Estimation of Relative Shares of Labour in Postwar U. K.

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I. Introduction

One of the focal points in estimating factor shares in the whole economy is how to impute Income from Self-employment (IS)[1] between wages and profits, for IS is a mixture of labour income and profit income.

This paper presents two kinds of estimates of relative income shares according to the 'labour' and 'asset' bases of impuation during the period 1950-82 in the U. K., and interprets the results. We had two kinds of difficulties in imputation, one of which was that parts of the necessary data did not exist. The other difficulty was that we had to make certain more or less arbitrary assumptions.

II. Estimation

Est. 1: The Labour Basis

The Labour Share (LS) is calculated according to the formula:

$$\frac{\text{IE (Income from Employment)} + \text{LIS (Labour Income from Self-employment)}}{\text{GNP}}$$

and the Property Share (PS) is given as $1-\text{LS}$.[2]

In imputing LIS, we took into account the following points: (i) The proportion of men in the Number of Self-employed (NS) was considerably greater than that in the Number of Employees (NE).[3] (ii) LIS is the reward for their manual and managerial labour.

Thus our final LIS estimate[4] was given by the formula:

$$\text{LIS} = (\text{IE} \div \text{NEW}) \times \text{NSW} \times \text{ERNA}$$

where NEW (NE Weighted) = NE Men + NE Women × ERWM (Earnings Ratio of Women to Men),

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1) Main abbreviations are listed in Appendix A.

2) A few reasons for the broad definition are that: (i) we aim at analysing the whole economy and, if possible in the final stage, at making a comparison with an analysis of the Japanese economy by the present author [14]; (ii) an estimation of depreciation, in an economy with high technical progress and rapid inflation, is difficult, which means that an accurate division of gross profits between depreciation and net profit is very hard to make.

3) See Table 3 in Appendix E.

4) We shall show other estimates in Appendix B and explain some reasons for the present formula. See Appendix C for data sources.

NSW (NS Weighted)=NS Men+NS Women×ERWM, and

ERNA=(average) Earnings Ratio of Non-manual Men to All Men.

It was based on the assumption that average labour income of the self-employed was equal to that of non-manual workers (both weighted). In the case of that LIS calculated by the formula exceeded IS, however, we assumed LIS=IS. LIS was greater than IS in three years 1980-82.

We had two LS estimates (Table 1):

Est. 1M=(IE+LIS on the labour basis)÷GNPM (at Market Prices)

and

Est. 1F=(IE+LIS on the labour basis)÷GNPF (at Factor Cost).

Est. 2: The Asset Basis

LS was calculated according to the same formula as for the labour basis, and we had an estimate (Table 1):

Est. 2M=(IE+LIS on the asset basis)÷GNPM.

LIS here, however, was obtained by

Table 1 LS and Degrees of Contribution by Factors to LS Fluctuations

Year	Labour Basis (%)		Asset Basis(%)	Est.2M − Est.1M	Annual Percentage Changes[1]		
	Est.1M	Est.1F	Est.2M		$\hat{LS}$ (Est. 1M)	$\hat{WAI}-\hat{GNPD}$	$\hat{APL}$
1950	63.71	72.22	65.70	1.98			
1951	63.87	72.61	64.97	1.10	0.25	0.90	0.65
1952	63.34	71.67	64.72	1.39	-0.84	0.04	0.88
1953	62.21	70.33	63.50	1.29	-1.78	1.91	3.69
1954	62.78	70.84	63.67	0.89	0.92	4.26	3.34
1955	63.79	72.29	64.60	0.80	1.61	4.29	2.67
1956	64.14	72.57	64.92	0.78	0.54	1.90	1.36
1957	64.17	72.41	64.78	0.61	0.04	2.35	2.31
1958	63.93	72.08	64.23	0.30	-0.37	0.86	1.24
1959	63.57	71.80	63.90	0.34	-0.56	4.30	4.86
1960	64.45	72.52	64.66	0.20	1.40	5.41	4.02
1961	65.19	73.21	65.57	0.38	1.14	4.24	3.10
1962	65.50	73.80	65.76	0.26	0.43	1.29	0.81
1963	64.54	72.66	64.73	0.19	-1.46	3.02	4.48
1964	64.08	72.51	64.18	0.10	-0.72	3.57	4.28
1965	64.24	73.08	64.65	0.41	0.25	2.35	2.10
1966	64.80	74.15	65.30	0.50	0.87	2.43	1.57
1967	64.15	73.52	64.33	0.18	-1.00	3.24	4.24
1968	63.49	73.30	63.60	0.11	-1.03	3.84	4.87
1969	63.61	74.53	63.52	-0.09	0.19	2.29	2.11
1970	65.23	76.30	64.76	-0.47	2.56	5.32	2.76
1971	64.34	74.31	63.83	-0.50	-1.38	2.16	3.54
1972	65.69	75.16	65.73	0.04	2.10	4.34	2.24
1973	65.18	73.75	65.95	0.77	-0.77	5.80	6.57
1974	68.27	75.81	68.60	0.33	4.74	2.04	-2.70
1975	71.41	79.20	70.88	-0.53	4.60	3.53	-1.08
1976	67.72	75.43	67.60	-0.11	-5.17	-2.28	2.90
1977	65.63	74.19	65.19	-0.44	-3.08	-3.20	-0.12
1978	64.99	73.47	64.38	-0.61	-0.98	2.84	3.82
1979	64.79	74.43	64.05	-0.74	-0.31	0.78	1.09
1980	66.35	76.80	65.32	-1.03	2.41	-0.02	-2.42
1981	64.43	75.37	63.54	-0.94	-2.82	0.00	2.83
1982	62.66	73.80	61.61	-1.04	-2.83	1.17	4.00

