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Suomen Pankin
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Bank of Finland
Economics Department

MATTI VIRÉN

SOME ASPECTS OF RECENT DEVELOPMENTS IN HOUSEHOLD SAVINGS RATIO IN WESTERN EUROPE

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SOME ASPECTS OF RECENT DEVELOPMENTS IN HOUSEHOLD SAVINGS RATIO IN WESTERN EUROPE*

by

Matti Virén

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1 SOME THEORETICAL CONSIDERATIONS

The concept of (household) savings ratio played a crucial role in the early Keynesian analysis, which promised powerful and predictable effects of different fiscal policy actions if only it could be assumed that the savings ratio is relatively stable. This analysis was based on the extreme assumption that, e.g., fiscal policies affect consumption only via their impact on current disposable income. This is why it is hard to see that this view could provide a meaningful starting point for fiscal policy; it not only ignores interest rate and wealth effects but also totally disregards the implications of intertemporal behaviour of households with respect to consumption and labour supply, which show up, for instance, in the distinction between transitory and permanent income.

In this paper, we leave aside these fundamental analytical problems of the households savings ratio to concentrate on more practical problems relating to the question: what are the proper concepts (or measures) of income and consumption from the viewpoint of households?

The conventional starting point is that households' disposable income constitutes the relevant income concept and private consumption expenditure, including consumer durables, constitutes the relevant consumption concept. There are numerous difficult measurement problems associated with these concepts which we do not discuss here (for thorough surveys on this topic, see OECD (1981) and Williams (1979).

But, if we go beyond these "pure" measurement problems, we face at least two conceptual problems concerning the sectoral definition: first, should one take into account firms' saving, i.e. retained earnings; second, how should one treat public consumption and saving?

Let us first consider the treatment of retained earnings. It is generally admitted that retained earnings might affect household consumption and saving behaviour (indeed, Keynes' own definition of income does not exclude retained earnings). Empirical analyses have, however, typically ignore this possibility, even though there is evidence indicating that households do, in fact, consider retained earnings a part of their income; see, e.g., Feldstein (1973), Feldstein and Fane (1973) and Koskela and Virén (1984). If we make the extreme assumption that there is perfect substitution between household saving and corporate saving, the private sector savings ratio is the proper measure of saving behaviour. This would be evident from the fact that the private sector savings ratio would be more stable than the personal (household) savings ratio.

As far as the second question is concerned, opinions differ to a great extent. The Keynesian view is challenged - as some kind of other extreme - by Barro's "debt neutrality" hypothesis, which states that households not only respond to taxes but equally to government deficits as well, thus implying that there is a more or less perfect substitution between household (or private sector) saving and government saving. Obviously, this latter view makes very strong assumptions concerning the public's perception of seeing through the government veil, and thus one would be tempted to suspect the empirical relevance of the "debt neutrality" hypothesis. But, even if we ignored this "extreme" hypothesis by referring to lack of rationality and foresight on the part of the general public, we would then have to face the question as to why households totally ignore public consumption. Presumably a part of public consumption is a substitute for private consumption and it should therefore stimulate household (or private sector) saving; see, e.g., Sjaastad and Wisecarver (1977), who provide an appropriate framework for analyzing the effects of changes in public consumption. There is, of course, the problem that public consumption can also be a substitute for <u>future</u> private consumption (as is the case with public nursing homes), so that it would reduce saving.

The analysis of Kormendi (1983) provides a summary of the points raised above. Kormendi presents a "consolidated approach" to household consumption behaviour, which takes into account the total amount of goods and services households obtain from all sources as well as their income from all sources. Thus, this approach suggests that total consumption or saving should be related to total income, e.g. to national (disposable) income, so that a relevant indicator would simply be the aggregate (national) savings ratio, which should, moreover, display relative stability over time.

The subsequent empirical analysis first scrutinizes some stylized facts, which should, on the basis of our previous discussion, be important when analyzing (household) saving behaviour. Some standard savings function specifications are then fitted to cross-country data for 10 countries covering the period 1970-1982 to find out the magnitude of different determinants of saving, thereby making it possible to assess the role of different factors contributing to the recent behaviour of (household) savings ratios in western Europe.

