THE IMPACT OF CAPITAL GAINS ON THE DISTRIBUTION OF INCOME IN BELGIUM

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In an earlier paper, we presented estimates of capital gains for a number of categories of assets owned by Belgian households. The purpose of the present paper is to see how the distribution of disposable income between socio-economic groups is modified when one adopts a "broadened" definition of income which includes capital gains corrected for losses of purchasing power.

The main result of the study is that at current prices, the adoption of a broadened definition of income strongly increases disparities between socio-economic groups. However, when one takes into account losses in purchasing power, conclusions differ according to the period analyzed. For the years 1953–68, it appears that the distribution of broadened disposable income is more unequal than the distribution of disposable income. For the years 1969–77 when inflation was high, the adoption of a broadened definition of income has reduced disparities, with the important exception of old age pensioners.

In an earlier note in this Review[1] we presented estimates of capital gains for a number of categories of assets owned by Belgian households. We found that over the period 1953–76 nominal capital gains (realized and unrealized) represented on average 17 percent of the national income. In real terms however this figure is reduced to about 5 percent. The purpose of the present note is to see how the distribution of the disposable income between socio-economic groups is modified when one adopts a "broadened" definition of income which includes capital gains. The idea of this research was born during the preparation of a book on the main changes in income distribution between socio-economic groups over the last 25 years.[2]

The concept of income adopted by the national accounts appeared to be unsatisfactory. To take an extreme case, consider a household which owns an important quantity of diamonds but has no "income". As the unit value of diamonds increases with time, each year a certain quantity of the stock is realized in order to meet the consumption needs of the household. According to the national accounts—and also to the tax definition of income in Belgium—this household will not appear in the data (or will appear as "poor" if it benefits from transfers from the government). This would not have been the case if one had adopted the income definition of Haig [13] or Simons [23] according to which income corresponds to the maximum consumption possible keeping the money value of net wealth constant. It is worth noting that capital gains do not have to be realized to influence consumption. One important reason is that they increase the borrowing capacity of a household. Empirical evidence is often inconclusive,[3]

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[1] Praet and Vuchelen [23].

[2] Kirschen, Culus, Praet, Van Regemorter [17].

[3] However, see Bhatia [4].

mainly because capital gains are concentrated among a small number of households. Their impact on aggregate consumption is consequently reduced.

A second weakness of the national accounts definition of income is that the main redistributive impact of inflation does not appear. Inflation modifies the relative positions of groups through an "income effect", a "spending effect" and a "wealth effect" (Lacroix and Chicoine [18]). The income effect results from differences in price adaptations of the various sources of income; the spending effect results from differences in price deflators, depending on the structure of expenditure of each group. The economic literature[4] agrees in attributing to the wealth effect the main redistributional impact of inflation. Socio-economic groups are more or less sensitive to inflation depending on the *structure* of their wealth and its *weight* measured in this note by its ratio to disposable income. Most studies on the wealth effect of inflation are confronted with the fact that, to the extent that inflation is expected, capital losses will be compensated by increased income flows. Foster [11] has estimated for the United Kingdom the redistributive effect of inflation on building society shares and deposits by deducting from real capital losses an amount representing the difference between the nominal interest rate and "what the real interest would have been in the absence of inflation" (page 67). Our concept of "broadened ownership income" implicitly takes into account expected inflation by adding to real capital gains corresponding flows of ownership income.

1. *Definitions*

At *current prices*, our definition of "broadened income" is similar to Simons' [24] definition of income and to the "expanded income" of McElroy [19]. The term "broadened" means that we have added capital gains to the national accounts income concept. One can thus obtain a "broadened ownership income" and a "broadened disposable income". Nominal capital gains are defined as:

$$CG_t = V_{t-1} \cdot \left(\frac{P_t}{P_{t-1}} - 1\right)$$

where V_{t-1} refers to the net wealth at the end of $t-1$ and P_t is the unit value of the net wealth.

"*Net* broadened income" is defined as the maximum consumption possible while holding the purchasing power of net wealth constant. Real capital gains are:

$$CG_t^* = \frac{V_{t-1}}{C_{t-1}} \cdot \left(\frac{P_t}{P_{t-1}} \cdot \frac{C_{t-1}}{C_t} - 1\right)$$

where C_t is an end-of-the-year consumption price index. By dividing ownership income and broadened ownership income by the net wealth at $t-1$, one gets respectively the rate of interest and the rate of return on the net wealth. This calculation can be made in nominal or in real terms.