1 Annual Percentage changes in LS (Est. 1M), WAI and GNPD are calculated from the respective values, but those in APL are given as

$(\hat{WAI}-\hat{GNPD})-\hat{LS}$ (See Table 3 (2) for WAI).

$$LIS = GIS - PIS$$

where GIS=Gross Income from Self-employment, and

PIS=Property Income from Self-employment.

Supposing that the profit rate of the Net Capital Stock (NCS) of unincorporated enterprises was equal to that of incorporated enterprises excluding public corporations, we obtained PIS by

$$PIS = GTP \times NCSR$$

where GTP=Gross Trading Profit of Companies, and

NCSR=NCS Ratio of Unincorporated to Incorporated Enterprises (excluding Public Corporations).

In calcuating NCSR, we assumed that Dwellings (D) in NCS were not a profit-earning asset, and deducted D from all assets concerned respectively.

III. Results and Their Validity

Results

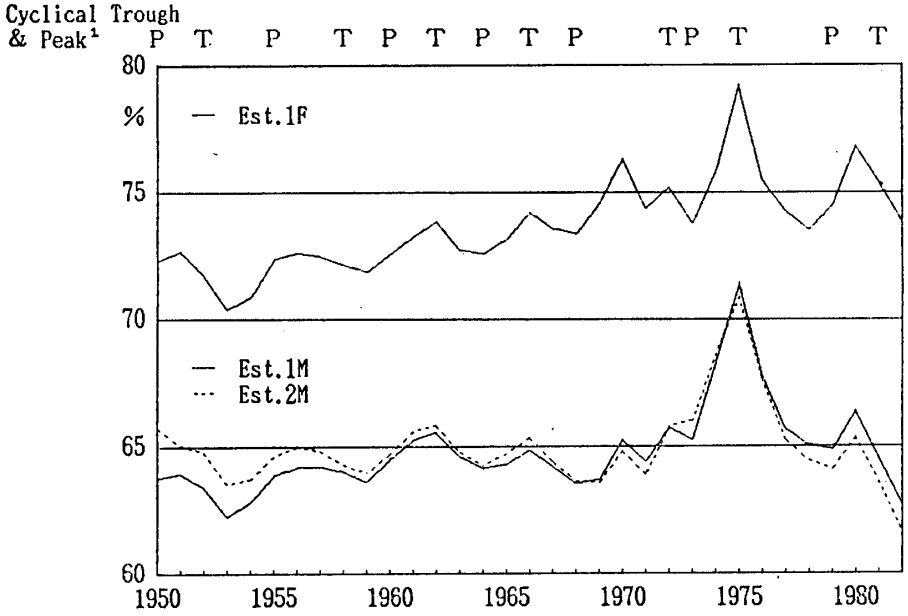
Table 1 shows our LS estimates and Figure 1 is their reproduction. We observe that:

(1) There is a good fit for 1954-79 between Ests. 1M and 2M, and the differences are within one percentage point. The two Ests. are almost parallel except for 1951 and 1973. Est. 1F, however, is higher than Est. 1M by 8-11 percentage points.

(2) An increasing trend is observed until the early 1970s in Ests. 1M & 1F, but less clearly in Est. 2M. Ests. 1M & 1F move in opposite directions in 1957 and 1979.