2 SAVING BEHAVIOUR IN WESTERN EUROPE IN 1970-1982

In this section, we briefly summarize some of the main features of saving behaviour in western Europe in the 1970s and early 1980s. We start by presenting graphs for the household savings rate (SHR), the private sector savings rate (SPR) and the aggregate (national) savings rate (SDR) in the following 10 countries: Austria, Belgium, Finland, France, the Federal Republic of Germany, Italy, Norway, Spain, Sweden and the United Kingdom. Our sample is restricted to these 10 countries because of data reasons.[1]

On the basis of these graphs, shown in Figures 1.1 - 1.10, as well as on the accompanying statistics in Table 1, we can draw the following conclusions:

- All savings ratios display a considerable amount of variability. Furthermore, it seems that the "aggregated" savings ratios, SPR and SDR, are by no means more stable than the household savings ratio, SHR. In fact, the standard deviations in Table 1 suggest that the opposite is true. This, in turn, can be interpreted to be at variance with the proposition of perfect substitutability of sectoral savings.

- The savings ratios are only partially correlated. The correlation between household and private sector saving ratios is far from perfect, but, when the correlation between household and aggregate (national) saving ratios is considered, one finds hardly any systematic relationship over countries. From the viewpoint of economic policy, this fact represents a new problem because it means that focusing on only one savings ratio can give

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[1] All measures used in this study are net measures. Private consumption expenditures also include expenditure on household durables. The data source is the OECD National Accounts tape for the period 1970-1982. The household saving figures for Norway are based on Cappelen (1980).

a highly misleading view of the overall behaviour of saving in an economy.

- In general, the savings ratios display a downward trend. Even though there are some exceptions (like the household savings ratio in Finland, for example), the overall tendency is quite strong, suggesting that financing investment may create some problems in the future - assuming, of course, that economies continue to have some growth targets.

3 AN EMPIRICAL ANALYSIS OF THE DETERMINANTS OF SAVING BEHAVIOUR IN WESTERN EUROPE IN 1971-1982

We start by introducing the basic savings function specification to be used in the subsequent empirical analysis. This function takes the following form:

$$(1) \qquad (s/y) = \sum_{i=i}^{10} D_i + b_1(s/y)_{-1} + b_2PCR + b_3YR + b_4DU + b_5RR + b_6GPR,$$

where (s/y) denotes the relevant savings ratio, PCR the rate of change in consumption prices, YR the rate of change in real income, DU the (first) difference in the unemployment rate, RR the "real ex post rate of interest" and, finally, GPR the rate of change in public (i.e. general government) consumption at constant prices. The D_1's are the individual country intercepts to be used in the context of our pooled cross-country data. Because of the lack of degrees of freedom, we are more or less obliged to use this kind of data. This, in turn, partly dictates the functional form to be used (notice, e.g., that (1) is completely free of units of measurement).

The basic story behind (1) is that the rate of change in real income has a positive effect on the savings ratio and that changes in the savings ratio show a certain persistence. All this is completely compatible with the standard life-cycle model. As far as the inflation rate variable is concerned, there are many possible channels through which inflation can affect private consumption and saving. Perhaps the one which is most often mentioned in this context is the effect of inflation on households' real balances. Because inflation erodes the real value of households' assets, households are forced to increase their saving in order to reach their desired level of real assets. Inflation may, of course, affect via (increased) relative price uncertainty and via the misperception of relative and absolute prices (an extensive survey of all these possibilities is provided in Williams (1979)).

The unemployment variable, DU, in (1) is a proxy for real income uncertainty, which should have a positive effect on household saving;

the real rate of interest, RR, should also have a positive effect on saving (given the assumption that the respective substitution effect outweights the income effect). Finally, the growth rate of public consumption, GPR, has been included in (1) in order to take into account the eventual substitution effects public consumption has with respect to private consumption. The use of this variable is not completely free of problems, as was pointed out above. In particular, there is the problem that public consumption might serve as a proxy for pension benefits which consumers expect to receive when they retire. If this effect suppresses saving, e.g., in the way Feldstein (1974) has argued, the sign of GPR might also be negative.

