INFLATION ACCOUNTING FOR THE FEDERAL REPUBLIC OF GERMANY
RESULTS USING DIFFERENT DEFLATOR PRICE INDICES

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The purpose of inflation accounting as proposed by Jack Hibbert[1] is to show the changes in purchasing power of the assets and liabilities by sectors resulting from general price movements. This paper shows the results of inflation accounting for the Federal Republic of Germany on the basis of complete balance sheets for the sectors "Private households," "Enterprises," "General government" and "Rest of the world" in 1980. It is evident that the results of inflation accounting depend to a high degree on the kind of price index which is used as an indicator of the changes in the purchasing power of money in general. The price index for inflation accounting should in general be selected according to the aim of the analysis. On the other hand, however, the validity of the results of inflation accounting depends on and is limited by the price index chosen for that purpose. The figures presented also show that the results of inflation accounting depend to a high degree on whether estimates of the value of tangible assets are included or not. This holds for reproducible tangible assets as well as for land.

1. PRELIMINARY REMARKS

In national accounts the production of goods and services and the generation of income are shown according to the concept of maintenance of real capital. Changes in stocks and consumption of fixed capital are valued at current replacement cost and thus income is not affected by inflationary gains and losses. But this does not apply to the presentation of income distribution, to the definition of saving and to capital finance accounts in connection with balance sheets and revaluation accounts. With the help of inflation accounting the changes in the purchasing power of tangible and financial assets, as well as of liabilities and net worth resulting from the general price increases, are to be measured.

Inflation accounting is based on the idea that increasing prices generally mean decreasing purchasing power of money. As a consequence, the holders of currency and of deposits with a fixed nominal value are suffering losses of purchasing power, while on the other hand economic units with liabilities profit from gains in purchasing power. The owners of tangible assets will have losses in purchasing power if the increase of the special price index of the tangible assets is lower than the increase of the general price index and, accordingly, they will profit from gains in purchasing power if for example the increase of prices for land is higher than the increase of the general price level.

A precondition of inflation accounting is the existence of sectoral balance sheets along the lines proposed by the United Nations.[2] Due to the statistical problems involved, complete balance sheets however are available only for a small number of countries. For the Federal Republic of Germany for instance,

[1] Hibbert, J., *Measuring the Effects of Inflation on Income, Saving and Wealth*, OECD, Paris, 1983.

[2] United Nations, *Provisional International Guidelines on the National and Sectoral Balance-Sheet and Reconciliation Accounts of the System of National Accounts*, New York 1977.

reliable estimates of the value of land do not exist. Another problem is the question how trends in general purchasing power can be measured. There are quite a number of different price indices available for this purpose, but none of them meets all the requirements. For this reason questions of estimates in constant prices as usually dealt with in national accounts are first discussed in this paper, and then the concept of measurement in constant prices is compared with the concept of measurement of changes in purchasing power. The last concept is necessary for purposes of inflation accounting. Prior to presenting the results of inflation accounting for the Federal Republic of Germany in detail, some more general remarks are made on the construction of balance sheets and on the methods used in inflation accounting.

2. Constant Price Figures and Purchasing Power Measurement

The changes in figures in money terms between two periods (or points in time) are determined by a number of factors such as

—pure changes in quantities
—changes in the quality component
—structural changes within a group of commodities, including
  —changes in the quantity structure
  —and changes in the price structure
—pure changes in prices.

Within national accounts the objective of constant price measurement is to show the trends of aggregates exclusive of pure price changes. The other three factors mentioned above are combined to form the "volume development" which is also called the "real" component. For some purposes it is desirable to show the impact of each factor explicitly, but because of the methodological and statistical problems involved, this in practice is possible in extremely few cases only.

The calculation in constant prices would present no difficulties if all prices showed the same trends. But in practice this is not the case; the price structure changes over time. In the Federal Republic of Germany for instance, the price increases for land, buildings and services have long been far above average while those for industrial products have been far below. With respect to constant price calculations the question is whether the prices of individual goods and services should be used or whether only the "general" price trend should be taken into account.