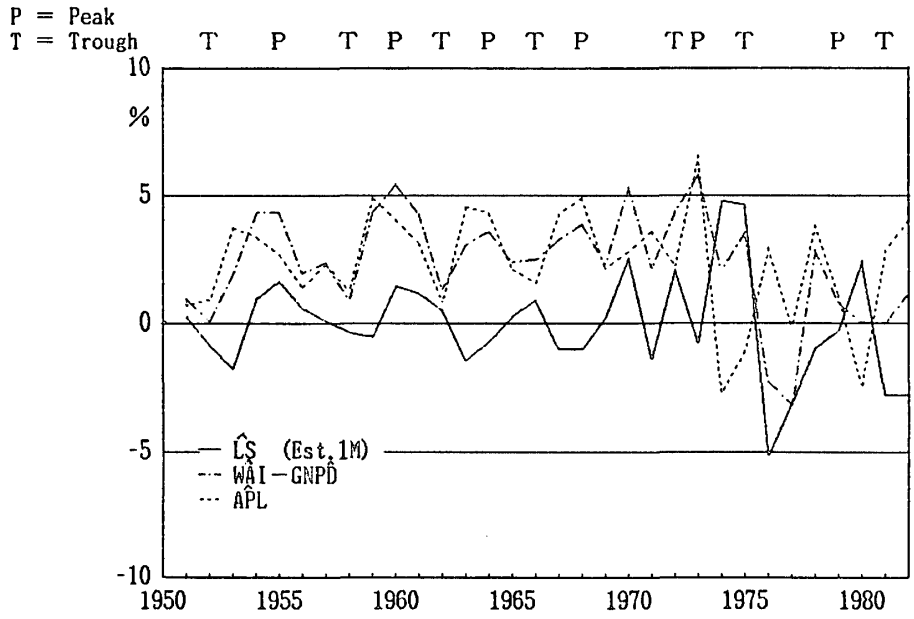
(3) Counter-cyclical movements are observed during the period 1961-80, but for 1951-60 and

Figure 1 Labour Shares in Postwar U. K., 1950-1982



1 Cyclical indicators for 1950-56 are taken from [16], T 5.1 (p. 23), and for 1957-82 from [2] May 1976, p. 71 and Feb. 1983, p. 69. Adjusted for their annual growth rates of GNP, trough years shift from 1963 and 1967 to 1962 and 1966 respectively, and peak years from 1951 and 1969 to 1950 and 1968. T=Cyclical Trough, and P=Cyclical Peak.

Figure 2 Degrees of Contribution by Factors to LS Fluctuations



1981-82 the movements are somewhat pro-cyclical.[5] A further observation on these fluctuations will be made later in this section.

Interpretation

(1) Except for 1973 the differences between Ests. 1M & 2M for 1957-78 were within 0.61 percentage point. During that period, the two Ests. are so close that we could say that the degree of competition in both labour and capital markets was almost the same.

(2) In the years that the solid line (Est. 1M) was under the broken line (Est. 2M), unincorporated enterprises in Est. 1M earned higher rates of profit than those of incorporated ones (especially for 1950-56 and 1973), and *vice versa* (for 1979-1982). This conclusion is supported by their high or low Income Ratio of Self-employed to Employees (IRSE) in these years: 1.95-1.58 for 1950-56, 1.49 for 1973, and 1.25-1.01 for 1979-82.[6] IRSE=(IS/NSW)÷(IE/NEW).

Possible reasons for these greater differences are: (i) for 1950-56, we used our estimate of NCS by sector for 1950-54 (and partly for 1955-59) and of ERNA for 1950-58. (ii) For 1973, the oil price shock probably produced a disproportionate effect between the two groups of enterprises. (iii) For 1979-82, our imputation in Est. 1M might cause overestimation of LIS especially in years such as 1980-82 that had a greater increase in NS (14.3% for the three years).

(3) It seems to be hard to apply the same principle in imputation through such a long period (33 years). However, there are reasons to believe that our present estimate based on

5) Our observations in relation to trade cycles have two kinds of limitations. First, our LS estimates are made in terms of the broadest category (not confined to manufacturing industries), and based on the labour basis. Secondly, troughs and peaks are taken from cyclical indicators in terms of quarters, and the years to which they belong are respectively regarded as trough and peak years (with some revisions).

6) See Table 3 (2) in Appendix E.

the labour basis might be more reliable than that based on the asset basis.

First, it is difficult to assume that two broad groups of capital gained the same profit rate, taking into account risk and tax elements (the limitation of liability and the tax regime between two groups are different).[7] Secondly, there are greater possibilities of error in NCSR than ERNA; NCS by sector was extended back in terms of £000M in such a way that marginal errors in the first couple of years become larger in the later years.[8]

(4) Est. 1F was greater than Est. 1M by 8-11 percentage points. Needless to say, the differences are a result of whether or not the Est. includes Taxes on Expenditure minus Subsidies. The opposite movements between Ests. 1M & 1F in 1957 and 1979 are also caused by the same factor.[9]

Further Observation

We calculate degrees of contribution by factors to LS fluctuations to see a relationship between LS fluctuations and trade cycles. We here take up LS in Est. 1M, taking into account our above explanation.

LS in Est. 1 M can be shown by

$$LS = WAI / GNPM = WAI / (GNPD \times APL)$$

where WAI (Weighted Average Income from Employed Labour Forces)

$= (IE + LIS \text{ in Est. } 1) / (NEW + NSW)$,

GNPD = GNP Deflator, and

APL = Average Productivity of Labour.

Writing this in the growth rate formula, we have

$$\hat{LS} = (\hat{WAI} - \hat{GNPD}) - \hat{APL}$$

where $\hat{LS} = \dot{LS}/LS$ and $\dot{LS} = dLS/dt$.

By using this formula, we calculate the degrees of contribution by factors to LS fluctuations. They are shown in Table 1 and Figure 2 is their reproduction.