Before we turn to the results of the empirical analysis, it might be of some use to have a brief look at the relevant time series. The descriptive statistics in question are presented in Table 2, and they give rise to, at least, the following commets:

- The rate of inflation, the rate of change in real income and the rate of change in public consumption behave very much in the same way across countries. By contrast, the unemployment rate and the real rate of interest seem to behave differently. It is evident that these differences partly reflect measurement errors, which, in turn, imply that the results of the empirical analysis must be considered with due care.

- The coefficients of correlation between the household savings ratio and the rate of inflation differ markedly from country to country. This suggests that the impact of inflation on household savings (given a saving model of the type described by equation (1), for instance) might differ between countries, reflecting, for example, such things as the degree of indexation, the composition of household asset portfolios and the behaviour of interest rates.

- The way interest rates are determined seems to vary considerably between countries, and presumably also within the sample period of each country. This probably makes it very difficult to assess the impact of interest rates on saving. A purely practical problem arises from the fact that in some countries, notably Finland and Spain, nominal interest rates have been virtually constant. As indicated in Table 3, this creates a difficult multi-collinearity problem, which should be borne in mind when interpreting the corresponding estimation results.

Estimation was carried out in the following way: equation (1) was estimated from both pooled cross-country data and from data for individual countries; estimation was done not only in terms of the household savings ratio but also in terms of the private sector savings ratio and the aggregate national savings ratio. The idea behind the sectoral analysis is the fact (discussed in the first section) that, if there exists perfect, or even a substantial degree of, substitution between sectoral savings, the household savings ratio is not the relevant concept; rather the private sector or the national savings ratio provide a better point of reference in, for instance, economic policy. Irrespective of this "theoretical" background, the estimation results of the different sectoral equations indicate simply how systematically different saving measures depend on some relevant set of variables.

As already mentioned, individual country data provide only a very few degrees of freedom to the estimated parameters (in fact, given equation (1), there is hardly one degree of freedom per parameter). Thus, small sample bias is so evident that we use pooled data, and, in fact, we concentrate very much on the results obtained with these data. Estimation is carried out by using both unweighted data and weighted data, weighting the observations by the estimates of the mid-year population in each country.

Turning now to the estimation results, the results with pooled cross-country data are presented in Table 4, results with individual

country data in Table 5 and, finally, some robustness checks with respect to the household savings ratio equation in Table 6. If we first consider Table 4.1, we can note that the overall changes in the household savings ratio, both from country to country and within each country, can be explained rather well, taking into account the fact that the unweighted mean of SHR is .103 and the corresponding standard deviation .058 (in the case of weighted observations the corresponding values are .129 and .052).

As far as the coefficient estimates are concerned, they are mostly of expected sign and magnitude, indicating that inflation, the rate of change in real income and the change in the unemployment rate have a positive impact on the household savings ratio. The rather high value of the lagged savings ratio indicates, in turn, that savings adjust only sluggishly to the optimal level. As far as the real rate of interest and the growth rate of public consumption are concerned, we find that the respective coefficients cannot be precisely estimated; this may reflect both theoretical ambiguity and measurement errors (particularly in the case of the real rate of interest). A brief look at the results with individual country data (see Table 5.1) shows that the same sign and magnitude pattern also holds with these results. Only in some cases (Austria, Finland, Norway and Italy) are the estimates so imprecise that no conclusions can be drawn. Thus, all country-specific assessments should be made with due care.

When equation (1) is used in the context of the whole private sector, the results are highly analogous to those for households only, cf. Tables 4.2 and 5.2. Thus, it seems that we are able to predict movements in both savings ratios by a similar set of background variables (of course, the parameters differ: in the case of the private sector savings ratio, the real income effect is larger and the inflation effect is smaller, in addition to the fact that the speed of adjustment is lower). In fact, the difference between these two savings ratio measures is due solely to the public consumption growth rate; results obtained for the private sector savings ratio suggest that this variable may, after all, have a

negative impact on saving. (See Appendix for a further analysis of the magnitude of the different substitution effects.)