Wealth is defined in a pragmatic way. For each flow of ownership income registered in the national accounts, we estimated a corresponding stock. The

[4]See for example Bach and Ando [2] and Babeau [1].

estimation methods to obtain a market value for the various assets were explained in Praet and Vuchelen [23]. To dwellings, land, savings and bank deposits, life insurance, bonds, government securities, shares in Belgian companies, currency and debts, we add in this note the stock of foreign shares and bonds held by Belgian households. The estimation of this increasingly important category of asset[5] was made on the basis of capitalized balance of payments income flows. The unit value of foreign shares is the Standard and Poor Corporation share price; the unit value of foreign bonds is the price index of Euro-bonds quoted on the Luxemburg stock exchange. Both series were corrected to take into account exchange rate variations. Our estimate of net wealth—and thus capital gains—now covers all ownership income items that appear in the national accounts. Unfortunately, it was still not possible to estimate other important categories of assets such as gold, jewels, antiques and professional goods.

In this note, we measure the evolution of relative positions of various *socio-economic groups*. Population and income of a number of groups have been estimated in detail in [17]. The seven groups we have selected are each representative of a certain *level* and/or *structure* of wealth. Moreover, each group can be identified in tax statistics. The groups are: *white collar workers*, including middle managers and civil servants (in 1977, they represented 25% of total households); *manual workers* (28% of the total); independent farmers (2% of the total); *liberal professions*, which include mainly doctors, dentists, pharmacists, lawyers, notaries and architects (1% of the total); *tradesmen*, including artisans (7% of the total); *old age pensioners* (35% of the total) and "capital owners" which include "*rentiers*", *top managers* and *associates* (2% of the total). This last group appears separately in tax statistics because their main source of revenue is from ownership.[6]

The respective positions of our seven groups can be schematically described as follows:

Structure of wealth / Level of wealth	Real estate			Financial assets with variable unit value		
	High	Middle	Low	High	Middle	Low
Low	Manual workers	—	—	—	—	Manual workers
Middle		White collar workers Tradesmen	Pensioners	Pensioners	White collar—workers Tradesmen	—
High	Farmers	Liberal professions	—	Liberal professions	Farmers	
Very high	—	—	Rentiers	Rentiers	—	—

We measure the evolution of relative positions in terms of disposable income and broadened disposable income with the help of "*disparity ratios*". We define disparity ratio as the ratio between the disposable income per household of a

[5] According to our estimates, foreign financial assets represented in 1977 7.9% of total net wealth as against only 2.1% in 1953.

[6] In the next pages, the group of capital-owners will be called "rentiers".

particular group and the disposable income per household of the total population. The comparison with "*broadened disparity ratios*" clearly shows the impact of capital gains on relative positions. Calculations are made in nominal and in real terms for the years 1953 to 1977. While nominal and real disparity ratios are identical, broadened nominal and real disparities may differ strongly in high inflation years.[7]

2. *Main assumptions and method*

We assume that for a certain category of asset both the interest rate and the unit value index are each the same in the seven groups. This means for example that the rate of interest on a savings deposit is the same for a manual worker as for a "rentier"; that the stock exchange price index is indifferently used for the calculation of capital gains on shares of each group. It follows that the rate of interest and of return on the total net wealth of each group depends only on the relative weights of each category of asset. Error is minimized by the fact that our number of groups is relatively small and that the number of categories of assets is important.[8] Moreover, as wealth is highly concentrated among the group of "rentiers", our assumptions do not significantly affect the results.

Regarding the method of estimation, we first estimated for the household sector capital gains and broadened ownership income for each category of asset. Main results were published in this Review [23]. The difficulty was to obtain data on wealth and asset composition in a form strictly comparable with national income data. We then estimated for each category of asset a distribution between socio-economic groups on the basis of tax statistics[9] and results of an enquiry by the National Institute of Statistics on the sources of income of various socio-economic groups. The resulting distributions, corrected to take into account differences in fraud rates among the groups,[10] were then applied to the macro-economic series. As detailed tax statistics are available only since 1969 and with a two year interval, we extrapolated the distributions for the remaining years on the basis of less detailed tax statistics. It follows that results for the beginning of the period should be taken with caution.

