
1990	189.6	189.8	179.9	229.4	228.8	217.0
1991	194.8	191.7	178.4	239.3	237.4	227.9
1992	195.8	188.6	175.7	240.1	237.5	228.1
1993	203.3	195.1	- -	239.5	233.1	- -

	Wood Industries *(SNI 33)*			Paper and Printing *(SNI 34)*		
(1980=100)	KS3	KI3	PP3	KS4	KI4	PP4
1968	- -	32.69	32.19	- -	32.97	33.42
1969	- -	33.65	33.10	- -	33.84	34.31
1970	- -	35.64	35.14	- -	36.38	36.97
1971	- -	36.50	36.02	- -	38.02	38.76
1972	- -	37.87	37.34	- -	39.36	40.12
1973	- -	46.75	45.41	- -	42.76	42.89
1974	- -	55.89	56.10	- -	54.66	55.68
1975	- -	58.23	58.59	- -	63.14	64.53
1976	- -	65.87	65.66	- -	69.10	69.51
1977	- -	72.66	72.76	- -	74.31	74.32
1978	- -	76.01	76.09	- -	79.24	79.26
1979	- -	84.98	85.22	- -	87.00	87.28
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	105.8	105.8	- -	111.7	111.8
1982	- -	111.3	112.1	- -	123.5	123.2
1983	128.3	128.3	130.3	137.6	137.6	137.4
1984	147.0	145.9	146.7	163.1	162.1	163.7
1985	150.4	148.4	155.4	163.1	161.6	162.5
1986	156.7	153.2	160.0	176.9	174.9	174.6
1987	163.1	159.8	168.4	190.7	187.9	186.1
1988	173.0	169.3	181.8	221.7	211.8	209.9
1989	185.7	183.2	197.1	269.3	249.2	235.7
1990	200.5	199.3	210.6	285.3	244.0	232.8
1991	204.2	200.7	212.8	269.2	218.1	216.5
1992	202.4	197.8	211.7	293.2	231.4	239.8
1993	200.9	195.7	- -	285.6	222.8	- -

	Foodstuff Industries *(SNI 31)*			Textiles and Clothing *(SNI 321+322+324)*		
(1980=100)	KS5	KI5	PP5	KS6	KI6	PP6
1968	- -	42.86	44.08	- -	41.84	41.42
1969	- -	43.98	45.24	- -	42.02	41.58
1970	- -	47.26	48.57	- -	43.08	42.61
1971	- -	48.49	49.80	- -	43.99	43.52
1972	- -	52.93	54.31	- -	46.29	45.74
1973	- -	55.97	57.29	- -	50.14	49.59
1974	- -	61.10	61.98	- -	58.80	58.22
1975	- -	64.30	64.83	- -	63.58	62.93
1976	- -	72.04	72.79	- -	68.72	68.19
1977	- -	82.34	81.70	- -	75.58	75.37
1978	- -	87.50	87.27	- -	81.13	81.20
1979	- -	91.96	91.78	- -	88.53	88.72
1980	- -	100.0	99.14	- -	100.0	100.0
1981	- -	114.1	113.5	- -	111.3	110.2
1982	- -	133.6	132.1	- -	122.0	119.9
1983	146.7	146.7	145.1	136.1	136.1	133.7
1984	168.3	167.8	164.9	151.2	149.8	148.5
1985	175.4	174.8	171.3	161.4	160.3	158.7
1986	186.2	184.9	182.8	170.7	169.3	167.9
1987	190.4	188.8	187.1	179.4	178.2	176.8
1988	203.0	200.9	200.6	194.3	192.4	184.6
1989	215.7	212.8	210.9	209.7	205.8	201.4
1990	228.7	226.0	221.5	227.1	219.5	218.0
1991	232.5	226.5	221.3	236.2	224.1	217.8
1992	232.6	225.8	223.2	236.2	222.7	220.2
1993	236.3	227.0	- -	238.6	224.9	- -

	Leather and Rubber *(SNI 323+355)*			Chemical Industries *(SNI 35 except 355)*		
(1980=100)						
	KS7	KI7	PP7	KS8	KI8	PP8
1968	- -	35.78	36.50	- -	27.70	27.83
1969	- -	36.17	36.74	- -	27.31	27.42
1970	- -	38.52	39.04	- -	27.88	27.98
1971	- -	39.55	39.98	- -	29.50	29.62
1972	- -	38.57	39.03	- -	29.88	29.90
1973	- -	42.55	42.63	- -	32.86	32.72
1974	- -	53.61	53.76	- -	48.33	48.18
1975	- -	59.40	59.52	- -	51.76	51.87
1976	- -	63.91	63.99	- -	55.78	57.54
1977	- -	73.05	73.19	- -	60.11	62.62
1978	- -	78.19	78.46	- -	63.32	66.03
1979	- -	84.04	84.33	- -	79.42	81.43
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	109.9	110.1	- -	117.3	117.2
1982	- -	130.6	130.8	- -	133.7	129.8
1983	139.5	139.5	139.0	148.7	148.5	144.2
1984	162.0	163.2	161.9	163.2	161.9	152.1
1985	171.3	171.3	171.0	172.8	170.0	159.9
1986	181.5	180.8	179.1	151.7	146.1	136.4
1987	187.4	185.4	183.8	147.9	141.4	132.5
1988	203.1	201.8	194.5	151.6	144.3	140.5
1989	217.8	216.4	208.4	166.0	157.4	157.4
1990	234.4	229.6	227.3	180.7	169.7	161.2
1991	246.5	235.8	234.2	185.1	172.9	170.2
1992	258.7	244.8	253.2	181.0	163.7	158.2
1993	258.1	244.8	- -	191.5	169.4	- -