The results for the national savings ratio (cf. Tables 4.3 and 5.3) differ considerably from those for the household and private sector savings ratios, the general flavour of the results suggesting that the "consolidated approach", or other related ideas, does not represent a proper framework. For instance, it can be observed that only the real income growth rate variable (plus the lagged dependent variable) has a coefficient which is of correct sign and magnitude. Otherwise the results are more a reflection of different kinds of spurious relationships.[2] Obviously, this is unavoidable because the national savings ratio cannot be isolated from the general equilibrium framework. This, in turn, justifies asking whether it is indeed appropriate to use such an abstract and "non-behavioural" concept such as the national savings ratio in an analysis which somehow serves economic policy.

Finally, some comments on the robustness checks presented in Table merit note. As can be seen, these checks, even though they are by no means complete, give the impression that the main findings of this study are not very sensitive to minor changes in the estimation procedure. Perhaps only if one starts by using the per capita transformation and ignores the population growth effect do the results change more significantly. However, both economic and statistical arguments are against this transformation.

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[2] A decrease in public sector saving, i.e. an increase in the public sector deficit, presumably has an impact on the rate of inflation and the interest rate. On the other hand, an increase in interest rates leads, in a macro-setting, to a change in the allocation of resources between consumption and investment.

4 SOME COMMENTS ON RECENT SAVING BEHAVIOUR IN WESTERN EUROPE

We conclude this paper by looking at some recent trends in saving ratios in western Europe. As was pointed above in reference to Figure 1, all savings ratios have displayed a rather clear downward trend during the last years. This kind of development seems likely to continue, as one can conclude on the basis of Table 7 and some recent forecasts for the years 1974-1985 (cf. e.g. OECD Economic Outlook (1984)).

It can, of course, be asked whether our empirical results are compatible with the view that, for instance, household savings ratios will continue to fall during the next year or two. Looking at the relevant variables in turn, the following arguments can be put forward:

- Real income growth rates have accelerated somewhat during the last quarters and may accelerate slightly more in western Europe in the near term. This should lead to a rise in household savings ratios. When evaluating the magnitude of the real income growth effect, it should, however, be borne in mind that the current and forecast growth rates are very low, substantially lower than our sample averages (see Table 8 for details).

- The rate of inflation has decreased appreciably during the last years, and if the same course of development is maintained in the future, the household savings ratio should indeed fall.

- Unemployment rates are still rising but the rates of change are decreasing (and are, moreover, below our sample averages). This would imply less income uncertainty, and a lower savings ratio.

- Real rates of interest have been at a very high level, and there are good grounds for assuming that they will fall rather than rise in the future. Even if we have not been able to identify the magnitude of the impact of the real interest rate on household saving, we are tempted to assume that the behaviour of interest rates has probably contributed to the fall in the household savings ratios.

Summing up, we can state that, even though there is some degree of ambiguity, particularly with respect to the role of the growth rate of real income, there are good reasons to believe that household savings ratios will continue to fall in western Europe in the near term.[3]

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[3] As far as the role of public consumption is concerned, we can only state that very much will depend on the way the growth of public consumption is allocated among different population groups; for instance, how much is allocated as goods and services to elderly people.

Table 1

Some descriptive statistics of the savings ratios
(Per cent, 1970-1982)