[7]If YD^i_t = disposable income per capita of group i, it is clear that:

$$\frac{YD^i_t}{YD^j_t} = \frac{YD^i_t/C_t}{YD^j_t/C_t}$$

(where C_t = general consumer price index, assumed to be the same for the various groups), while this is not necessarily the case for the broadened disparity ratio:

$$\frac{YD^i_t + V^i_{t-1} \cdot \left(\frac{P^i_t}{P^i_{t-1}} - 1\right)}{YD^j_t + V^j_{t-1} \cdot \left(\frac{P^j_t}{P^j_{t-1}} - 1\right)} \neq \frac{\frac{YD^i_t}{C_t} + \frac{V^i_{t-1}}{C_{t-1}} \cdot \left(\frac{P^i_t}{P^i_{t-1}} \cdot \frac{C_{t-1}}{C_t} - 1\right)}{\frac{YD^j_t}{C_t} + \frac{V^j_{t-1}}{C^j_{t-1}} \cdot \left(\frac{P^j_t}{P^j_{t-1}} \cdot \frac{C_{t-1}}{C_t} - 1\right)}$$

(where V^i_{t-1} = net wealth per capita of group i).

[8]However, in the following tables, categories of assets are grouped.

[9]Which give for each group a breakdown of the various ownership incomes.

[10]Only minor differences in fraud on ownership income appear in Frank [12].

3. *Main results*

Over the period 1953–77, capital gains represented 20.7% of the national income. In real terms, this figure is reduced to 5.7%. During the recent period 1969–77, when the average annual inflation rate increased to 7.8% (compared with 2.3% in the preceding period) real capital losses representing on average 4.3% of the national income were registered. About 90% of nominal capital gains were on real estate. This ratio fluctuates strongly year by year, however.

Results for the distribution between socio-professional groups are summarized by limiting the number of years or by giving averages.

(a) The *structure of wealth* of each group appears in table 1. Real estate represents more than three quarters of the total net wealth of white collar workers, manual workers, farmers and tradesmen. The corresponding share is much smaller for the other groups. The important weight of real estate in the wealth of lower income groups results in part from the fact that durables are not included in our definition of wealth. Financial assets with variable unit value represent about 28% of the total net wealth of the "rentiers". The percentage is 18 for pensioners and much smaller for the other groups. Debts represent about 10% of the total wealth of white collar and manual workers. The relatively low share of debts for the independent professions is explained by the fact that the national accounts do not consider liabilities of individual entrepreneurs under the household sector. Interest payments on professional debts of independent professions are consequently not covered in our study.

The structure of wealth determines the rate of interest and the rate of return of the total net wealth of each group. As interest rates do not differ strongly between groups, we limited our comments to the unit value index (table 2). Paradoxically at first sight, the price index of low income groups increased more rapidly. This is due to the weight of real estate in their total assets. At current prices, the price index of total net wealth of manual workers was multiplied by 4.7 in 25 years compared with 2.6 for rentiers. For the recent period 1969–77 differences are even more pronounced. In real terms, over the whole period, the unit value index for the total population increased at an annual rate of 1.1%. This rate ranges between 2.7% for manual workers and 0.10% for rentiers and pensioners.

In table 3 we present for each group the price index of total *financial assets* (currency excluded). It appears that low income groups registered this time lower growth rates than more wealthy groups. The 1977 price index for manual workers is at about the same level as in 1953. For rentiers, the figure is 138%. When one takes into account losses of purchasing power, it appears that the unit value of financial assets owned by manual workers fell by about 62% in 25 years compared with 47% for rentiers. It is interesting to note that divergences in the evolution of the price indexes were considerably reduced during the seventies. For the years 1953–68, the annual rate of growth of real unit values ranges between =0.12% (rentiers) and −2.26% (manual workers). For the years 1969–77, the rate is close to −7.4% for all groups.

(b) The price index of the *total* net wealth of a group may increase more rapidly than for other groups; but if the net wealth of this group is small compared

TABLE 1

STRUCUTRE OF NET WEALTH OF SOCIO-ECONOMIC GROUPS (% OF TOTAL NET WEALTH)

(Averages)	Dwellings	Land	Savings deposits and bonds	Government securities	Shares of Belgian companies	Foreign assets	Currency	Total	Debts
White collar workers									
1952–66	68.7	9.7	17.6	2.6	5.6	2.9	2.8	109.9	−9.9
1967–77	69.1	7.6	20.1	2.0	3.8	5.3	1.6	109.5	−9.5
Manual workers									
1952–66	74.5	10.5	19.0	2.2	0.2	0.1	4.0	110.5	−10.5
1967–77	80.6	8.7	18.4	0.9	0.4	0.7	1.8	111.5	−11.5
Farmers									
1952–66	15.6	64.6	11.2	3.0	2.1	0.4	4.1	101.0	−1.0
1967–77	18.6	66.8	9.6	1.5	1.4	1.8	1.4	101.1	−1.1
Liberal professions									
1952–66	52.2	22.5	17.7	2.2	5.5	1.8	4.4	106.3	−6.3
1967–77	51.8	17.0	21.1	2.3	4.6	6.0	2.3	105.1	−5.2
Tradesmen									
1952–66	75.9	10.7	10.8	2.8	3.1	0.8	3.8	107.9	−7.9
1967–77	73.1	8.0	15.2	2.4	2.6	3.2	2.4	106.9	−6.9
Rentiers									
1952–66	37.4	16.1	14.5	6.5	16.1	5.4	5.6	101.6	−1.6
1967–77	32.5	10.8	27.7	4.7	11.0	12.5	3.2	102.4	−2.4
Pensioners									
1952–66	38.6	16.6	17.7	6.5	7.0	3.5	10.9	100.8	−0.8
1967–77	37.0	12.1	25.1	5.1	5.1	8.9	7.2	100.5	−0.5
Total									
1952–66	50.1	17.6	15.3	4.5	8.6	3.1	5.3	104.5	−4.5
1967–77	48.3	13.1	22.5	3.4	5.8	7.7	3.5	104.3	−4.3