Table A3. Price Indexes for Branches of Industry

	Iron and Steelworks *(SNI 371)*			**Metal Works** *(SNI 372)*		
(1980=100)						
	KS11	KI11	PP11	KS12	KI12	PP12
1968	- -	30.39	31.04	- -	36.91	39.00
1969	- -	35.71	35.92	- -	42.83	45.16
1970	- -	40.95	41.02	- -	44.29	46.71
1971	- -	40.40	40.84	- -	38.01	40.25
1972	- -	40.78	40.61	- -	36.65	38.95
1973	- -	48.35	48.30	- -	46.78	49.08
1974	- -	67.39	66.60	- -	61.35	62.91
1975	- -	72.11	73.09	- -	44.86	45.62
1976	- -	74.93	74.50	- -	50.92	57.20
1977	- -	75.34	74.35	- -	56.15	61.94
1978	- -	79.97	79.82	- -	61.13	65.58
1979	- -	89.43	89.71	- -	81.74	84.29
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	104.6	103.9	- -	104.1	103.7
1982	- -	118.0	117.5	- -	126.0	126.0
1983	131.0	131.0	130.2	135.2	135.2	135.1
1984	146.7	146.1	141.6	151.4	151.3	153.8
1985	154.5	153.7	147.7	153.6	150.9	152.3
1986	154.8	154.2	146.5	141.4	136.9	140.2
1987	157.5	156.9	149.3	148.9	143.7	147.8
1988	169.3	169.4	160.2	186.1	178.6	181.3
1989	196.8	196.4	182.2	213.5	204.1	207.7
1990	183.4	181.8	166.1	197.3	188.0	188.7
1991	184.2	182.4	168.8	193.0	181.9	182.6
1992	185.5	181.9	162.1	178.9	170.3	171.7
1993	189.3	183.6	- -	187.9	179.5	- -

	Iron and Metal Goods *(SNI 381)*			Machinery Industry *(SNI 382)*		
(1980=100)						
	KS13	KI13	PP13	KS14	KI14	PP14
1968	- -	30.38	30.47	- -	34.48	34.37
1969	- -	33.57	33.67	- -	35.35	35.23
1970	- -	38.98	39.09	- -	37.28	37.01
1971	- -	38.67	38.79	- -	39.74	39.43
1972	- -	40.92	41.04	- -	41.69	41.67
1973	- -	47.36	47.50	- -	44.15	44.11
1974	- -	62.95	63.13	- -	51.29	50.99
1975	- -	66.84	67.03	- -	59.78	59.06
1976	- -	71.15	71.36	- -	67.82	67.53
1977	- -	74.40	74.62	- -	74.33	74.33
1978	- -	81.84	82.09	- -	82.42	82.41
1979	- -	89.32	89.58	- -	89.98	90.09
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	106.3	106.1	- -	110.0	110.1
1982	- -	114.3	115.1	- -	123.9	123.4
1983	128.8	128.8	129.8	135.4	135.4	129.4
1984	146.3	146.3	147.5	152.7	152.0	153.7
1985	150.9	150.9	152.4	160.5	160.1	154.4
1986	159.4	159.2	160.8	172.4	171.9	164.9
1987	164.7	164.5	166.4	180.8	179.6	172.0
1988	179.2	178.8	179.8	190.0	192.0	186.3
1989	196.1	195.2	196.3	210.1	207.7	201.2
1990	208.7	208.6	209.1	224.0	224.0	218.1
1991	217.5	217.1	216.1	232.2	232.6	227.8
1992	216.8	214.6	213.9	243.4	241.2	236.6
1993	224.8	222.4	- -	251.6	247.8	- -

	Electrotechnical Industry *(SNI 383)*			Shipbuilding *(SNI 3841)*		
(1980=100)						
	KS15	KI15	PP15	KS16	KI16	PP16
1968	- -	38.9	40.2	- -	34.0	32.2
1969	- -	40.5	41.8	- -	34.1	32.4
1970	- -	44.0	45.3	- -	34.5	32.8
1971	- -	45.9	47.1	- -	34.7	32.9
1972	- -	48.1	49.4	- -	36.7	34.8
1973	- -	52.1	53.4	- -	46.8	44.4
1974	- -	61.8	62.8	- -	57.3	54.4
1975	- -	67.2	68.5	- -	57.9	54.9
1976	- -	73.3	74.8	- -	66.1	62.7
1977	- -	78.7	80.0	- -	79.5	75.4
1978	- -	84.5	85.6	- -	88.2	83.7
1979	- -	90.2	91.1	- -	95.1	90.2
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	105.7	105.4	- -	104.3	104.4
1982	- -	114.5	113.4	- -	113.7	114.1
1983	121.4	121.4	118.9	123.8	123.8	124.2
1984	131.4	131.1	125.9	137.3	137.1	136.3
1985	133.4	133.2	128.0	141.4	141.2	140.2
1986	137.4	136.8	129.8	148.3	148.5	147.5
1987	137.4	135.5	129.7	153.0	153.1	152.0
1988	141.5	136.0	136.3	160.3	160.8	159.7
1989	146.4	140.4	140.2	166.6	169.9	168.6
1990	150.2	144.9	133.7	176.3	181.1	185.7
1991	149.3	135.7	120.4	183.9	192.7	193.4
1992	142.4	122.9	106.1	187.7	198.6	199.3
1993	142.4	122.2	- -	187.3	205.0	- -