		E(s/y)	SD(s/y)	R(n,i)	R(p,d)
Austria:	SHR	10.1	1.5	1.000	
	SPR	16.3	1.2	.593	.546
	SDR	19.1	3.0	-.056	
Belgium:	SHR	16.5	1.1	1.000	
	SPR	17.9	1.6	.814	.926
	SDR	12.9	4.8	.717	
Finland:	SHR	5.0	1.2	1.000	
	SPR	10.0	2.3	.517	.237
	SDR	14.4	2.2	-.439	
France:	SHR	13.3	1.1	1.000	
	SPR	14.2	2.5	.696	.936
	SDR	14.0	3.5	.517	
Federal Republic of Germany:	SHR	13.4	0.9	1.000	
	SPR	15.0	1.7	.507	.906
	SDR	14.4	3.5	.306	
Italy:	SHR	21.2	1.3	1.000	
	SPR	21.3	1.0	.639	.400
	SDR	13.6	2.3	-.221	
Norway:	SHR	2.4	0.9	1.000	
	SPR	10.4	3.1	.017	.835
	SDR	14.8	3.5	-.435	
Spain:	SHR	9.9	1.6	1.000	
	SPR	13.6	2.5	.944	.962
	SDR	14.2	3.3	.964	
Sweden:	SHR	3.4	1.3	1.000	
	SPR	9.3	2.8	.137	.007
	SDR	11.0	4.9	.329	
United Kingdom:	SHR	7.6	1.7	1.000	
	SPR	9.9	2.4	.467	.176
	SDR	8.5	2.9	-.542	

SHR denotes the household savings ratio, SPR the private sector savings ratio and the SDR the aggregate national savings ratio (aggregate savings in relation to national disposable income). E(s/y) denotes the sample mean of (s/y), SD(s/y) the corresponding standard deviation, r(h,i) the coefficient of correlation between SHR, on the one hand, and SPR and SDR, on the other, and, finally, r(p,d) the coefficient of correlation between SPR and SDR.

Table 2
Some descriptive statistics of the determinants of saving

	E(x)	SD(x)	R(s,x)
Austria:			
PCR	6.2	1.5	-.600
YHR	3.1	2.2	.251
YPR	3.1	2.8	.116
YDR	3.0	2.9	-.035
DU	0.1	0.5	.091
RR	2.6	1.2	.517
GPR	5.0	2.7	-.283
Belgium:			
PCR	7.0	2.7	.265
YHR	2.9	2.8	.605
YPR	2.7	3.2	.492
YDR	2.2	3.6	.465
DU	1.1	1.0	-.066
RR	2.8	3.4	-.667
GPR	5.0	3.5	.639
Finland:			
PCR	10.5	3.2	.582
YHR	3.3	2.5	.126
YPR	3.3	4.0	-.007
YDR	3.3	3.1	-.336
DU	0.3	1.1	-.112
RR	-1.0	3.4	.135
GPR	5.7	2.8	-.027
France:			
PCR	9.3	2.5	-.360
YHR	3.8	2.1	.690
YPR	3.3	2.8	.558
YDR	3.1	2.5	.357
DU	0.5	0.4	.011
RR	2.3	1.9	-.625
GPR	4.8	1.7	.727
Federal Republic of Germany:			
PCR	5.1	1.3	.804
YHR	2.2	2.3	.169
YPR	1.8	2.4	-.078
YDR	1.8	3.1	-.374
DU	0.6	0.9	.571
RR	3.1	0.6	-.274
GPR	4.2	4.0	.348
Italy:			
PCR	14.1	4.5	-.039
YHR	2.7	1.9	.283
YPR	2.5	2.7	.294
YDR	2.3	3.5	.149
DU	0.3	0.6	.274
RR	-1.0	4.1	-.111
GPR	5.0	4.7	-.145

Table 2, continued

	E(x)	SD(x)	R(s,x)
Norway:			
PCR	8.5	2.2	-.102
YHR	3.1	2.1	.275
YPR	3.0	2.2	.162
YDR	3.6	3.0	-.339
DU	0.1	0.3	.216
RR	0.1	2.1	-.072
GPR	5.2	2.8	.360
Spain:			
PCR	14.1	3.9	-.408
YHR	2.9	3.1	.861
YPR	2.6	3.6	.828
YDR	2.8	3.4	.793
DU	1.3	0.9	-.789
RR	-7.0	3.0	.228
GPR	5.8	2.5	.707
Sweden:			
PCR	9.4	1.8	.326
YHR	1.1	2.1	.492
YPR	1.5	3.7	.072
YDR	0.9	2.8	.152
DU	0.1	0.4	-.397
RR	0.5	1.7	-.635
GPR	3.9	3.0	.374
United Kingdom:			
PCR	11.9	4.4	.470
YHR	1.9	3.7	-.013
YPR	1.9	4.8	-.284
YDR	1.7	2.8	-.247
DU	0.8	1.2	.184
RR	0.4	3.4	-.257
GPR	3.9	4.1	.208