If it is a question of indicating the real trends of special flows of goods and services (e.g. of private consumption or of fixed capital formation), the best method without a doubt is the use of *special price indices* typical of these goods. This however is possible only if the value of a transaction can be indicated as a sum of products: quantities multiplied by prices. A measurement of real income with special price indices is excluded due to the fact that incomes cannot be divided into a price and a quantity component. The constant price measurement in national accounts is therefore in general limited to flows of goods and services as well as to residuals which can directly be derived from these transactions. Examples of such residuals are exports less imports of goods and services, gross

value added at market prices, and the gross national product (and/or the gross domestic product). The computation of residuals at constant prices by the method of double deflation may however lead to questionable results, especially if the price development of the two components making up the residual differs substantially and if the residual represents only a small share. The interpretation of the results in those cases requires great circumspection.

A different conclusion is arrived at if information is to be supplied on the development of real purchasing power of money in general, as well as of income or financial assets and liabilities. Here the general price development is to be eliminated, for which *general price indices* are to be used. The biggest problem in measuring the general price development consists in the fact that there does not exist one single price index which covers all prices in their entirety. It is therefore necessary to find other solutions. Different price indices are available, but all of them have only a limited information value.

A frequently used general index is the consumer price index. Its selection may be justified on the ground that a maximum level of real consumption of the population should be the ultimate aim of economic activities. In this light, fixed capital formation can be regarded as a means towards higher private final consumption in the future, while exports may be seen as a condition for acquiring imported goods for private consumption.

Based on the objection that the consumer price index represents only a part of the transactions in a national economy, often the implicit price index of the gross national product (GNP deflator) or the price index of the final domestic use of goods and services, respectively, are recommended. In support of these indices as indicators of the trends in the general price development the broader field of coverage should be mentioned. They also include the prices of fixed assets and the price trends of final consumption of government. Against the GNP deflator as an indicator for purchasing power measurement one may object that the GNP is defined as the difference between final uses on the one hand and the imports of goods and services on the other. An above average increase in import prices will result in a calculated diminished increase of the GNP deflator, while the purchasers in the economic territory however must pay higher prices.

For the measurement of purchasing power by sectors, it is also possible to draw upon general sectoral deflators. With regard to private households, the price index of private final consumption expenditure could be mentioned as an example. With respect to enterprises, the price indices of gross fixed capital formation could be used, while the computation for general government could be based on the price development of final consumption and fixed capital formation of government. Moreover, the purchasing power in relation to financial assets of the rest of the world could be measured by the export price index and, vice versa, that relating to liabilities by the import price index.

With regard to the measurement of purchasing power in relation to financial assets and liabilities, the price development of tangible assets could also be taken into account. This approach may be based on the consideration that the financial assets and liabilities have, in a macro-economic sense, ultimately served to increase tangible assets, i.e. that their values should be viewed in close connection with the values of the tangible assets.

The starting base for inflation accounting is, as mentioned already, the balance sheets, in which assets and liabilities are presented on the basis of current market prices and not valued at (historical) cost of acquisition. For revaluations of individual kinds of assets, special price indices must of course be drawn upon, as for instance price indices of transactions in land, price indices of fixed assets for reproducible tangible assets, or indices of share prices for the purpose of computing the value of shares at daily prices. Inflation accounting as such aims at the measurement of purchasing power; consequently it is necessary here to start from general price indices. For this purpose, the above mentioned indices should be taken into consideration.

In order to analyse how sensitively the results of inflation accounting depend on the selection of the general deflator, the estimated 1980 results for the Federal Republic of Germany are presented. However, prior to dealing with these results in detail, some explanation should be made regarding the estimates of the items in the 1980 balance sheets and the methods of compiling gains and losses in purchasing power.