	Motor and Transport Equipment[14] *(SNI 384 except 3841)*			**Instruments Industry** *(SNI 384 except 3841)*		
(1980=100)	KS17	KI17	PP17	KS18	KI18	PP18
1968	- -	39.5	40.3	- -	30.6	30.7
1969	- -	40.7	41.5	- -	31.2	31.3
1970	- -	43.0	43.8	- -	33.2	33.3
1971	- -	44.4	45.2	- -	36.5	36.6
1972	- -	47.0	47.8	- -	39.7	39.9
1973	- -	50.8	51.5	- -	42.6	42.8
1974	- -	58.4	58.5	- -	47.0	47.2
1975	- -	65.9	66.3	- -	54.8	55.0
1976	- -	72.4	72.7	- -	63.7	63.9
1977	- -	78.3	78.8	- -	71.3	71.6
1978	- -	85.1	85.6	- -	77.3	77.6
1979	- -	91.7	91.7	- -	83.3	83.6
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	104.9	104.8	- -	108.3	108.3
1982	- -	114.2	114.8	- -	120.9	120.5
1983	125.4	125.4	125.8	133.4	133.4	132.6
1984	135.5	140.1	140.9	141.8	143.8	144.8
1985	141.1	147.9	148.9	145.7	144.3	144.7
1986	152.3	160.6	161.7	159.9	148.5	149.7
1987	154.1	169.1	171.3	167.7	155.2	156.6
1988	159.5	181.4	184.5	178.8	164.7	158.3
1989	167.3	190.1	193.4	187.0	164.8	158.2
1990	176.8	200.8	205.0	198.0	169.8	162.0
1991	185.3	210.1	214.7	210.5	180.7	171.1
1992	191.7	216.6	221.9	213.1	182.6	174.4
1993	204.0	228.8	- -	218.8	187.7	- -

[14] In Ljungberg (1990) branch 17 equals to motor industry, branch 18 is bicycle industry, locomotives up to 1920 are included in branch 14, while railway rolling stock and aircraft is missing; here all are included in branch 17.

Mining Industry

(SNI 2301+2302)

(1980=100)

	KS19	KI19	PP19
1968	- -	163.3	132.3
1969	- -	165.5	137.3
1970	- -	169.3	140.5
1971	- -	117.8	121.2
1972	- -	125.4	125.3
1973	- -	103.7	73.2
1974	- -	115.3	84.7
1975	- -	74.1	137.7
1976	- -	77.9	125.1
1977	- -	74.7	108.9
1978	- -	66.7	54.6
1979	- -	92.2	75.5
1980	- -	100.0	100.0
1981	- -	100.9	108.1
1982	- -	108.5	118.8
1983	122.9	122.9	134.5
1984	119.5	120.3	132.6
1985	121.7	122.6	137.4
1986	100.6	99.8	110.3
1987	107.2	105.8	116.9
1988	143.6	137.2	136.8
1989	170.3	164.2	164.5
1990	159.0	157.0	155.1
1991	148.7	147.4	143.6
1992	135.4	133.0	127.6
1993	151.4	148.5	- -

	Glass Industry *(SNI 362)*			Mineral Goods *(SNI 369)*		
(1980=100)	KS21	KI21	PP21	KS22	KI22	PP22
1968	- -	30.84	31.09	- -	22.28	32.49
1969	- -	31.44	31.70	- -	22.80	33.25
1970	- -	33.19	33.47	- -	23.82	34.72
1971	- -	36.09	36.38	- -	25.28	36.84
1972	- -	38.79	39.10	- -	27.11	39.51
1973	- -	41.96	42.22	- -	28.67	41.78
1974	- -	48.67	48.86	- -	34.22	49.86
1975	- -	57.25	57.25	- -	39.32	57.27
1976	- -	66.34	66.52	- -	42.38	43.54
1977	- -	73.94	74.37	- -	74.33	74.35
1978	- -	80.45	80.98	- -	81.41	81.47
1979	- -	87.32	87.61	- -	88.70	88.73
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	116.6	116.6	- -	116.9	116.1
1982	- -	128.5	127.5	- -	130.2	128.1
1983	139.8	139.8	138.7	141.2	141.2	138.7
1984	156.8	157.4	155.0	156.0	156.5	154.0
1985	160.8	160.9	158.7	163.2	164.3	161.6
1986	166.6	166.0	163.4	173.5	175.5	172.6
1987	177.1	175.9	173.3	179.4	182.0	178.6
1988	190.3	189.7	180.4	191.3	194.1	185.7
1989	203.0	202.3	192.7	207.7	210.3	201.1
1990	216.8	215.7	206.3	229.1	229.6	217.7
1991	218.1	214.9	204.5	242.3	242.4	231.6
1992	209.8	205.0	194.9	247.5	246.7	235.5
1993	214.8	209.4	- -	243.3	237.7	- -

	Sawmills and Planing Industry *(SNI 33111)*			Joinery Industry *(SNI 33112 to 33119 + 332)*		
(1980=100)	KS31	KI31	PP31	KS32	KI32	PP32
1968	- -	26.68	26.69	- -	35.28	35.03
1969	- -	28.71	28.72	- -	35.70	35.44
1970	- -	31.62	31.63	- -	37.26	36.99
1971	- -	32.60	32.62	- -	38.04	37.76
1972	- -	31.99	32.00	- -	40.44	40.13
1973	- -	49.01	49.03	- -	45.27	45.09
1974	- -	61.36	61.39	- -	53.07	52.79
1975	- -	58.30	58.32	- -	58.44	58.11
1976	- -	67.53	67.55	- -	65.17	64.81
1977	- -	72.22	72.25	- -	73.06	72.78
1978	- -	70.94	70.97	- -	91.22	91.33
1979	- -	81.53	81.56	- -	94.01	94.05
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	99.20	99.34	- -	113.0	113.6
1982	- -	100.0	100.0	- -	124.3	122.3
1983	119.1	119.1	118.9	139.9	139.9	139.2
1984	136.8	135.4	136.8	159.8	159.2	159.4
1985	135.5	133.6	135.2	165.3	164.4	167.4
1986	137.9	134.4	136.5	173.5	171.8	176.4
1987	145.5	142.5	144.5	179.4	177.5	185.7
1988	154.7	151.6	155.9	190.1	187.7	197.4
1989	168.7	164.0	168.6	202.4	203.1	214.2
1990	189.5	184.1	186.0	213.5	217.7	229.6
1991	180.8	173.5	175.2	224.3	228.1	241.2
1992	170.9	163.1	165.3	227.0	230.5	243.9
1993	168.7	160.7	- -	226.0	228.5	- -