PCR denotes the implicit deflator of private consumption expenditure, YHR households' real disposable income, YPR the real disposable income of the private sector, YDR real national disposable income, DU the unemployment rate, RR the "real ex post rate of interest" and GPR general government consumption expenditure (in real terms). All variables, except DU, are expressed as relative differences, i.e. as 100 times the log.difference; DU is the first difference of the unemployment rate. E(x) denotes the sample mean of a variable x, SD(x) the corresponding standard deviation, and, finally, R(s,x) the coefficient of correlation between x and the household savings ratio (SHR). The data sample after differencing is 1971-82 for all countries. The data source for SHR, SPR, SDR, PCR, YHR, YPR, YDR and GPR is the OECD National Accounts tape, the data source for U and R (i.e. the nominal rate of interest, which is the yield on long-term government bonds) is OECD Main Economic Indicators, Historical Statistics, Paris, 1984; the interest rate series for Spain is the official discount rate, and is taken from the same publication. The time series of the weight variable, i.e. the mid-year estimates of population (POP), is derived from International Financial Statistics Yearbook, 1983.

Table 3

The coefficients of correlation between the inflation rate and the "real ex post rate of interest"

	R(p,RR)
Austria	-.747
Belgium	-.725
Finland	-.945
France	-.188
Federal Republic of Germany	-.177
Italy	-.817
Norway	-.376
Spain	-.979
Sweden	-.723
United Kingdom	-.123

The yield on long-term government bonds is used as the relevant nominal rate of interest (for Spain, however, the official discount rate is used for data reasons). The rate of inflation is the actual annual rate of change in the implicit consumption deflator.

Table 4.1
Estimation results of the household savings ratio equation with cross-country data

Equation	SHR(-1)	PCR	YHR	DU	RR	GPR	100*SEE	D-W	Weighting of observations
SHR:1	.551 (8.55)	.114 (2.99)	.355 (7.17)	.492 (4.13)	.002 (0.05)	.007 (0.27)	.857	1.903	POP
SHR:2	.551 (8.75)	.114 (3.89)	.360 (8.37)	.497 (4.27)			.849	1.911	POP
SHR:3	.581 (8.61)	.087 (2.84)	.258 (6.70)				.915	1.986	POP
SHR:4	.487 (6.44)	.097 (1.99)	.316 (5.65)	.492 (2.98)	.009 (0.19)	.010 (0.29)	.980	1.987	none
SHR:5	.485 (6.53)	.092 (2.72)	.320 (6.75)	.425 (3.04)			.971	1.995	none
SHR:6	.476 (6.17)	.083 (2.35)	.242 (5.85)				1.008	2.034	none

The dependent variable is the household savings ratio (SHR) and the numbers in parentheses are t-ratios; other symbols are explained in Table 2. All equations include individual country intercepts, which, however, are not displayed. The number of observations is 120. The weighting variable is the estimate of the mid-year population (POP). The Durbin-Watson autocorrelation statistics have been adjusted for the gaps in data when moving from one country to another. Due to the presence of a lagged dependent variable in all estimated equations, the Durbin-Watson statistics are biased towards rejecting the hypothesis of autocorrelated residuals.

Table 4.2

Estimation results of the private sector savings ratio equation with cross-country data

Equation	SPR(-1)	PCR	YPR	DU	RR	GPR	100*SEE	D-W	Weighting of observations
SPR:1	.691	.062	.472	.338	.001	-.049	.865	2.026	POP
	(15.45)	(1.60)	(13.45)	(2.91)	(0.03)	(1.98)			
SPR:2	.670	.061	.461	.337			.873	1.907	POP
	(15.43)	(2.02)	(13.52)	(2.83)					
SPR:3	.634	.047	.414				.902	1.821	POP
	(14.76)	(1.52)	(13.35)						
SPR:4	.669	.159	.546	.345	.070	-.078	1.121	2.049	none
	(12.42)	(2.88)	(12.57)	(2.07)	(1.27)	(2.22)			
SPR:5	.633	.110	.521	.392			1.151	1.766	none
	(11.82)	(2.66)	(12.00)	(2.31)					
SPR:6	.590	.102	.470				1.174	1.695	none
	(11.51)	(2.42)	(12.35)						

The dependent variable is the savings ratio of the private sector (SPR).