Result: We observe that LS decreases in every first expansion year after the trough and increases in every first contraction year after the peak.

Explanation: The decrease in LS in the first year of expansion results from the rapid growth of productivity (which is almost at its cyclical peak rate of growth), which exceeds the rate of growth in wages. Conversely, the increase in LS in the first year of contraction is due to a rate of wage growth faster than that in productivity.

It is possible to explain this almost symmetrical movement as a combined effect of 'wage lag' and changes in 'overhead labour'[10]: (i) Wages lag behind changes in national income; the wage increase is not fast enough to keep up with rapid productivity growth in early expansion and *vice versa* in early contraction. (ii) Productivity (output per worker) is a

7) Feldstein and Summers [12] (pp. 212-3) discusses these points.

8) See Appendix C.

9) Precise mathematical conditions are shown in Appendix D.

10) See Hahnell and Sherman [13] for a more detailed explanation of 'wage lag' and 'overhead labour' theses. Since there are two limitations as we mentioned in footnote 5, we can not make a close comparison between our estimate and their data for the postwar U.S. economy. It is, however, possible to say that, both in early expansion and in early contraction, the pattern of the LS movements is similar between ours and theirs, but it is dissimilar in late expansion and in late contraction.

positive function of capacity utilization in the short run. In early contraction, employers can not fire a proportional number of workers in the face of falling production, because the need for overhead workers does not decline directly as output falls, and *vice versa* in early expansion. This plays an important role in explaining why productivity rises rapidly in early expansion and falls rapidly in early contraction. Taking into consideration technical progress, however, productivity does not necessarily fall, but its growth rate does decline.

IV. Conclusions

Let us summarize our results and their interpretations:

(1) There was a good fit for 1954-79 between Ests. 1M & 2M, and their differences were less than ± one percentage point. The Ests. are so close that we could say that both labour and capital markets had almost the same degree of competition especially for the better fit period for 1957-78 (except for 1973).

(2) On the other hand, the existence of relatively poor fit periods suggested that it was hard to apply the same principle of imputation through such a long period as 33 years. A few reasons which might cause those poor fits were presented.

(3) It is difficult to assess the reliability of the two estimates. Relatively speaking, however, Est. 1M (1F) based on the labour basis might be more reliable than Est. 2M based on the asset basis, taking into consideration that: (i) The risk premium and tax regime between unincorporated and incorporated enterprises are different; (ii) There might be greater possibilities of error in NCSR estimation than those in ERNA.

(4) An increasing trend of LS was observed until the early 1970s in Est. 1M (1F), but it was not clear in Est. 2M. We could see counter-cyclical movements of LS in 1961-80, but for 1951-60 and 1981-82, the movements were rather procylical. A symmetrical movement between in the first contraction and in the first expansion years was observed, and explained as a combined effect of 'wage lag' and changes in 'overhead labour'.

Data and References

Data:

[1] CSO (Central Statistical Office), *Annual Abstract of Statistics 1984 Ed.*, No. 120. LONDON: HMSO (Her Majesty's Stationery Office), 1984.

[2] CSO, *Economic Trends*, May 1976 and Feb. 1983. LONDON: HMSO.

[3] CSO, *Economic Trends: Annual Supplement 1983-4 Eds.* LONDON: HMSO.

[4] CSO, *National Income and Expenditure 1960-83 Eds.* LONDON: HMSO.

[5] DE (Department of Employment), *British Labour Staistics: Year Book 1976.* LONDON: HMSO, 1978.

[6] DE, *Department of Employment Gazette*, June 1974-Dec. 1979; *Employment Gazette*, Jan. 1980-Aug. 1984. LONDON: HMSO.

[7] DE, *Employment Gazette: Historical Supplement No. 1*, Aug. 1984. LONDON: HMSO.

[8] Department of Employment and Productivity, *British Labour Statistics: Historical Abstract 1886-1968.* LONDON: HMSO, 1971.

[9] Feinstein, C. H., *Statistical Tables of National Income, Expenditure and Output of the U. K. 1885-1965*. Cambridge: Cambridge University Press, 1972.

References:

[10] CSO, *National Accounts Statistics: Sources and Methods*. LONDON: HMSO, 1968.

[11] Dow, J. C. R., *The Management of the British Economy: 1945-60*. Cambridge: Cambridge University Press, 1968.

[12] Feldstein, M. and L. Summers, "Is the Rate of Profit Falling?" *Brookings Paper on Economic Activity*, 1 (1977), 211-228.

[13] Hahnell, Robin and H. J. Sherman, "Income Distribution and the Business Cycle: The Conflicting Hypotheses," *Journal of Economic Issues*, XVI (March 1982), 49-73.

[14] Iyoda, M., "The Fluctuation of Relative Income Shares and the Real Wage Rate in Postwar Japan," *International Review of Economics and Business* (Bocconi University) XXVII (Jul.-Aug. 1980), 665-682.

[15] King, J. and P. Regan, *Relative Income Shares*. LONDON: Macmillan, 1976.