Pulp and Paper Industries

(whereof Pulp SNI 34111, and Paper SNI 34112 + 3412 to 3419 + 34113)

			Pulp	Paper		Pulp	Paper
(1980=100)							
	KS41	KI41	KI412	KI414	PP41	PP412	PP414
1968	- -	32.07	29.91	33.01	32.89	29.92	33.46
1969	- -	33.27	32.99	33.69	33.95	33.00	34.14
1970	- -	36.02	39.30	35.59	36.83	39.31	36.03
1971	- -	36.88	39.75	36.42	37.93	39.76	36.88
1972	- -	36.73	35.71	38.34	38.53	35.72	38.77
1973	- -	41.13	44.27	41.06	41.31	44.28	41.35
1974	- -	58.69	72.02	57.54	58.73	72.05	57.94
1975	- -	67.80	63.59	68.56	68.15	63.61	69.01
1976	- -	73.89	79.47	70.28	72.18	79.50	70.73
1977	- -	75.42	75.31	73.98	74.17	75.34	74.50
1978	- -	76.27	65.29	77.07	76.44	65.32	77.58
1979	- -	84.77	82.94	84.83	85.45	82.97	85.30
1980	- -	100.0	100.0	100.0	100.0	100.0	100.0
1981	- -	110.9	114.0	107.7	110.8	114.0	107.7
1982	- -	124.6	129.6	119.8	123.5	129.8	119.7
1983	133.7	133.7	138.1	129.3	132.4	138.2	129.2
1984	162.7	160.3	179.4	149.2	161.1	179.7	150.9
1985	156.3	152.3	149.5	153.8	153.1	149.8	155.5
1986	159.0	154.1	147.5	157.5	154.9	146.9	159.1
1987	171.9	165.7	173.3	162.3	166.7	172.7	164.2
1988	183.6	177.1	193.8	169.6	182.2	193.3	174.1
1989	204.7	199.2	225.8	185.7	221.5	228.3	190.5
1990	199.5	182.6	202.5	192.1	198.6	199.9	196.2
1991	139.5	131.1	91.81	194.0	153.5	90.87	198.2
1992	133.3	125.9	86.82	187.5	151.0	86.33	191.7
1993	123.5	113.0	83.25	164.0	- -	- -	- -

	Other Paper and Package Industry *(SNI 3412 to 3419)*			Printing Industry *(SNI 342)*		
(1980=100)	KS42	KI42	PP42	KS43	KI43	PP43
1968	- -	33.26	33.29	- -	33.45	33.50
1969	- -	34.02	34.06	- -	34.19	34.24
1970	- -	36.62	36.65	- -	36.59	36.65
1971	- -	37.42	37.45	- -	39.00	39.06
1972	- -	39.68	39.71	- -	41.08	41.14
1973	- -	43.04	43.08	- -	43.82	43.89
1974	- -	57.41	57.46	- -	51.28	51.36
1975	- -	66.19	66.25	- -	59.27	59.36
1976	- -	70.31	70.38	- -	65.80	65.89
1977	- -	75.60	75.67	- -	73.52	73.63
1978	- -	80.59	80.66	- -	80.61	80.73
1979	- -	89.20	89.28	- -	87.77	87.90
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	111.4	111.3	- -	112.5	112.7
1982	- -	124.2	124.0	- -	122.5	122.9
1983	135.6	135.6	135.3	140.1	140.1	140.6
1984	154.8	154.7	155.4	164.8	164.8	166.8
1985	161.6	161.1	161.8	167.0	167.2	168.4
1986	169.2	168.5	169.5	187.9	188.7	190.0
1987	176.4	175.8	175.9	203.5	203.9	204.3
1988	187.8	187.4	187.4	249.1	240.3	239.5
1989	188.8	172.3	172.5	322.8	303.9	296.8
1990	196.6	180.5	183.6	361.5	339.1	313.4
1991	197.5	181.2	186.9	397.2	363.5	336.4
1992	196.2	180.2	186.5	458.8	411.6	388.4
1993	194.3	178.2	- -	458.4	411.2	- -