Table 4.3

Estimation results of the national savings ratio equation with cross-country data

Equation	SDR(-1)	PCR	YDR	DU	RR	GPR	100*SEE	D-W	Weighting of observations
SDR:1	.808	-.022	.487	-.003	-.088	-.153	.804	2.070	POP
	(22.23)	(0.61)	(13.49)	(0.03)	(2.21)	(5.22)			
SDR:2	.719	.013	.446	-.131			.956	1.806	POP
	(22.16)	(0.43)	(11.10)	(0.98)					
SDR:3	.727	.019	.466				.955	1.856	POP
	(23.11)	(0.61)	(13.56)						
SDR:4	.860	.025	.558	.175	-.065	-.196	.922	2.013	none
	(22.49)	(0.52)	(13.67)	(1.25)	(1.23)	(5.57)			
SDR:5	.766	.056	.517	.127			1.056	1.683	none
	(23.41)	(1.52)	(11.65)	(0.80)					
SDR:6	.761	.053	.498				1.054	1.643	none
	(23.69)	(1.44)	(13.35)						

The dependent variable is the aggregate national savings ratio (i.e. aggregate savings relative to national disposable income; SDR).

Table 5.1

Individual country estimates of the household saving function

	Constant	SHR(-1)	PCR	YHR	100*SEE	D-W
Austria	.117	.097	-.504	.105	1.300	1.985
	(2.86)	(0.35)	(1.72)	(0.56)		
Belgium	.072	.421	.204	.271	.735	2.109
	(1.82)	(1.78)	(2.35)	(3.27)		
Finland	.027	.342	.040	.107	1.088	1.852
	(1.24)	(1.11)	(0.38)	(0.76)		
France	-.003	.569	.358	.712	.449	2.447
	(0.14)	(4.33)	(3.74)	(6.24)		
Fed. Rep. Germany	.062	.308	.539	.129	.460	2.468
	(3.06)	(1.86)	(4.35)	(2.10)		
Italy	.111	.531	-.078	.033	1.064	1.804
	(1.89)	(1.44)	(0.46)	(0.09)		
Norway	.031	-.132	-.091	.125	1.050	2.123
	(1.22)	(0.30)	(0.48)	(0.84)		
Spain	.036	.522	.065	.290	.710	2.449
	(1.95)	(2.57)	(0.09)	(2.40)		
Sweden	.002	-.056	.355	.388	1.207	1.871
	(0.01)	(0.14)	(1.68)	(2.06)		
United Kingdom	-.028	.930	.218	.413	.846	2.848
	(1.59)	(4.98)	(3.26)	(4.28)		

The dependent variable is the household savings ratio (SHR); the number of observations is 12 for each country.

Table 5.2

Individual country estimates of the private sector saving function

	Constant	SPR(-1)	PCR	YPR	100*SEE	D-W
Austria	.161	-.039	-.043	.285	.938	2.052
	(4.25)	(0.17)	(0.22)	(2.74)		
Belgium	.071	.453	.201	.380	.566	2.454
	(3.29)	(3.54)	(2.66)	(5.83)		
Finland	.019	.536	.128	.494	1.409	1.739
	(0.82)	(2.78)	(0.91)	(4.40)		
France	-.066	.857	.534	.954	.550	2.128
	(2.17)	(10.02)	(2.88)	(6.13)		
Fed. Rep. Germany	.066	.234	.713	.508	.498	1.733
	(4.43)	(1.51)	(3.12)	(4.56)		
Italy	.158	.231	-.042	.306	.533	2.044
	(3.61)	(0.99)	(0.07)	(3.27)		
Norway	-.019	.712	.253	.854	2.256	1.421
	(0.51)	(2.80)	(0.79)	(2.37)		
Spain	.032	.611	.047	.416	.905	2.066
	(1.23)	(3.69)	(0.59)	(4.01)		
Sweden	-.016	.665	.401	.697	1.347	1.309
	(0.61)	(4.40)	(1.53)	(5.63)		
United Kingdom	-.025	.764	.146	.492	1.005	1.653
	(0.12)	(5.85)	(1.65)	(5.84)		

The dependent variable is the private sector savings ratio (SPR); the number of observations is 12 for each country.