3. National Balance Sheet, 1980

Table 1 shows the national balance sheet of the Federal Republic of Germany for the three large domestic sectors "Private households," "Enterprises," "General government" and for the "Rest of the world." In comparison with the calculations by J. Hibbert for the Federal Republic of Germany for the years 1960 to 1979,[3] there are essentially the following differences:

—Estimates of the value of land are also included.

—Residential buildings were sectorally subdivided according to owners, so that tangible assets are shown for private households.

—In general government, the value of public roads, dams, etc. is also included.

The estimates of the value of land are based on the results of both the statistics of land utilization and the statistics of purchase prices of agricultural as well as building land. The valuation itself was made in a detailed breakdown by type of land utilization and by region. On account of the problems of valuation and the difficulties connected with the sectoral breakdown of the results, the data on the value of land shown in Table 1 are subject to considerable uncertainty margins.

The values for reproducible tangible assets are national accounts figures.[4] The presentation includes the net stock of fixed assets at current replacement cost and the stocks of enterprises and general government. Contrary to the presentation in national accounts, dwellings were distributed by estimation according to the sectors of ownership. In accordance with the recommendations of the SNA,[5] no depreciation allowances are calculated for public roads, dams,

[3]See footnote 1.

[4]Statistisches Bundesamt, Fachserie 18, Volkswirtschaftliche Gesamtrechnungen, Reihe 1, Konten und Standardtabellen 1982, pp. 265, 316ff.

[5]United Nations, *A System of National Accounts*, New York, 1968, p. 122.

etc. Two-thirds of the gross stock of these assets of general government are therefore shown in Table 1 as a proxy for the net stock.

The data on financial assets and liabilities are based on figures published by the Deutsche Bundesbank.[6] For purposes of inflation accounting, it is useful to distinguish between assets with a fixed nominal value and those with a value liable to change (securities and index-linked liabilities[7]). The nominal values of the first group of financial assets do not change in the course of time (aside from the fact that they may become dubious for instance in the case of bankruptcies), while for the second group changes of value may occur for example due to changing quotations on the stock exchanges. Bonds and shares are shown in Table 1 at their year-end market values. Shares were treated here as a kind of financial asset or liability, respectively, and for joint stock companies accordingly the quoted share values at year-end were included with liabilities. The financial assets and liabilities of the "housing sector" were distributed by sectors on the basis of estimates.

The net worth of the sectors shown in Table 1 has been calculated as the difference between assets and liabilities. Attention should be paid to the fact that the enterprise sector comprises the assets of all enterprises, independent of the ownership situation. Included, for instance, are the assets of agricultural establishments, of independent professional persons and of all publicly-owned enterprises. It has however not yet been possible to allocate the net worth of enterprises to the owners (private households, general government and rest of the world). The net worth of all sectors represents the national wealth of the Federal Republic of Germany. It should be noted however that the value of consumer durables, fixed assets for military purposes, timber tracts, subsoil assets, historic monuments and art objects, and non-financial intangible assets are not included. The calculation presented in Table 1 for the end of 1980 reveals a national wealth per inhabitant of roughly 130,000 DM. The national income per capita amounted in 1980 to 19,000 DM.

4. The Calculation of Gains and Losses in Purchasing Power

As mentioned at the beginning, one of the objectives of inflation accounting is the quantification of gains and losses in purchasing power as a result of the general price development. A gain in purchasing power is registered if, within the recording period, the rate of price increase for a particular asset (e.g. the price of land) has shown a stronger upward movement than the general level of prices. A general increase in prices according to this calculation will always result in losses in purchasing power of monetary claims, and vice versa in gains in purchasing power for liabilities. (In Tables 2 and 3, a minus sign for assets indicates losses in purchasing power and for liabilities gains in purchasing power). In order to be able to compute the gains and losses in purchasing power, it is

[6]Deutsche Bundesbank, *Zahlenübersichten und methodische Erläuterungen zur gesamtwirtschaftlichen Finanzierungsrechnung der Deutschen Bundesbank* 1960 *bis* 1982, Sonderdrucke der Deutschen Bundesbank No. 4, 4. Auflage, July 1983, p. 139f.