[16] O'Dea, D. J., *Cyclical Indicators for the Postwar British Economy*, NIESR Occasional Papers XXVIII. LONDON: Macmillan, 1975.

Appendix

A Main Abbreviations

GNPM (F)=GNP at Market Prices (at Factor Cost)
IE=Income from Employment
IS=Income from Self-employment (Net)
GIS=Gross Income from Self-employment
GTP=Gross Trading Profit of Companies
GTS=Gross Trading Surplus of Public Corporations
LIS=Labour Income from Self-employment
PIS=Property Income from Self-employment
ERNA=Earnings Ratio of Non-manual Men to All Men (on full-time base in manufacturing industries)
ERNM=Earnings Ratio of Non-manual Men to Manual Men (on full-time base in manufacturing industries)
ERWM=Earnings Ratio of Manual Women to Manual Men (on full-time base in all industries covered)
IRSE=Income Ratio of Self-employed to Employees (based on the weighted average)
NCS=Net Capital Stock
NCSR=NCS Ratio of Unincorporated to Incorporated Enterprises excluding Public Corporations
NE (NEW)=Number of Employees including Forces (NE Weighted according to ERWM)
NS (NSW)=Number of Self-employed (NS Weighted according to ERWM)
GNPD=GNP Deflator

B LIS Estimates

We tried to make eight LIS estimates as follows:

$$LISA = NS \times (IE/NE) \qquad LISC = NSW \times (IE/NEW)$$
$$LISA\text{-}1 = LISA \times ERNA \qquad LISC\text{-}1 = LISC \times ERNA$$
$$LISA\text{-}2 = LISA \times ERNM \qquad LISC\text{-}2 = LISC \times ERNM$$
$$LISB = GIS - GTP \times NCSR$$
$$LISB\text{-}1 = GIS - (GTP + GTS) \times NCSR^{*} \text{ (incl. Public Corporations)}$$

LISB and B-1 were estimated on the asset basis, and the others were all on the labour basis. LISA and LISC were obtained by rather simple methods of imputation. The differences between LISA & LISC, and LISB were large, and those between LISA & LISC, and LISB-1 were far larger. Then, the Profit Rate of the Unincorporated Enterprises (PRU) in LISA & LISC became extraordinary higher than that in LISB which was assumed to be equal to the Profit Rate of the Incorporated Enterprises (PRI, excluding Public Corporations).

Comparing the remained four with LISB, LISC-1 & C-2 were closer to LISB than LISA-1 & A-2 respectively. LS calculated according to (IE+LISC-2)/GNPM was slightly greater than that according to (IE+LISC-1)/GNPM, with the differences being between 0.32 and 0.52 percentage point except for 1971 and 1980-82, and closer to LS according to (IE+LISB)/GNPM. Judging from IRSE and rather steady NCSR, however, the PRU in LISC-2 seemed to be too low. There were six years in which the PRU in LISC-2 was smaller than the depreciation (1970-71, 75 and 80-82). The profit ratios (PRU in LISC-2/PRI) in percentage terms were below 100 since 1957 (except for 1965-66 and 1973). The same ratios in LISC-1 were higher than those in LISC-2 and were below 100 in 1969-71 and since 1975. Finally we took LISC-1 and LISB, which are our LISs in Est. 1 and in Est. 2 respectively.

C Data Sources

We list data sources in Table 2. Numbers 1-7 in the Formula column show that the data were calculated according to the respective formulae shown below. * means that the data were estimated or adjusted through those periods in the way explained below.

Formulae:

1 $$\frac{\text{Average Weekly Earnings (AWE) of All Non-manual Males}}{(\text{AWE of Full-time Manual Men} \times \text{Their Number} + \text{AWE of All Non-manual Males} \times \text{Their Number}) \div \text{Number of Full-time Manual Men and All Non-manual Males}}$$

(at October each year in U. K. manufacturing industries).

2 $$\frac{\text{AWE of Full-time Non-manual Men}}{\text{AWE of All Full-time Men}}$$

(at April figures of 21 years and over, excluding those whose pay was affected by absence, in Great Britain manufacturing industries).

3 $$\frac{\text{AWE of All Non-manual Males}}{\text{AWE of Full-time Manual Men}}$$

(at October each year in U. K. manufacturing industries).

4 $$\frac{\text{AWE of Full-time Non-manual Men}}{\text{AWE of Full-time Manual Men}}$$

(the same conditions in above 2).

5 $$\frac{\text{AWE of Manual Women (18 years and over, working full-time)}}{\text{AWE of Manual Men (21 years and over, working full-time)}}$$

(at October each year in U. K. all industries covered).

6 $\frac{\text{(All Assets}-\text{Dwellings) in Personal Sector}}{\text{(All Assets}-\text{Dwellings) in Companies}}$

7 Annual Figures=(Q1+Q2+Q3+Q4)÷4

Estimated or Adjusted Data:

(1) GIS and IS

GIS for 1950-60 was obtained by

Other Income in [3] 1984 (p. 38)−Other Income in [3] 1983 (p. 38)+IS in [8] (T86).