	Butchery Industry *(SNI 3111)*			Dairy Industry *(SNI 3112)*		
(1980=100)	KS501	KI501	PP501	KS502	KI502	PP502
1968	- -	52.41	52.55	- -	48.81	48.87
1969	- -	55.14	55.28	- -	49.93	49.99
1970	- -	59.54	59.70	- -	52.62	52.68
1971	- -	59.12	59.28	- -	56.72	56.79
1972	- -	65.88	66.06	- -	63.40	63.48
1973	- -	69.13	69.31	- -	65.11	65.19
1974	- -	67.50	67.68	- -	60.82	60.89
1975	- -	69.71	69.89	- -	62.33	62.41
1976	- -	76.52	76.72	- -	69.94	70.03
1977	- -	84.54	84.76	- -	76.58	76.68
1978	- -	91.19	91.44	- -	84.73	84.84
1979	- -	96.49	96.74	- -	89.71	89.82
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	123.3	123.1	- -	110.6	110.8
1982	- -	146.1	144.8	- -	134.9	135.3
1983	163.7	163.7	162.3	141.2	141.2	141.6
1984	191.6	191.6	191.2	161.5	161.5	161.9
1985	196.7	196.5	195.9	171.7	172.0	172.8
1986	206.7	205.9	205.6	182.6	182.9	184.1
1987	217.6	216.6	216.3	191.5	192.0	192.5
1988	228.5	227.4	226.7	207.0	207.6	206.7
1989	241.1	240.0	239.1	222.0	221.1	220.0
1990	250.9	249.7	248.2	225.5	224.7	224.5
1991	252.1	250.6	248.2	226.0	224.8	224.5
1992	249.3	245.9	241.1	226.7	224.9	224.7
1993	244.9	241.5	- -	228.3	226.5	- -

	Fat Industry *(SNI 3115)*			Milling Industry *(SNI 3116)*		
(1980=100)	KS503	KI503	PP503	KS504	KI504	PP504
1968	- -	35.52	37.51	- -	49.90	49.87
1969	- -	35.64	37.61	- -	52.40	52.36
1970	- -	42.07	44.30	- -	56.19	56.15
1971	- -	43.39	45.72	- -	59.33	59.30
1972	- -	41.15	43.15	- -	63.52	63.48
1973	- -	51.22	53.63	- -	64.22	64.18
1974	- -	74.13	74.28	- -	65.72	65.68
1975	- -	64.24	64.81	- -	69.56	69.52
1976	- -	67.29	67.85	- -	76.45	76.40
1977	- -	76.96	77.23	- -	78.69	78.64
1978	- -	82.50	82.60	- -	86.33	86.28
1979	- -	90.38	90.59	- -	91.47	91.41
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	113.3	113.3	- -	118.7	118.7
1982	- -	130.1	129.6	- -	137.4	137.1
1983	143.4	143.4	143.1	152.8	152.8	152.6
1984	160.0	158.8	161.3	170.7	170.5	169.7
1985	170.8	166.8	169.1	184.4	184.2	183.3
1986	181.7	175.8	179.1	193.5	193.4	192.5
1987	186.2	180.2	184.2	202.2	202.1	201.1
1988	198.7	191.8	194.3	214.5	214.4	209.2
1989	206.4	200.0	202.3	225.7	224.7	219.2
1990	209.6	204.8	206.8	238.1	236.0	230.2
1991	208.8	203.3	205.6	250.2	248.1	242.2
1992	206.4	200.3	200.3	253.4	251.1	245.4
1993	209.6	202.3	- -	252.9	250.6	- -

	Bakery Industry *(SNI 3117)*			Sugar Industry *(SNI 3118)*		
(1980=100)						
	KS505	KI505	PP505	KS506	KI506	PP506
1968	- -	34.40	34.47	- -	32.98	32.98
1969	- -	33.95	34.02	- -	35.32	35.32
1970	- -	37.22	37.30	- -	36.38	36.38
1971	- -	39.94	40.02	- -	37.83	37.83
1972	- -	44.86	44.95	- -	43.57	43.57
1973	- -	47.92	48.02	- -	46.20	46.20
1974	- -	53.77	53.88	- -	70.35	70.35
1975	- -	61.61	61.74	- -	71.60	71.60
1976	- -	69.14	69.28	- -	72.06	72.06
1977	- -	74.51	74.66	- -	78.43	78.43
1978	- -	81.18	81.35	- -	84.23	84.23
1979	- -	86.65	86.83	- -	90.04	90.04
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	118.0	118.0	- -	110.6	110.6
1982	- -	133.8	134.1	- -	121.5	121.6
1983	146.4	146.4	146.7	132.8	132.8	132.9
1984	173.2	172.9	173.0	151.5	151.4	151.4
1985	180.9	180.5	180.6	155.4	155.3	155.2
1986	192.5	192.1	192.3	158.2	158.1	157.6
1987	200.6	200.2	200.4	163.2	162.9	162.7
1988	221.8	221.3	221.4	166.7	166.6	166.2
1989	244.5	243.9	243.7	153.7	152.3	152.4
1990	271.2	270.5	271.0	154.7	153.3	154.3
1991	294.5	293.9	294.7	153.2	151.3	150.8
1992	300.8	299.9	302.3	155.2	152.8	152.3
1993	301.9	301.1	- -	160.1	156.0	- -

	Confectionary Industry *(SNI 3119)*			Other Food Industries *(SNI 3121)*		
(1980=100)	KS507	KI507	PP507	KS508	KI508	PP508
1968	- -	33.17	33.17	- -	31.32	34.27
1969	- -	33.37	33.37	- -	31.63	34.61
1970	- -	34.17	34.17	- -	37.65	41.19
1971	- -	35.09	35.09	- -	36.55	39.99
1972	- -	37.35	37.35	- -	37.15	40.64
1973	- -	39.37	39.37	- -	35.67	39.03
1974	- -	57.02	57.02	- -	48.51	53.08
1975	- -	61.70	61.70	- -	47.76	52.26
1976	- -	65.34	65.34	- -	68.15	74.57
1977	- -	79.44	79.44	- -	110.5	120.9
1978	- -	74.93	74.93	- -	96.53	105.6
1979	- -	89.53	89.53	- -	88.51	96.85
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	111.3	112.6	- -	92.39	92.38
1982	- -	126.1	128.5	- -	111.8	111.3
1983	139.3	139.3	142.0	125.2	125.2	124.6
1984	167.1	159.9	162.8	152.1	151.3	150.8
1985	181.5	175.1	178.4	159.4	158.8	158.3
1986	188.2	180.4	184.1	192.7	190.5	190.2
1987	199.1	190.9	195.4	136.0	134.2	134.2
1988	208.5	199.7	208.8	140.5	138.8	139.2
1989	223.0	214.1	223.5	147.1	145.0	144.6
1990	239.9	230.5	241.2	195.0	191.9	194.9
1991	253.9	244.2	255.3	148.0	128.6	128.6
1992	266.0	255.5	265.2	141.3	121.4	124.2
1993	265.1	254.7	- -	159.2	136.5	- -