[7]In the Federal Republic of Germany, the "indexing" of financial claims, i.e. the contractual linkage of the surrender values of claims to a price index, is not permitted.

TABLE 1

THE NATIONAL BALANCE SHEET OF THE FEDERAL REPUBLIC OF GERMANY 1980 BY SECTORS AT OPENING PRICES OR AT CLOSING PRICES
1,000 mill DM[1]

Type of Asset and Liability	Private Households[2]	Enterprises[3]	General Government[4]	Domestic Sectors	Rest of the World	Total
Opening Stocks						
1. *Land*[5]	711.3	1,381.7	505.8	2,598.8	—	2,598.8
a) Underlying buildings etc.[6]	711.3	651.1	422.3	1,784.7	—	1,784.7
b) Agricultural	—	662.3	—	662.3	—	662.3
c) Forests etc.	—	68.3	83.5	151.8	—	151.8
2. *Reproducible tangible assets*[7]	1,456.7	2,395.3	856.1	4,708.1	—	4,708.1
a) Residential buildings	1,456.7	309.6	54.6	1,820.9	—	1,820.9
b) Non-residential buildings and structures	—	1,051.5	764.9	1,816.4	—	1,816.4
c) Machinery and equipment	—	674.9	34.7	709.6	—	709.6
d) Stocks[8]	—	359.3	1.9	361.2	—	361.2
3. *Financial assets*	1,367.1	2,818.0	300.5	4,485.6	368.9	4,854.5
a) With fixed nominal values	1,144.8	2,346.1	252.1	3,743.0	311.0	4,054.0
b) Bonds[9]	158.2	286.4	16.6	461.2	22.9	484.1
c) Shares[9]	64.1	185.5	31.8	281.4	35.0	316.4
4. *All assets* (1+2+3)	3,535.1	6,595.0	1,662.4	11.792.5	368.9	12,161.4
5. *Liabilities*	490.9	3,464.1	450.1	4,405.1	449.4	4,854.5
a) With fixed nominal values	490.9	2,824.2	352.7	3,667.8	386.2	4,054.0
b) Bonds[9]	—	363.8	97.4	461.2	22.9	484.1
c) Shares[9]	—	276.1	—	276.1	40.3	316.4
6. *Net worth* (4−5)	3,044.2	3,130.9	1,212.3	7,387.4	−80.5	7,306.9

Closing Stocks						
1. *Land*[5]	876.6	1,617.6	598.2	3,092.4	—	3,092.4
a) Underlying buildings etc.[6]	876.6	800.0	503.9	2,180.5	—	2,180.5
b) Agricultural	—	740.4	—	740.4	—	740.4
c) Forests etc.	—	77.2	94.3	171.5	—	171.5
2. *Reproducible tangible assets*[7]	1,614.8	2,640.8	950.0	5,205.6	—	5,205.6
a) Residential buildings	1,614.8	347.7	58.6	2,021.2	—	2,021.1
b) Non-residential buildings and structures	—	1,166.4	850.8	2,017.3	—	2,017.3
c) Machinery and equipment	—	731.8	38.2	770.0	—	770.0
d) Stocks[8]	—	394.9	2.4	397.3	—	397.3
3. *Financial assets*	1,481.2	3,045.3	309.4	4,835.9	432.0	5,267.9
a) With fixed nominal values	1,241.3	2,542.5	260.0	4,043.8	374.6	4,418.4
b) Bonds[9]	176.7	301.1	16.1	493.9	22.4	516.3
c) Shares[9]	63.2	201.7	33.3	298.2	35.0	333.2
4. *All assets* (1+2+3)	3,972.6	7,303.7	1,857.6	13,133.9	432.0	13,565.9
5. *Liabilities*	542.5	3,733.5	503.8	4,779.8	488.1	5,267.9
a) With fixed nominal values	542.5	3,057.0	407.1	4,006.6	411.8	4,418.4
b) Bonds[9]	—	389.4	96.7	486.1	30.2	516.3
c) Shares[9]	—	287.1	—	287.1	46.1	333.2
6. *Net worth* (4−5)	3,430.1	3,570.2	1.353.8	8,354.1	−56.1	8,298.0

Sources: See Table 2.
Footnotes: See Table 3.

