NOTES AND MEMORANDA

THE BROADENING OF INCOME TO INCLUDE CAPITAL GAINS: RESULTS FOR BELGIUM

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Most economists accept the importance of capital gains (and losses) but national accounts, and therefore some econometricians, have neglected these gains for obvious reasons. For a thorough analysis of different economic phenomena, e.g. consumption, and income and wealth distribution, capital gains are however essential. In this note we estimate capital gains for Belgium and add them to ownership income. We obtain in this way a "broadened income". At this stage of our research, we are not able to give an indication about the distribution of these capital gains. A distinction between realized and unrealized gains is also beyond the scope of this note.

Different methods for the estimation of capital gains can be found in the literature. A survey is provided by Bhatia ([3], p. 366–371). At every point in time the nominal value of an asset (V_t) is equal to the quantity (Q_t) multiplied by an end of period price index (P_t), i.e. P_tQ_t. The problem related to the estimation of capital gains consists of the decomposition of the change in P_tQ_t into quantity and price level changes. After some obvious transformations, we find:

$$V_t = P_tQ_t = P_{t-1}\cdot Q_{t-1} + P_{t-1}(Q_t - Q_{t-1}) + (P_t - P_{t-1})Q_{t-1} + (P_t - P_{t-1})(Q_t - Q_{t-1})$$

i.e. the present value of an asset is equal to the value of last period plus the quantity change valued at last period prices, the price change of the quantity owned last period and of the change in quantity. Nominal capital gains are equal to both price change terms, i.e. to:

$$CG_t = (P_t - P_{t-1})Q_{t-1} + (P_t - P_{t-1})(Q_t - Q_{t-1})$$

We assumed in this note that net investments occur at the end of period t, so that no capital gain is made on these purchases. Since in most cases investment is small relative to total stocks, the assumption made regarding the purchase price of net investment is of minor importance.[1] Nominal capital gains can thus be written as:

$$CG_t = V_{t-1}\left[\frac{P_t}{P_{t-1}} - 1\right]$$

and capital gains in real terms are:

$$CGR_t = \frac{V_{t-1}}{C_{t-1}}\left[\frac{P_t}{P_{t-1}}\frac{C_{t-1}}{C_t} - 1\right]$$

where C = a consumer price index.

Estimated capital gains are added to ownership income. This income is derived from the national accounts so it is necessary that our definition of assets held by households should match the national accounts definition. It was not our purpose in this research to

[1]In Bhatia [3], the purchase price is P_{t-1}.

question the assumptions used by the National Institute of Statistics (NIS) in calculating the national accounts. More specifically we retained the series for savings deposits, bank deposits, life insurance and debts used by the NIS in the determination of interest incomes. Concerning the other earning assets, we applied the NIS assumptions (e.g. the share of the household sector in total rents, dividends, etc.).

The income broadened to include capital gains is used to calculate a rate of return as:

$$\text{Nominal rate of return: } \frac{\text{Nominal broadened income}}{P_{t-1}Q_{t-1}} \times 100$$

$$\text{Real rate of return: } \frac{\text{Real broadened income}}{(P_{t-1}Q_{t-1})/Q_{t-1}} \times 100$$

The total net assets equals 3.5 times national income in 1970 (Table 1). A more comprehensive study of the distribution of wealth estimated total net household wealth at 5.7 times the national income in 1969 (Praet–Walravens [8]). The main excluded assets are:

—non residential houses (do not appear explicitly in the national accounts);

—foreign assets (we could not find an acceptable quantity and price index because these assets are very heterogenous);

—professional goods;

—gold, jewels, antiques;

—consumption goods for which the calculation of a broadened income has not much sense due to the lack of market value.

The value of *dwellings* retained by households is estimated as the product of the total number of houses and an average market price. This last variable is the average price of yearly private and public sales: on average these sales represent 2.4 percent of the total of the stock; the structure of the sales by categories of houses (apartments, individual

TABLE 1

ASSETS AND LIABILITIES CONSIDERED

	Price Index of the Asset	Market Value, End 1970	
		10^6B.Fr.	% of Total
Earning assets			
Real estate			
Dwellings	Market price	1600.4	45.2
Agricultural and forest land	Market price	641.8	18.1
Fixed income financial assets			
Non quoted			
Savings deposits	—	317.2	9.0
Bank deposits	—	322.2	9.1
Life insurance	—	112.4	3.2
Bonds issued by financial institutions	—	145.0	4.1
Quoted			
Government securities	Calculated price index	163.5	4.6
Shares in Belgian companies	Stock exchange	283.1	8.0
Non earning assets			
Bank notes and coins	—	160.1	4.5
Liabilities			
Mortgages	—	−187.5	−5.3
Consumer credit	—	−16.3	−0.5
Total (net)		3541.9	100.0

houses, ...) fluctuates in a regular pattern and the geographical distribution is stable. Published prices were however increased by 10 percent in order to take the fiscal fraud occurring in private contract sales into account (Frank [5]). We excluded commercial and industrial buildings, assuming that non-residential buildings belonging to individuals and dwellings belonging to enterprises cancel out. The same assumption is made by the NIS for the estimate of rents. The price series obtained includes the value of land. The value of dwellings is 7.5 times higher in 1976 than in 1952. The largest part of this increase is due to increases in prices: the number of houses rose by 35 percent, their average price by 460 percent. Nominal capital gains represent on average 1.9 times nominal rents.[2] There is no nominal capital loss. At 1970 prices, capital gains amounted on average to 70 percent of real rents. The average nominal rate of return equals 12.9 percent; the average real rate of return 8.5 percent (see Table 2). Two periods can be distinguished: the first covers the years 1953 to 1967 with an average rate of 9.7 percent, the second the years 1968 to 1976 with an average rate of 6.6 percent.