Neither IS for 1950-63 nor corresponding IS to our GIS for 1964-71 could be found in [4]. First, we calculated IS・GIS ratio and its 5-year average for 1964-68 by [4] 1964-74, T23. Then we obtained IS for 1950-63 according to (IS・GIS Average Ratio)×GIS (each year), and for 1964-71 according to (IS・GIS Annual Ratio)×GIS (each year).

Table 2 Data Sources

CATEGORY	DATA	YEAR	SOURCE	FORMULA
National Income	GNPM, GNPF, IE, GTP&GTS	1950-82	[3] 1984, P.38	—
	GIS	1950-60 1961-82	 [4] 1983, T1.2	* —
	IS	1950-71 1972-82	 [4] 1983, T4.3	* —
	GNPD	1950-82		*
Earning Ratio	ERNA	1950-58 1959-70 1971-82	 [8], T55 & [5] Y1970, T21 [6] Jun. 1974 & Dec. 1979, T126 & Oct. 1982, T5.6	* 1 2
	ERNM	1950-58 1959-70 1971-82	 Same as above in ERNA Same as above in ERNA	* 3 4
	ERWM	1950-66 1967-74 1975-82	[8], T41 and T42 [5] Y1972 & Y1976, T22 [6] Oct. 1982 & May 1984, T5.4	5 5 5
Net Capital Stock Ratio	NCSR	1950-54 1955-59 1960-63 1964-69 1970-82	 [4] 1972, T63 [4] 1964-74, T72 [4] 1981, T11.11 and 1982 & 1983, T11.7	* * 6 6 6
Employed Labour Force[1]	NEE, NEEM, NF & NS	1950-58 1959-74 1975-82	[8], T118 and T119 [5] Y1976, T55 [7], T1.1	7 7 7
	NFM	1950-58 1959-76 1977-82	[8], T118 and T119 [5] Y1976, T55	7 7 *
	NSM	1950-58 1959-70 1971-82	[8], T118 and T119 [5] Y1976, T55	7 7 *

1 NEE (NEEM)=Number of Employees in Employent (NEE Men)
NF (NFM)=Number of Forces (NF Men)
NS (NSM)=Number of Self-employed (NS Men)

(2) GNPD

GNPD for 1961-82 was obtained by dividing GNP at current prices by the corresponding GNP at 1980 prices from [4] 1983, T1.1 & T2.1; for 1950-60 from [3] 1984, p. 38 and our below estimates of GNP at 1980 prices.

We got estimates of GNP at 1980 prices for 1950-60 by adding Net Property Income from abroad (NPI) to the corresponding GDP at 1980 prices from [3] 1984, p. 13. NPI at 1980 prices for 1950 was calculated according to

NPI at 1963 prices (each year) × 5-year average of (NPI at 1980 prices/NPI at 1963 prices) for 1961-65

from [4] 1983, T2.1 and [4] 1972, T14; for 1951-55 in the same way by using NPI at 1980 prices and at 1970 prices ([4] 1973, T14); and for 1956-60 by using NPI at 1980 prices and at 1975 prices ([4] 1967-77, T2.1).

(3) ERNA

ERNA for 1950-58 was calculated in a rather complicated way. First, we calculated ERNA in the Blue Book for 1950-51 from [4] 1960, T17; for 1952-58 from [4] 1963, T17; and for 1959-69 from [4] 1970, T18, according to the following formula:

$$\frac{\text{Salaries} \div \text{Estimated Number of Salary Earners}}{(\text{Wages}+\text{Salaries}) \div \text{Estimated Number of Wage \& Salary Earners}}$$

(in U. K. manufacturing industries).

Comparing ERNA calculated by [8] with that by [4] during the period for 1959-69, the latter was greater than the former by 10-15 percentage points. This was caused by the difference in data coverage, as the latter was based on all employees but the fromer on only male employees of 21 years and over (both in manufacturing industries).

Then, we got a 5-year-average of (ERNA by [8] /ERNA by [4]) for 1959-63, obtaining ERNA for 1950-58 according to the 5-year-average × ERNA by [4] (each year).

(4) ERNM

ERNM for 1950-58 was extended by using the same tables (sources) and procedure as in ERNA. First, we calculated ERNM by [4] according to

$$\frac{\text{Salaries} \div \text{Estimated Number of Salary Earners}}{\text{Wages} \div \text{Estimated Number of Wage Earners}}$$

(in U. K. manufacturing industries). Then, we obtained ERNM for 1950-58 according to

ERNM by [4] (each year) × 5-year-average (1959-63) of (ERNM by [8] / ERNM by [4]).

(5) NCSR

We had NCS in total, but neither NCS by sector for 1950-54 nor D by sector for 1950-59 did exist.