TABLE 2

NET CAPITAL TRANSACTIONS AND GAINS AND LOSSES IN PURCHASING POWER 1980 AT ANNUAL AVERAGE PRICES 1,000 mill DM[1]

Type of Asset and Liability	Private Households[2]	Enterprises[3]	General Government[4]	Domestic Sectors	Rest of the World	Total
Net Capital Transactions						
1. *Land*[5]	11.1	7.7	3.5	22.3	—	22.3
a) Underlying buildings etc.[6]	11.1	10.3	3.5	24.9	—	24.9
b) Agricultural	—	−2.7	—	−2.7	—	−2.7
c) Forests etc.	—	0.1	—	0.1	—	0.1
2. *Reproducible tangible assets*[7]	42.0	97.5	33.6	173.1	—	173.1
a) Residential buildings	42.0	14.2	0.4	56.6	—	56.6
b) Non-residential buildings and structures	—	36.4	31.0	67.4	—	67.4
c) Machinery and equipment	—	28.5	1.7	30.2	—	30.2
d) Stocks[8]	—	18.4	0.5	18.9	—	18.9
3. *Financial assets*	121.7	233.8	8.9	364.4	65.1	429.5
a) With fixed nominal values	96.5	196.4	7.9	300.8	63.6	364.4
b) Bonds[9]	25.6	26.8	—	52.4	0.2	52.6
c) Shares[9]	−0.4	10.6	1.0	11.2	1.3	12.5
4. *All assets* (1+2+3)	174.8	339.0	46.0	559.8	65.1	624.9
5. *Liabilities*	51.6	282.6	56.6	390.8	38.7	429.5
a) With fixed nominal values	51.6	232.8	54.4	338.8	25.6	364.4
b) Bonds[9]	—	43.1	2.2	45.3	7.3	52.6
c) Shares[9]	—	6.7	—	6.7	5.8	12.5
6. *Net worth* (4−5)	123.2	56.4	−10.6	169.0	26.4	195.4

Gains and Losses in Purchasing Power[10,11]						
1. *Land*[5]	111.2	146.5	58.8	316.5	—	316.5
a) Underlying buildings etc.[6]	111.2	99.2	52.9	263.3	—	263.3
b) Agricultural	—	42.5	—	42.5	—	42.5
c) Forests etc.	—	4.8	5.9	10.7	—	10.7
2. *Reproducible tangible assets*[7]	32.1	10.2	10.9	53.3	—	53.3
a) Residential buildings	32.1	5.9	0.5	38.6	—	38.6
b) Non-residential buildings and structures	—	17.9	10.7	28.6	—	28.6
c) Machinery and equipment	—	−10.1	−0.2	−10.3	—	−10.3
d) Stocks[8]	—	−3.4	−0.1	−3.6	—	−3.6
3. *Financial assets*	−85.6	−167.1	−16.8	−269.5	−23.7	−293.3
a) With fixed nominal values	−65.4	−133.9	−14.1	−213.4	−18.6	−232.0
b) Bonds	−16.3	−28.2	−1.4	−45.9	−1.9	−47.8
c) Shares	−4.0	−5.0	−1.3	−10.3	−3.2	−13.5
4. *All assets* (1+2+3)	57.7	−10.4	52.9	100.2	−23.7	76.5
5. *Liabilities*	−28.3	−210.4	−29.0	−267.7	−25.6	−293.3
a) With fixed nominal values	−28.3	−161.1	−20.7	−210.1	−21.9	−232.0
b) Bonds	—	−38.2	−8.3	−46.5	−1.3	−47.8
c) Shares	—	−11.2	—	−11.2	−2.3	−13.5
6. *Net worth* (4−5)	86.0	200.0	81.9	367.9	1.9	369.8

Sources: Value of land: own estimates. Reproducible tangible assets: Statistisches Bundesamt at Wiesbaden. Financial assets and liabilities: Deutsche Bundesbank at Frankfurt am Main. Gains and losses in purchasing power: own calculation.