Agricultural and forest land consists of grassland (28 percent), cultivated land (27 percent), forests (22 percent) and "mixed land". The method used is similar to that for dwellings. We assumed a fraud rate of 5 percent on private contract sales. Real capital gains represent on average 1.8 times real rents. Real broadened income is negative between 1969 and 1975. This is mainly due to a 1967 law limiting speculation in land. Real rates of return on land are on average one half of those on dwellings.

Five categories of *fixed income financial assets* are considered: savings deposits, bank deposits, life insurance, bonds issued by financial institutions (up to five years) and government bonds. Only this latter category can produce nominal capital gains. The value of household savings deposits is relatively well known since the share of non-households is very small. The share of household bank deposits is not well known as there is no distinction between accounts held by non-financial enterprises and by households. The NIS estimates the share of the households at 75 percent. Reserves of life insurance companies are assimilated to savings deposits in the national accounts. In Belgium financial institutions issue bonds with a maturity up to five years. These bonds are however not negotiable so that no market price exists. Capital gains on these bonds occur therefore only in constant prices. The stock of government bonds held by the household sector is obtained from publications of the National Bank. However here changes in the market value of bonds have to be taken into account. We calculated our own price index since no other satisfactory series was available. This market price index is a weighted average of coupon rates divided by the current coupon rate. The weights were chosen so as to take into account that newly issued bonds will be affected more by changes in the interest rate. The real rates of return are negative at the end of the period.

Due to problems in finding a relevant stock, we limited our study to *shares held by households in Belgian companies.* The total value of all shares quoted on the stock markets of Brussels and Antwerp for the period 1960–1976 is calculated by the Stock Market Commission. For the years up to 1960, we made use of data calculated by the NIS. The stock market index was used as price index. Results show an average rate of return positive in nominal as well as in real terms. This is however due to the high returns in the fifties.

Very little information is available on the *currency* held by the household sector. In the United States, Anderson [1] estimated the households' share at 90 percent. For Belgium we accepted a 85 percent figure to take into account the currency held in Luxembourg. The real rate of return equals here the negative of the inflation rate.

Two categories of *liabilities* were considered: *mortgages* and *consumer credit.* Debts lead generally to a capital gain when the rate of inflation accelerates. Mortgages are very important in this respect. Results show that capital gains were always positive except in 1953 and 1955 when the consumption price index declined. The real rate of return, or better the real cost, was however only slightly negative. Since the average interest rate on consumer credit is rather high, the average real rate of return (i.e. cost) is negative and much higher than the average real rate on mortgages.

[2]Mortgage interest payments not deducted: they are treated separately below.

TABLE 2

NOMINAL AND REAL RATES OF RETURN (%)