NCS in Personal Sector (NCSP, including D) for 1950-54 was calculated, in the way which dated back year by year from 1955, according to

$$NCSP_{t-1} = (NCSP_t - FP_t) \div ((NCS_t - FT_t)/NCS_{t-1})$$

where FP = Net Fixed Capital Formation (F) in Personal Sector,

FT = F in Total,

and NCS in Companies (NCSC) in the same way.

Dwellings in Personal Sector (DP) for 1950-59 were calculated in the above way from 1960, according to

$$DP_{t-1}=(DP_t-FDP_t)\div((NCS_t-FT_t)/NCS_{t-1})$$

where FDP=F in DP,

and Dwellings in Companies and Public Corporations (DCP) in the same way. Dwellings in companies for 1950-59 were calculated according to

Estimated DCP (each year)×5-year-average of Dwellings Ratio of Companies to Companies & Public Corporations for 1960-64.

Thus we got NCSR for 1950-59 by using Formula 6 above.

(All figures except for F by sector are at the end value of each time period. Sources: NCS for 1950-54 from [8], Table 46, NCS by sector for 1955-60 from [4] 1966, T66, and D by sector for 1960-64 from [4] 1972, T63; F by sector for 1950-54 and 1955-60 from [4] 1960, T56 and [4] 1966, T65 respectively.)

(6) NFM

NFM for 1977-82 was taken from [1] 1984, T6.1 & T7.4, with a slight adjustment in relation to NF (annual average). For NFM in [1] 1984, T6.1 (at mid-June figure) and T7.4 (at 1 April figure) are not annual averages.

(7) NSM

NSM for 1971-82 was estimated according to

NS (calcuated from [7], T1.1)×NSM・NS Ratio (obtained from [1] 1984, T6.1).

The figures of NS for 1971-82 are annual averages, but those of NSM・NS ratio are based on mid-June.

D Ests. 1M and 1F

We defined Ests. 1M and 1F as

$$\text{Est. } 1M=W/GNPM\ (=W/(GNPF+T))$$

and

$$\text{Est. } 1F=W/GNPF$$

where W=IE+LIS, and

T=Taxes on Expenditure less Subsidies.

From these, we have

$$\text{Est. } 1M=(\text{Est. } 1F\times GNPF)/(GNPF+T).$$

We obtain its growth rate form:

$$\text{Est. } 1\hat{M}=\text{Est. } 1\hat{F}-T(\hat{T}-GNP\hat{F})/(GNPF+T).$$

Thus, we have

$$\text{Est. } 1\hat{M}\gtreqless 0 \text{ as Est. } 1\hat{F}\gtreqless T(\hat{T}-GNP\hat{F})(GNPF+T).$$

In 1979, Est. $1\hat{F}$ was positive, but Est. $1\hat{F}<T(\hat{T}-GNP\hat{F})/(GNPF+T)$, then Est. $1\hat{M}$ became negative. In 1957, Est. $1\hat{F}$ was negative but Est. $1\hat{M}$ was positive because of Est. $1\hat{F}>T(\hat{T}-GNP\hat{F})/(GNPF+T)$.

E Related Estimates

Table 3 shows related estimates.

The Labour Share in Unincorporated Enterprises (the self-employed sector) (LSU) was

calculated according to the formula:

LSU=(IEU+LIS on the labour basis)÷(GIS+Rent+IEU)

where IEU =Income from Employment in Unincorporated Enterprises, and

Rent=Rent Total in Personal Sector (RT)−Rent of owner-occupied Dwellings in Personal Sector (RD)

IEU for 1971-82 was taken from [4] 1982 and 1983, T1.10, but the corresponding IEU for 1950-70 to our GIS was calculated by

GIS×IRES

where IRES=Income Ratio of Employees of Unincorporated Enterprises to Self-employed. (Sources: See above (1) for GIS; IRES for 1952-56 from [4] 1963, T12, for 1957-63 from [4] 1968, T13 and for 1964-70 from [4] 1964-74, T13; IRES for 1950-51 was assumed to be equal to three-year-average of IRES for 1952-54).

Rent for 1950-53 was obtained from [4] 1960, T12 & T13; for 1954-64 from [4] 1965, T12 & T22 and for 1970-82 from [4] 1981, 1982 and 1983, T1.10 & T4.1. Rent for 1965-69 was obtained by the following way.

We had RT, but no data on RD for 1965-69 did exist in [4]. First, we got an annual Rent Ratio of Dwellings to Total in personal sector (RD/RT), during the periods for 1950-64