TABLE 2

UNIT VALUE INDEX OF TOTAL NET WEALTH
(1953 = 100)

	White Collar Workers	Manual Workers	Farmers	Liberal Professions	Tradesmen	Rentiers	Pensioners	Total
			(At current prices)					
1953	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1960	136.6	134.4	146.4	137.7	138.2	136.4	129.9	136.4
1965	185.6	184.8	209.1	186.0	180.2	174.0	162.8	180.4
1969	208.7	210.2	231.0	206.1	204.3	187.0	175.3	198.2
1974	292.7	315.5	261.0	265.1	293.9	214.7	207.6	249.3
1977	417.3	473.6	350.8	359.0	421.9	262.3	260.9	329.2
Annual rate of growth (%)								
1953–69	4.71	4.75	5.37	4.62	4.57	3.99	3.57	4.37
1969–77	9.05	10.69	5.36	7.18	9.49	4.32	5.10	6.55
1953–77	6.13	6.69	5.37	5.47	6.18	4.10	1.08	5.09
			(At constant prices)					
1953	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1960	125.3	122.9	132.7	125.7	126.4	124.5	118.7	124.5
1965	148.0	146.9	164.7	147.6	152.2	138.2	129.4	143.1
1969	145.7	146.3	159.3	143.3	151.2	130.2	122.1	137.9
1974	148.1	160.1	126.6	132.3	158.0	106.1	102.9	124.3
1977	166.6	189.7	134.4	141.4	179.1	102.4	102.1	129.6
Annual rate of growth (%)								
1953–69	2.38	2.41	2.95	2.27	2.62	1.66	1.26	2.03
1969–77	1.69	3.30	−2.10	−0.17	2.14	−2.96	−2.21	−0.77
1953–77	2.15	2.70	1.24	1.45	2.46	0.10	0.10	1.09

TABLE 3

UNIT VALUE INDEX OF TOTAL FINANCIAL ASETS[a]

(1953 = 100)

	White Collar Workers	Manual Workers	Farmers	Liberal Professions	Tradesmen	Rentiers	Pensioners	Total
				(At current prices)				
1953	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1960	112.5	100.1	106.8	113.4	111.3	128.0	114.7	119.7
1965	119.0	100.0	108.8	119.3	115.4	140.3	121.0	128.0
1969	119.0	100.0	108.6	119.0	115.1	139.6	121.0	127.6
1974	115.1	99.1	105.5	114.7	111.8	133.5	115.8	122.7
1977	117.5	99.6	107.2	117.2	113.9	137.5	118.8	125.8
Annual rate of growth (%)								
1953–69	1.09	—	0.52	1.09	0.88	2.11	1.20	1.53
1969–77	−0.16	−0.05	−0.16	−0.19	−0.13	−0.19	−0.23	−0.18
1953–77	0.67	−0.02	0.29	0.66	0.57	1.34	0.72	0.96
				(At constant prices)				
1953	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
1960	105.3	91.2	97.6	103.5	101.7	117.8	105.4	109.9
1965	96.9	79.1	86.5	94.7	91.7	112.4	96.8	102.2
1969	84.9	69.4	75.7	82.9	80.2	98.1	84.9	89.4
1974	56.8	47.5	50.9	55.3	54.0	65.1	56.3	59.6
1977	45.8	37.8	40.9	44.6	43.6	53.0	45.6	48.3
(*Annual rate of growth* (%)								
1953–69	−1.02	−2.26	−1.72	−1.17	−1.37	−0.12	−1.02	−0.70
1969–77	−7.42	−7.31	−7.41	−7.46	−7.34	−7.41	−7.48	−7.41
1953–77	−3.20	−3.97	−3.66	−3.31	−3.40	−2.61	−3.22	−2.99

[a]Currency excluded.

to its disposable income, capital gains will only have marginal consequences: disposable income and broadened disposable income will not be very different. Table 4 gives average ratios of total net wealth to disposable income. Important differences between groups appear. Net wealth represented on average only 1.4 times the disposable income of manual workers compared with 9.2 for liberal professions. The very high ratio for rentiers is of course explained by the definition of this group.