	Dwellings		Land		Savings, Bank Deposits	Non-quoted Bonds	Quoted Bonds		Shares		Currency	Mortgage Debts	Consumer Credits
	Current Prices	1970 Prices	Current Prices	1970 Prices	1970 Prices	1970 Prices	Current Prices	1970 Prices	Current Prices	1970 Prices	1970 Prices	1970 Prices	1970 Prices
1953	10.3	10.5	15.4	15.6	1.9	5.2	12.7	13.1	6.9	7.1	+0.1	−3.9	−5.8
1954	17.3	16.3	13.7	12.7	1.2	4.9	15.3	14.2	20.5	19.4	−0.9	−2.9	−5.2
1955	12.1	12.3	10.5	7.1	2.2	5.4	3.5	3.3	30.2	30.3	+0.1	−3.8	−6.1
1956	12.0	8.8	22.0	15.0	−0.8	1.9	−1.7	−4.5	12.3	9.1	−2.9	−0.8	−3.2
1957	10.7	7.5	10.6	7.5	−0.8	1.9	−5.2	−9.2	4.1	1.0	−3.0	−0.7	−3.1
1958	6.2	4.7	−2.2	−3.5	0.9	3.9	9.3	7.6	−3.8	−5.1	−1.4	−2.5	−3.5
1959	12.6	11.4	11.2	10.0	1.1	4.7	16.5	15.2	17.9	16.6	−1.1	−2.7	−4.3
1960	9.8	9.3	8.2	7.7	2.1	5.3	3.2	2.6	1.2	0.8	−0.4	−3.6	−4.3
1961	10.3	9.3	6.5	5.5	1.6	4.8	1.3	0.4	20.6	19.5	−0.9	−3.1	−4.4
1062	12.2	10.5	9.6	8.0	1.0	4.5	13.1	11.5	−0.8	−2.2	−1.5	−2.4	−3.5
1963	11.2	8.9	7.5	5.3	0.3	4.2	1.8	−0.3	17.8	16.6	−2.1	−2.1	−2.7
1964	15.4	10.7	14.3	9.7	−1.7	2.1	−1.9	−5.9	5.7	1.4	−4.2	−0.1	0.2
1965	12.7	8.4	10.7	6.5	−1.3	2.1	9.6	5.4	−3.8	−7.5	−4.0	−0.5	0.4
1966	10.3	5.8	12.8	8.2	−1.4	3.0	5.0	0.7	−18.6	−21.8	−4.3	−0.1	−4.1
1967	13.7	10.6	4.1	1.2	−0.6	4.2	8.6	5.6	20.8	17.5	−2.8	−1.4	−2.1
1968	6.0	3.2	3.7	0.9	0.1	4.1	11.6	8.6	10.2	7.3	−2.8	−1.6	−2.6
1969	7.9	4.1	3.6	−0.1	−0.4	4.3	0.5	−3.0	5.3	1.5	−3.7	−0.8	−2.2
1970	2.7	−1.2	−4.4	−8.2	−0.2	4.1	0.5	−3.4	7.6	1.0	−4.0	−0.6	−1.7
1971	7.6	3.1	−7.3	−3.1	−0.6	3.8	17.6	12.8	10.5	6.0	−4.3	−0.6	−1.8
1972	16.2	10.2	2.6	−2.7	−2.1	2.7	19.8	13.6	23.6	17.2	−5.5	0.2	0.2
1973	26.3	18.0	6.9	−0.1	−3.2	1.1	0.1	−6.4	13.5	6.1	−7.0	1.3	1.2
1974	16.6	3.3	10.0	−2.3	−7.1	−3.1	−4.0	−14.7	−24.2	−32.7	−12.6	6.1	5.3
1975	19.5	3.5	4.2	−7.7	−7.4	−3.3	12.5	−0.3	23.7	9.7	−12.8	6.0	4.4
1976	27.8	16.3	15.1	4.8	−5.1	−0.9	5.3	−4.1	−2.9	−11.1	−9.8	3.7	2.0
Average	12.9	8.5	7.9	4.1	−0.9	2.9	6.5	2.6	8.3	4.5	−3.8	−0.7	−2.0

The empirical importance of capital gains is shown in Table 3. Nominal capital gains amounted on average to 17 percent of national income. Only two figures are negative, 1958 and 1970. These years can be described as bottom years of the business cycle. Note also that in the early sixties (1961–1967) the percentages were not very different from the average.

TABLE 3

STRUCTURE AND MAGNITUDE OF CAPITAL GAINS

	Structure of Nominal Capital Gains (% of Total)				Capital Gains as a Percentage of National Income	
	Dwellings	Land	Government Bonds	Shares	Current Prices	1970 Prices
1953	36.1	50.0	9.5	4.4	15.6	16.3
1954	51.5	24.6	6.7	17.2	30.3	27.5
1955	41.8	16.3	−1.7	43.6	21.7	22.0
1956	41.3	49.3	−6.4	15.8	22.4	12.3
1957	63.5	55.8	−19.3	0.0	12.0	1.4
1958	−14.4	62.6	−16.0	67.8	−4.4	−9.5
1959	42.2	26.8	8.5	22.5	27.1	23.1
1960	65.8	47.5	−3.8	−9.5	11.0	9.5
1961	47.8	22.8	−4.8	34.2	17.7	14.1
1962	66.7	36.0	8.5	−11.2	17.8	12.2
1963	54.0	24.9	−3.8	24.9	19.9	12.3
1964	65.6	36.6	−5.3	3.1	26.6	11.1
1965	71.8	38.3	3.0	−13.1	19.2	4.7
1966	82.5	74.2	−1.6	−55.1	12.5	−3.6
1967	69.2	11.9	1.8	17.1	21.2	12.4
1968	40.4	26.6	11.6	21.4	7.9	−2.6
1969	82.3	27.0	−14.0	4.7	7.0	−6.1
1970	42.7	54.8	15.1	−12.6	−6.6	−5.7
1971	189.0	−224.9	71.3	64.6	2.1	−6.8
1972	68.2	3.0	7.9	20.9	21.7	5.7
1973	88.2	7.2	−2.8	7.4	32.5	12.2
1974	142.1	28.3	−11.6	−58.8	11.5	−26.1
1975	82.7	4.5	2.0	10.8	24.9	−14.7
1976	91.9	12.7	−0.9	−3.7	36.2	8.6
Average	67.3	21.5	2.2	9.0	17.0	5.1

67 percent of nominal capital gains result from dwellings. The average share of real capital gains in (real) national income equals 5.1 percent. Here the negative figures from 1968 on are important: the average for the period 1970–1976 is 1.8 percent so that the acceleration in the inflation rate was not completely reflected in the price of assets. Note however that for some financial assets expected price increases led to higher interest income, not a higher market value. This does of course not facilitate the interpretation of the results.

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