Table 3 Related Estimates (1) %

YEAR	ERNA	ERNM	ERWI	PMNE[1]	PMNS[2]
1950	136.5	146.5	54.7	67.1	81.7
1951	134.2	143.7	54.1	66.9	81.7
1952	130.7	139.7	53.9	67.0	81.7
1953	128.9	137.3	54.1	66.8	81.6
1954	127.3	134.9	52.9	66.3	81.5
1955	123.5	130.0	51.8	66.0	81.4
1956	121.9	128.5	51.8	65.9	81.4
1957	123.5	130.9	51.6	65.9	81.4
1958	124.6	131.6	52.2	65.9	81.3
1959	121.1	128.9	52.0	66.3	81.2
1960	120.1	127.6	51.0	66.0	81.2
1961	120.2	128.1	50.4	65.7	81.0
1962	121.5	130.2	50.7	65.6	80.4
1963	120.5	128.9	50.2	65.4	79.9
1964	119.4	127.4	49.4	65.1	79.3
1965	119.2	127.2	49.0	64.7	78.8
1966	120.0	129.0	49.6	64.3	78.5
1967	119.3	128.2	49.4	64.1	79.1
1968	118.6	127.2	49.1	63.7	79.4
1969	118.1	126.8	48.8	63.3	80.0
1970	117.8	126.2	49.9	62.9	80.3
1971	118.5	127.7	51.1	62.6	80.1
1972	118.1	127.0	51.1	61.9	80.1
1973	115.1	122.1	51.7	61.3	81.2
1974	114.3	120.8	55.5	60.5	81.0
1975	114.1	121.4	57.4	60.1	80.4
1976	113.3	120.0	60.6	59.9	80.4
1977	113.2	119.8	60.8	59.6	80.1
1978	114.4	121.6	59.9	59.2	81.1
1979	113.5	120.2	60.1	58.7	81.8
1980	116.5	125.7	60.8	58.4	81.2
1981	118.0	129.8	60.9	57.9	80.3
1982	118.9	131.4	61.3	57.5	78.2

1 PMNE=Proportion of Men in the Number of Fmployees

2 PMNS=Proportion of Men in the Number of Self-employed

Teble 3 Related Estimates (2) %

YEAR	NCSR	PRI[1]	PRU[2]	IRSE	WAI (£)	LSU
1950	14.1	25.0	47.2	195.1	429.4	72.3
1951	15.2	25.1	36.0	183.0	473.0	74.7
1952	15.5	19.8	32.9	178.1	506.0	74.4
1953	15.2	20.7	33.8	175.0	530.7	73.7
1954	15.8	22.6	31.6	170.0	560.9	75.7
1955	15.5	22.4	30.2	165.6	607.2	75.0
1956	14.4	21.1	29.3	158.4	657.1	76.3
1957	13.6	20.0	26.5	154.7	697.0	78.3
1958	14.3	18.5	21.6	149.4	730.7	78.9
1959	14.6	20.2	23.7	149.3	771.2	77.3
1960	15.3	21.1	23.1	149.7	822.6	76.2
1961	15.2	19.0	22.6	149.5	883.2	76.4
1962	15.1	17.5	19.9	146.5	926.9	78.0
1963	15.1	18.7	20.4	147.8	973.7	77.7
1964	15.0	18.9	19.8	146.3	1043.9	78.7
1965	14.4	18.0	21.9	150.8	1120.3	77.1
1966	14.6	16.4	21.1	150.2	1198.1	77.3
1967	15.6	16.1	17.8	143.4	1272.1	79.0
1968	15.5	16.6	17.6	140.2	1375.0	79.4
1969	15.3	16.1	15.3	134.5	1481.3	80.9
1970	15.3	15.0	11.1	123.9	1667.9	84.0
1971	14.8	15.2	11.0	124.0	1859.4	84.5
1972	16.4	16.3	16.6	140.0	2093.0	78.6
1973	16.9	16.4	21.9	149.3	2367.2	73.9
1974	17.1	14.2	16.3	134.1	2776.1	76.3
1975	16.6	12.2	8.7	115.7	3622.9	85.0
1976	16.2	13.0	12.2	123.3	4081.5	81.6
1977	16.1	15.3	12.3	125.7	4513.7	80.5
1978	16.2	15.2	11.1	126.2	5141.5	81.8
1979	16.4	16.1	11.4	124.7	5923.1	80.7
1980	16.4	14.0	7.4	110.3	7130.8	86.0
1981	16.1	13.3	7.0	100.8	8044.5	86.3
1982	15.9	13.6	6.2	102.4	8714.5	87.4

1 PRI=GTP/NCS in Companies (D excluded)
2 PRU=(GIS—LIS in Est. 1)/NCS in Personal Sector (D excluded)

and 1970-82 by using the same tables as above. By observation, we could find its gradual increase from 1961 to 1964 and 1970 onwards. Then we calculated the Rent Ratio for 1965-69, by assuming that the ratio increased proportionally between 1964 and 1970.

Rent for 1965-69 was calculated by

RT(1—Estimated Rent Ratio).

RT for 1966-69 was taken from [4] 1966-76, T1. 10, but for 1965 was adjusted according to

RT (1965)—ICN Total (1965)×Average ICN Ratio of Personal Sector to Total for 1966-68

where ICN=Imputed Charge for Capital Consumption of Private Non-profit Making Bodies. This is because RT for 1965 from [4] 1964-74, T13 includes ICN, but for 1966-69 from [4] 1966-76 does not.

(Sources: See above for RT (1965); ICN Total and ICN Ratio from [4] 1966-76, T1. 1 & T1. 10).