	Liquor Industry[15] (SNI 3131 + 3132)			Brewery Industry[15] (SNI 3133 + 3134)		
(1980=100)	KS509	KI509	PP509	KS510	KI510	PP510
1968	- -	- -	- -	- -	41.46	41.46
1969	- -	- -	- -	- -	41.38	41.38
1970	- -	- -	- -	- -	41.79	41.79
1971	- -	- -	- -	- -	43.33	43.33
1972	- -	- -	- -	- -	47.22	47.22
1973	- -	- -	- -	- -	51.00	51.00
1974	- -	- -	- -	- -	59.54	59.54
1975	- -	- -	- -	- -	68.28	68.28
1976	- -	- -	- -	- -	74.71	74.71
1977	- -	- -	- -	- -	81.10	81.10
1978	- -	- -	- -	- -	88.35	88.35
1979	- -	- -	- -	- -	91.88	91.88
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	110.3	110.4	- -	109.2	109.2
1982	- -	125.2	125.3	- -	125.5	125.6
1983	134.0	134.0	134.1	135.4	135.4	135.6
1984	136.9	136.3	136.4	147.3	147.3	147.6
1985	138.9	138.3	138.4	154.3	153.8	154.1
1986	142.1	142.0	143.0	169.1	168.1	168.6
1987	153.1	151.7	153.0	174.8	173.9	172.5
1988	151.1	150.1	150.7	194.8	194.6	193.0
1989	166.3	165.6	166.3	220.6	218.0	216.2
1990	184.9	184.5	184.9	242.0	239.2	237.4
1991	199.0	196.4	198.9	265.6	262.3	260.3
1992	172.5	174.2	173.0	274.1	270.6	268.6
1993	258.4	233.8	- -	277.3	273.7	- -

[15] 1968-1979 Liquor Industry is included in Brewery Industry.

	Tobacco Industry *(SNI 314)*			Canned and Frozen Food *(SNI 3113 + 3114)*		
(1980=100)	KS511	KI511	PP511	KS512	KI512	PP512
1968	- -	50.44	50.45	- -	39.77	40.41
1969	- -	50.44	50.45	- -	40.58	41.24
1970	- -	53.06	53.07	- -	42.04	42.68
1971	- -	53.06	53.07	- -	43.16	43.71
1972	- -	54.27	54.28	- -	46.62	47.22
1973	- -	55.79	55.80	- -	49.00	49.54
1974	- -	59.07	59.08	- -	57.60	58.18
1975	- -	68.55	68.56	- -	70.59	71.31
1976	- -	74.70	74.72	- -	77.98	78.76
1977	- -	82.67	82.69	- -	83.93	84.72
1978	- -	91.80	91.82	- -	89.96	90.60
1979	- -	95.68	95.70	- -	93.04	93.34
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	114.2	114.1	- -	110.4	110.2
1982	- -	138.7	138.6	- -	125.5	125.0
1983	155.9	155.9	155.9	142.0	142.0	141.5
1984	189.7	189.8	189.7	165.4	164.2	160.0
1985	198.8	198.8	198.7	172.0	171.1	167.1
1986	214.6	214.6	214.5	183.6	182.0	175.4
1987	217.8	217.8	217.7	193.8	192.1	186.9
1988	232.6	232.5	232.6	209.6	205.2	201.4
1989	246.4	246.4	246.0	220.7	209.4	202.3
1990	274.8	275.1	274.6	246.6	236.8	231.0
1991	306.8	306.2	305.8	263.5	253.3	240.2
1992	336.1	335.3	335.0	270.7	260.1	243.7
1993	361.7	360.9	- -	260.4	248.1	- -

	Fodder Industry *(SNI 3122)*			Spinning and Weaving Industries *(SNI 321 except 3213)*		
(1980=100)	KS513	KI513	PP513	KS61	KI61	PP61
1968	- -	42.57	42.57	- -	40.12	40.25
1969	- -	42.83	42.83	- -	40.25	40.35
1970	- -	43.59	43.59	- -	41.13	41.21
1971	- -	44.53	44.53	- -	42.36	42.47
1972	- -	47.42	47.42	- -	45.04	45.15
1973	- -	56.96	56.96	- -	50.27	50.32
1974	- -	60.19	60.19	- -	61.23	61.30
1975	- -	61.60	61.60	- -	65.19	65.24
1976	- -	69.99	69.99	- -	70.08	70.12
1977	- -	79.27	79.27	- -	77.33	77.34
1978	- -	83.22	83.22	- -	82.63	82.71
1979	- -	88.38	88.38	- -	89.06	89.20
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	112.2	112.2	- -	113.0	112.5
1982	- -	126.0	126.0	- -	125.8	124.2
1983	139.8	139.8	139.8	142.6	142.6	140.8
1984	145.8	145.8	146.1	159.3	156.8	154.9
1985	147.8	147.7	147.9	167.6	166.0	163.8
1986	148.6	148.5	148.8	174.1	173.0	172.6
1987	146.8	146.8	147.1	176.3	176.7	175.7
1988	157.2	157.2	157.4	184.8	185.1	178.8
1989	167.1	167.1	167.5	199.6	197.2	197.7
1990	167.9	167.5	167.9	207.5	202.9	201.0
1991	162.7	162.2	162.5	222.2	214.3	204.9
1992	160.2	159.7	160.1	222.1	213.4	209.3
1993	155.5	155.1	- -	226.0	217.3	- -