Footnotes: See Table 3.

TABLE 3

PURCHASING POWER GAINS AND LOSSES IN THE FEDERAL REPUBLIC OF GERMANY 1980 USING DIFFERENT PRICE INDICES 1,000 mill DM[1]

Institutional Sector Type of Price Index	Assets					
	Land[5]	Reproducible Tangible Assets[7]	Financial Assets	All Assets	Liabilities[11]	Net Worth
	1	2	3	4=1+2+3	5	6=4−5
Private households[2]						
Consumer price index	111.2	32.1	−85.6	57.7	−28.3	86.0
GNP-deflator	123.3	56.0	−63.4	115.9	−20.2	136.1
Price index of final domestic use[12]	113.8	37.6	−80.4	71.0	−2[illegible].4	97.4
Price index of private final consumption	112.4	34.8	−83.0	64.2	−27.3	91.5
Price index of tangible assets	73.3	−40.6	−152.9	−120.2	−52.7	−67.5
Enterprises[3]						
Consumer price index	146.5	10.2	−167.1	−10.4	−210.4	200.0
GNP-deflator	169.7	49.5	−121.3	97.9	−154.2	252.1
Price index of final domestic use[12]	151.7	19.3	−156.3	14.5	−197.3	211.8
Price index of increase in tangible assets	144.5	7.2	−170.4	−18.7	−214.5	195.8
Price index of tangible assets	75.4	−109.0	−305.7	−339.3	−380.6	41.3
General government[4]						
Consumer price index	58.8	10.9	−16.8	52.9	−29.0	81.9
GNP-deflator	67.4	25.0	−12.0	80.4	−21.5	101.9
Price index of final domestic use[12]	60.8	14.2	−15.6	59.4	−27.3	86.7
Price index of government expenditure	53.7	2.7	−19.5	36.9	−33.3	70.2
Price index of tangible assets	32.7	−31.8	−31.2	−30.3	−51.5	21.2

Rest of the world						
Consumer price index	—	—	−23.7	−23.7	−25.6	1.9
GNP-deflator	—	—	−17.6	−17.6	−18.4	0.8
Price index of final domestic use[12]	—	—	−22.4	−22.4	−24.0	1.6
Price index of exports or imports[13]	—	—	−23.1	−23.1	−40.8	17.7
Price index of tangible assets	—	—	−42.8	−42.8	−47.8	5.0
Total						
Consumer price index	316.5	53.3	−293.3	76.5	−293.3	369.8
GNP-deflator	360.5	130.5	−214.3	276.7	−214.3	491.0
Price index of final domestic use[12]	326.3	71.1	−274.9	122.5	−275.0	397.5
Sector price indices	310.6	44.7	−296.0	59.3	−315.9	375.2
Price index of tangible assets	181.4	−181.4	−532.6	−532.6	−532.6	0.0

Sources: See Table 2.

[1]Differences in totals are due to rounding.

[2]Included are residential buildings and land, not included are assets and liabilities for commercial purposes and equities other than shares.

[3]Not included are private and government owned residential buildings.

[4]Included are residential buildings.

[5]Rough estimates. The value of timber tracts, subsoil assets, fisheries, etc. is not included.

[6]Including small private gardens, land for traffic purposes, parklands, airfields, etc.

[7]Net stock of fixed assets at current replacement cost, with respect to public roads etc. $\frac{2}{3}$ of the gross stock; excluded are consumer durables, fixed assets for military purposes and historical monuments.