TABLE 4

RATIO OF TOTAL NET WEALTH TO DISPOSABLE INCOME

Average	1953–68	1969–77	1953–77
White collar workers	3.3	2.8	3.1
Manual workers	1.4	1.3	1.4
Farmers	5.6	6.1	5.8
Liberal professions	10.3	7.2	9.2
Tradesmen	3.6	3.9	3.7
Rentiers	34.2	30.9	33.0
Pensioners	5.3	6.0	5.6
Total	5.0	4.6	4.8

Ratios indicate important wealth disparities. On average over the period 1953–77, rentiers who represented 2.4% of the households owned 33.6% of the aggregated net wealth. For manual workers percentages are respectively 34.5 and 8.6.[11] Trends are difficult to interpret because most of the groups have been subjected to important demographic and economic changes.[12] Table 5 gives for 1977 the respective distributions in percent of total of wealth, disposable income and broadened disposable income.

TABLE 5

DISTRIBUTION OF WEALTH, DISPOSABLE INCOME AND BROADENED DISPOSABLE INCOME BY SOCIO-ECONOMIC GROUP, 1977 (IN % OF TOTAL)

	White Collar Workers	Manual Workers	Farmers	Liberal Professions	Tradesmen	Rentiers	Pensioners
Share of total households	24.8	27.9	2.1	1.1	6.7	1.5	35.9
Share of total net wealth	20.4	8.3	3.6	4.7	7.1	26.4	29.5
Share of total disposable income	33.2	26.0	2.1	3.1	8.6	4.0	23.0
Share of total broadened disposable income							
Nominal	32.2	23.8	2.7	3.6	9.0	5.9	22.8
Real	34.7	27.0	2.5	3.3	9.3	1.5	21.7

[11]Wealth disparities are more pronounced for financial assets: rentiers owned on average 46.1% of the total compared with 5.3% for manual workers.

[12]It appears for example that farmers improved their relative wealth position. This is mainly explained by the fact that marginal farmers have left the profession.

(c) The unit value of total net wealth and the weight of wealth to disposable income determine the impact of capital gains on relative positions. Table 6 gives respectively the disparity ratios and the broadened disparity ratios in nominal and in real terms. At *current prices*, the main conclusion is that the adoption of a broadened definition of disposable income *increases* strongly disparities between socio-economic groups. Disparity ratios range on average between 80% for manual workers and 275% for liberal professions. Broadened disparity ratios fall to 74% for manual workers and increase to 333% for liberal professions. However, when one takes into account losses in purchasing power, conclusions differ according to the period analyzed.

TABLE 6

DISPARITY RATIOS AND BROADENED DISPARITY RATIOS (IN PERCENT)

	1953–68			1969–77			1953–77		
	Disparities	Broadened disparities Nominal	Broadened disparities Real	Disparities	Broadened disparities Nominal	Broadened disparities Real	Disparities	Broadened disparities Nominal	Broadened disparities Real
White collar workers	116.2	112.9	113.5	117.6	117.8	128.2	116.8	114.6	118.8
Manual workers	78.9	71.0	73.7	83.0	78.0	91.5	80.4	73.5	80.1
Farmers	152.4	167.1	161.2	154.0	157.9	136.3	153.0	163.8	152.2
Liberal professions	265.9	331.2	303.4	290.2	335.1	286.6	274.7	332.6	297.3
Tradesmen	196.4	195.1	194.5	151.8	165.2	169.7	180.3	184.3	185.6
Rentiers	172.7	341.8	251.1	217.3	352.9	−6.5	188.8	345.8	158.4
Pensioners	58.9	58.6	56.6	70.9	72.2	64.5	63.2	63.5	59.5

For *the years 1953–68* it appears that the distribution of broadened disposable income is more unequal than the distribution of disposable income. On the contrary, for *the years 1969–77* when inflation was high, the adoption of a broadened definition of income *reduces* disparities, with the important exception of the pensioners. For this group, the disparity ratio, which is the lowest of our seven groups, falls by about 10% when one takes into account real capital gains. Such results present a great number of similarities with Minarik's recent paper [20] on income distribution during inflation in the US.

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