	Clothing Industry *(SNI 322 + 3213)*			Shoe Industry *(SNI 324)*		
(1980=100)						
	KS62	KI62	PP62	KS63	KI63	PP63
1968	- -	44.33	44.84	- -	34.19	34.19
1969	- -	44.47	44.98	- -	34.87	34.87
1970	- -	45.68	46.21	- -	35.97	35.97
1971	- -	46.19	46.73	- -	37.54	37.54
1972	- -	48.20	48.71	- -	39.15	39.15
1973	- -	50.70	51.24	- -	43.80	43.80
1974	- -	57.71	58.32	- -	47.66	47.66
1975	- -	62.84	63.55	- -	55.83	55.83
1976	- -	67.67	68.35	- -	64.69	64.69
1977	- -	73.68	74.34	- -	74.53	74.53
1978	- -	79.61	79.92	- -	79.66	79.66
1979	- -	88.54	88.63	- -	86.57	86.57
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	109.3	107.3	- -	112.0	112.1
1982	- -	117.2	115.2	- -	126.1	125.9
1983	128.7	128.7	126.5	141.3	141.3	141.2
1984	142.6	142.5	140.3	151.1	151.4	151.3
1985	154.2	154.7	152.1	161.7	161.3	161.2
1986	165.6	166.3	163.1	171.1	170.5	169.5
1987	179.0	179.6	176.7	187.2	187.1	185.9
1988	199.7	199.6	192.9	194.9	195.2	194.1
1989	214.9	214.4	204.3	213.4	214.8	209.4
1990	239.8	235.3	232.2	232.4	232.6	227.4
1991	240.2	233.9	238.3	246.9	249.7	244.2
1992	239.8	231.6	235.3	258.2	260.8	255.0
1993	240.5	231.2	- -	266.3	268.9	- -

	Tannery and Leather Industry *(SNI 3231 to 3233)*			Rubber Products Industry *(SNI 355)*		
(1980=100)	KS71	KI71	PP71	KS72	KI72	PP72
1968	--	40.22	41.12	--	35.64	35.67
1969	--	44.29	45.13	--	35.21	35.24
1970	--	46.63	47.33	--	37.60	37.63
1971	--	49.26	49.87	--	38.38	38.42
1972	--	49.18	49.49	--	37.28	37.31
1973	--	58.99	58.62	--	40.42	40.45
1974	--	64.80	64.50	--	52.00	52.04
1975	--	65.12	64.69	--	58.45	58.50
1976	--	71.68	70.62	--	62.66	62.71
1977	--	80.56	79.17	--	71.78	71.84
1978	--	87.61	87.30	--	76.70	76.76
1979	--	98.61	98.27	--	82.11	82.18
1980	--	100.0	100.0	--	100.0	100.0
1981	--	101.9	102.1	--	111.3	111.6
1982	--	125.3	127.3	--	131.5	131.7
1983	144.0	144.0	142.9	137.9	137.9	138.1
1984	158.0	160.1	155.7	164.4	163.5	162.8
1985	169.9	170.3	171.6	172.3	171.3	170.9
1986	177.4	169.9	167.5	183.8	182.9	182.0
1987	183.2	168.7	166.3	189.8	189.0	188.3
1988	195.7	181.9	169.5	207.1	206.1	200.4
1989	202.5	181.2	171.0	225.7	224.1	216.9
1990	217.8	187.7	205.8	243.0	238.8	235.6
1991	230.4	181.4	178.4	254.6	250.1	252.8
1992	219.9	176.3	205.0	269.5	263.6	265.8
1993	227.5	187.1	--	267.0	260.3	--

	Fertilizer Industry *(SNI 3512)*			Dye Industry *(SNI 3521)*		
(1980=100)						
	KS81	KI81	PP81	KS82	KI82	PP82
1968	- -	43.00	43.06	- -	34.49	34.49
1969	- -	40.72	40.78	- -	34.42	34.42
1970	- -	38.23	38.28	- -	34.77	34.77
1971	- -	38.91	38.97	- -	37.42	37.42
1972	- -	39.52	39.57	- -	39.66	39.66
1973	- -	42.05	42.11	- -	43.18	43.18
1974	- -	62.69	62.78	- -	56.98	56.98
1975	- -	76.32	76.43	- -	61.67	61.67
1976	- -	75.81	75.91	- -	65.81	65.81
1977	- -	75.38	75.48	- -	70.01	70.01
1978	- -	79.29	79.40	- -	76.53	76.53
1979	- -	85.66	85.78	- -	87.92	87.92
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	121.7	121.8	- -	109.8	109.8
1982	- -	144.2	144.1	- -	119.7	119.8
1983	169.3	169.3	169.1	136.3	136.3	136.5
1984	215.3	215.5	214.4	150.1	150.3	150.2
1985	224.8	224.8	223.9	155.8	156.2	156.1
1986	226.8	227.2	225.9	170.6	171.5	169.3
1987	221.2	221.4	220.5	176.9	180.8	176.2
1988	223.3	223.2	221.5	184.2	189.0	183.5
1989	230.1	229.8	228.4	199.8	205.5	198.7
1990	232.0	232.0	227.3	215.8	222.4	214.9
1991	238.6	237.7	227.0	234.3	242.3	233.5
1992	221.1	214.8	204.7	233.6	241.5	229.8
1993	229.5	223.2	- -	246.7	- -	- -