[8]Including livestock.

[9]At stock exchange values of the day of recording.

[10]Calculated with the consumer price index.

[11]With respect to liabilities a minus sign marks gains in purchasing power.

[12]Private and government final consumption expenditure, gross fixed capital formation, change in stocks.

[13]Price index of exports for financial assets, price index of imports for liabilities.

necessary to convert the stock figures and the net capital transactions to a uniform level of purchasing power. Generally suitable for this purpose are (constant) prices of a fixed base year, or else the opening, average of closing prices of the reference year.

The computations presented here are based on the average annual prices of the reference year 1980 using the following formula:

$$G(t) = S(e) : \frac{P(e)}{P(t)} - S(b) : \frac{P(b)}{P(t)} - T(t)$$

$G(t)$ are the gains (losses) in purchasing power, $S(e)$ and $S(b)$ the stocks at the end and the beginning of year t, $P(e)$, $P(b)$ and $P(t)$ the general price index at the end, beginning and as an average of year t, and $T(t)$ the net capital transactions during t. The closing prices were estimated as the mean between adjacent monthly indices (December and January), adjacent quarterly indices (fourth and first quarter) or, tentatively, annual indices. The computation of the purchasing power gains may be illustrated by the example of the housing assets of private households using the consumer price index as the general price index. In 1980 this index (1976 = 100) was 117.0 on the annual average, 113.4 at the beginning and 119.8 at the end of the year:

Residential buildings of private households, 1980, at annual average 1980 prices in 1,000 millions of DM

Closing stock	$1{,}614.8 : \frac{119.8}{117.0} = 1{,}577.06$
− Opening stock	$1{,}456.7 : \frac{113.4}{117.0} = 1{,}502.94$
− Net fixed capital formation	$42.0 : \frac{117.0}{117.0} = \quad 42.00$
= Gain in purchasing power	32.12

The upward revaluations due to the price increases for residential buildings to the amount of 116.1 billions of DM (1,614.8 − 1,456.7 − 42.0) must be seen against a computed purchasing power gain of 32.1 billions of DM.

As far as the interpretation of the gains and losses in purchasing power is concerned, it should be pointed out that we are first of all dealing here with calculated values from a macro-economic point of view. Whether they are explicitly included in the considerations of the individual economic units may be doubtful, at least as long as commercial accounting is not performed in the form of "current cost accounting" as has been recommended for instance in the United Kingdom. The results of these computations also appear doubtful with respect to private households who would practically never be considering selling their dwellings or who would immediately upon selling acquire a new dwelling.

5. Results of Inflation Accounting, 1980

In order to show how sensitively the results of inflation accounting react to the selection of the price index, the following price indices were drawn upon for use as general deflators (shown in brackets are the rates of price increase from the beginning of 1980 to year-end in %):

1. Consumer price index of all private households (+5.6)
2. Implicit deflator of the gross national product at market prices (+4.0)
3. Price index of final domestic use of goods and services (+5.3)
4. Sectoral deflator indices:
   (a) Price index of private final consumption expenditure (+5.5)
   (b) Price index of fixed capital formation and purchases of land by enterprises (+5.8)
   (c) Price index of government final consumption and fixed capital formation (+6.6)
   (d) Price indices of exports and imports (+5.5; +9.1)
5. Price index of tangible assets (+10.7)

The rates of increase of these price indices show only small differences, with the exception of the GNP deflator, the import prices, and the price index of the stock of tangible assets. The low rate of increase of the GNP deflator is mainly explained by the strong increase of import prices. (On the expenditure side of the GNP, imports are a minus position. A strong increase in import prices consequently results in a lower increase of the GNP deflator.) A far above average price increase for tangible assets has for long been registered in the Federal Republic of Germany. To a large extent, this is contributed to by the exceptionally strong increase in prices being paid for building land.

Table 2 shows the net capital transactions and the gains and losses in purchasing power in 1980. Here, the consumer price index was used as a general price index. The net capital transactions shown comprise in the case of land the balance between purchases and sales valued at annual average prices for 1980. As far as reproducible tangible assets are concerned, these are equivalent to net capital formation (gross fixed capital formation and change in stocks less consumption of fixed-capital) in prices of 1980. The net additions to financial assets and liabilities, respectively, were calculated as changes of stocks at nominal values.

Gains in purchasing power have accrued for the items land and buildings since prices of these assets have increased more than the consumer price index. Losses in purchasing power are shown primarily for financial claims. The gains and losses in purchasing power in the case of financial assets and liabilities as a whole are mutually compensating, due to the fact that the same deflator has been used for all sectors. The net gains in purchasing power for private households (86.0 billions of DM) can be compared with their total savings, which amounted according to national accounts to 123.0 billions of DM in 1980. As far as enterprises and general government are concerned, the net gains in purchasing power computed are more than twice as high as their net investments in 1980.

Table 3 presents in condensed form the gains and losses in purchasing power relative to the selection of the general deflator price index. In relation to the individual items, the differences in the results are altogether not too great. For combined positions, however, as for instance in columns 4 and 6, the differences in the results are considerable. The calculation for private households works out to a net purchasing power gain of +136 billions of DM on the basis of the GNP deflator, and to −68 billions of DM (a loss in purchasing power) using the price index of tangible assets. The great influence of tangible assets on the results is also clearly revealed. For instance if no tangible assets had been taken into account for private households, this would have had the effect of considerable losses in purchasing power.

After all this, the question arises which price index should be used as an indicator for the general development of the purchasing power of money for the purpose of inflation accounting. It is not possible to give a definite answer to that problem: it depends on the respective objective of analysis. Quite a lot speaks in favour of the consumer price index. Its utility is rather limited however if information is to be supplied which relates to enterprises and general government. Reservations with regard to the implicit GNP deflator as an indicator of purchasing power measurement have to be kept in mind, particularly in those instances when export and import prices show very diverging trends. On the macro-level, much could be said in favour of the price index of final domestic use. Problems do exist, however, with respect to the price measurement for final consumption of general government included therein.

In cases where specific information about trends in purchasing power in individual sectors is the prime consideration, the use of sector-specific indices seems to be advisable or even necessary. We then however must accept as a serious drawback the fact that the accounting constraints are not maintained, i.e. regarding the economy as a whole, the losses and gains with respect to financial assets and liabilities are not equal and consequently do not balance.

On the other hand, if the information requested is to indicate which sectors on balance are "winners" or "losers" in the general price development, the price index of tangible assets has to be regarded as appropriate. With this index, it is assured that the gains and losses in purchasing power with regard to all assets and liabilities are equal for the economy as a whole.

6. Conclusions

a) The results of inflation accounting presented in this paper show impressively that the gains and losses in purchasing power with respect to assets and liabilities run to considerable amounts even if the rates of price increases are not very high. They can exceed many times the capital transactions during a year.

b) The results of inflation accounting depend to a high degree on the selection of the price index which is used as an indicator for the general price development. Even slight differences in price trends do have a considerable impact on the results of purchasing power measurement. The index selection should essentially be determined by the objective of the analysis.

c) The results of inflation accounting are largely influenced by the extent to which tangible assets—in particular the value of land—are included in the individual sector's balance sheet. A limitation of inflation accounting to financial assets and liabilities would have the effect that only partial information could be provided, which to a high degree would involve the danger of misinterpretations.

d) Inflation accounting in the form presented here can provide information only on inflationary gains and losses in purchasing power as they relate to assets and liabilities. The general price development however also exerts a considerable impact on level and changes of transactions within the reference period. Thus, the level of rates of interest or that of rates of wage increases also depends on price trends. Inflation accounting which truly justifies its name should not restrict itself to stock figures, but must also endeavour to include in its presentation the inflation-conditioned effects on transactions and in particular on income.