	Soap and Detergents *(SNI 3523)*			Chemicals Industry *(SNI 3511)*		
(1968=100)						
	KS83	KI83	PP83	KS84	KI84	PP84
1968	- -	42.08	42.12	- -	37.88	38.08
1969	- -	41.32	41.36	- -	37.08	37.28
1970	- -	42.50	42.54	- -	36.63	36.82
1971	- -	43.51	43.55	- -	38.37	38.58
1972	- -	47.63	47.68	- -	39.62	39.83
1973	- -	48.90	48.94	- -	41.59	41.81
1974	- -	64.42	64.49	- -	55.27	55.56
1975	- -	73.77	73.84	- -	62.84	63.17
1976	- -	77.39	77.46	- -	64.70	65.04
1977	- -	81.72	81.80	- -	68.60	68.96
1978	- -	87.11	87.19	- -	73.53	73.91
1979	- -	92.11	92.20	- -	85.72	86.18
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	107.3	107.2	- -	110.4	110.3
1982	- -	116.9	116.3	- -	113.5	112.1
1983	130.4	130.4	130.7	125.6	125.6	125.4
1984	147.9	147.7	148.1	119.0	123.5	110.4
1985	146.2	145.9	146.3	128.5	134.7	122.3
1986	157.7	156.7	156.7	111.4	107.4	97.82
1987	161.4	160.3	162.6	112.3	106.0	97.51
1988	169.5	168.9	176.3	129.6	121.9	117.1
1989	171.2	180.9	176.8	136.7	129.6	136.4
1990	183.4	194.9	189.6	143.2	137.3	125.9
1991	187.3	201.3	192.4	140.9	134.4	124.5
1992	192.3	206.1	197.0	152.6	135.5	128.2
1993	210.5	225.9	- -	145.0	125.4	- -

	Other Chemical Industry *(SNI 3529)*			Petrol Refinery Industry *(SNI 353 + 354)*		
(1968=100)						
	KS85	KI85	PP85	KS86	KI86	PP86
1968	- -	28.20	28.28	- -	15.82	15.79
1969	- -	28.71	28.79	- -	15.65	15.56
1970	- -	29.78	29.86	- -	17.20	17.09
1971	- -	31.33	31.42	- -	19.29	19.18
1972	- -	33.16	33.26	- -	18.35	18.24
1973	- -	36.91	37.02	- -	22.13	21.93
1974	- -	52.85	53.00	- -	39.41	39.58
1975	- -	62.01	62.19	- -	38.82	38.96
1976	- -	67.06	67.25	- -	45.00	45.33
1977	- -	72.25	72.45	- -	49.72	50.30
1978	- -	79.16	79.38	- -	51.12	51.76
1979	- -	86.83	87.07	- -	72.34	72.89
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	105.7	105.6	- -	123.6	123.7
1982	- -	117.6	117.7	- -	146.4	146.4
1983	129.2	129.2	129.4	160.8	160.8	160.6
1984	148.7	148.7	150.6	173.8	171.4	168.5
1985	152.1	151.3	153.4	184.2	181.2	178.9
1986	158.8	158.4	162.9	132.2	132.3	130.2
1987	163.8	164.1	168.9	119.5	119.8	118.3
1988	171.8	172.7	173.8	113.2	113.1	110.4
1989	182.9	182.7	183.7	130.4	130.7	127.6
1990	189.9	189.4	196.6	154.7	154.4	148.5
1991	203.4	201.4	208.6	154.8	153.7	147.1
1992	219.0	215.2	222.9	138.1	134.7	128.6
1993	202.3	196.7	- -	159.8	156.1	- -

	Pharmaceutical Industry *(SNI 3522)*			Plastic Industry *(SNI 35131 + 35132 + 356)*		
(1968=100)						
	KS87	KI87	PP87	KS88	KI88	PP88
1968	- -	48.50	48.51	- -	44.52	44.95
1969	- -	47.82	47.83	- -	43.54	43.95
1970	- -	48.31	48.32	- -	42.65	42.97
1971	- -	50.29	50.30	- -	43.39	43.70
1972	- -	53.54	53.56	- -	43.26	43.52
1973	- -	55.82	55.84	- -	45.93	46.16
1974	- -	60.38	60.39	- -	65.52	66.42
1975	- -	69.31	69.32	- -	68.24	67.17
1976	- -	75.22	75.24	- -	68.95	69.25
1977	- -	83.57	83.58	- -	72.37	72.09
1978	- -	88.56	88.58	- -	77.16	76.67
1979	- -	95.84	95.86	- -	89.56	89.84
1980	- -	100.0	100.0	- -	100.0	100.0
1981	- -	118.2	118.2	- -	102.9	102.9
1982	- -	126.1	126.4	- -	106.4	106.5
1983	136.0	136.0	136.2	122.6	122.6	122.5
1984	150.9	150.9	150.1	139.3	140.1	138.4
1985	151.8	151.8	151.0	144.9	146.2	143.9
1986	158.8	158.8	157.9	157.9	158.1	155.7
1987	164.4	164.4	163.5	165.8	165.8	159.4
1988	170.3	170.3	169.0	180.1	181.0	178.7
1989	175.8	175.8	174.4	191.7	192.0	192.0
1990	180.0	180.0	178.6	186.5	189.3	178.4
1991	185.1	185.1	183.7	194.1	198.8	192.6
1992	186.8	186.8	185.4	177.8	181.3	176.5
1993	184.9	184.9	- -	178.9	181.0	- -

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