Table 5.3

Individual country estimates of the aggregate national saving function

	Constant	SDR(-1)	PCR	YDR	100*SEE	D-W
Austria	.033	.666	.111	.489	1.031	1.815
	(1.70)	(4.49)	(0.38)	(3.65)		
Belgium	-.073	.784	.189	.525	.466	2.492
	(1.28)	(18.42)	(3.05)	(9.80)		
Finland	.027	.574	.170	.438	1.065	2.061
	(1.19)	(2.79)	(1.21)	(4.04)		
France	-.015	.913	.041	.501	.621	1.874
	(0.45)	(13.33)	(0.16)	(2.04)		
Fed. Rep. Germany	.015	.479	.835	.681	.840	1.337
	(1.19)	(2.79)	(2.20)	(5.19)		
Italy	.038	.614	-.004	.436	.769	0.947
	(1.49)	(4.51)	(0.06)	(6.18)		
Norway	-.017	.742	.311	.761	1.938	1.016
	(0.52)	(3.98)	(0.97)	(3.53)		
Spain	.015	.771	.014	.367	.639	2.437
	(1.02)	(8.09)	(0.23)	(3.82)		
Sweden	.011	.843	-.097	.554	.976	2.314
	(0.46)	(10.47)	(0.50)	(4.53)		
United Kingdom	.038	.517	-.077	.388	1.426	2.306
	(1.42)	(3.13)	(0.60)	(2.07)		

The dependent variable is the aggregate national savings ratio (SDR); the number of observations is 12 for each country.

Table 6

Estimation results with some alternative estimation methods and variable specifications

Equation	SHR(-1)	PCR	YHR	DU	RR	GPR	POPR	100*SEE	D-W	Estimation procedure
SHR:7	.552	.061	.244	.309	-.019	.002		.943	1.955	per capita
	(7.79)	(1.52)	(5.11)	(2.49)	(0.43)	(0.07)				
SHR:8	.577	.063	.201					.957	2.012	per capita
	(8.18)	(2.01)	(5.63)							
SHR:9	.551	.113	.355	.049	.001	.001	.345	.861	1.895	per capita
	(8.51)	(2.97)	(7.14)	(4.10)	(0.04)	(0.26)	(4.65)			
SHR:10	.580	.088	.259					.919	1.975	per capita
	(8.58)	(2.83)	(6.68)							
SHR:11	.549	.112	.344	.503	-.002	.007		.869	1.990	cost of living index
	(8.45)	(2.92)	(7.00)	(4.15)	(0.04)	(0.25)				
SHR:12	.579	.089	.247					.922	2.033	cost of living index
	(8.52)	(2.84)	(6.52)							
SHR:13	.641	.102	.311	.395	.010	.001		.871	1.994	gross savings ratio
	(10.81)	(2.61)	(6.20)	(3.26)	(0.26)	(0.47)				
SHR:14	.661	.076	.237					.907	2.041	gross savings ratio
	(10.81)	(2.48)	(6.21)							
SHR:15	.613	.112	.320					.934	1.900	instrumental variable method
	(9.18)	(3.13)	(5.51)							
SHR:16	.586	.089	.238					1.049	2.033	instrumental variable method
	(8.12)	(2.18)	(3.61)							

Table 6, continued

The dependent variable in all equations is the household savings ratio. All equations, except for the last one (SHR:16)), are estimated by weighting the observations by the estimate of the mid-year population (POP). Equations 7-10 are estimated in the per capita form, POPR is the rate of change in population; when testing the equality of the coefficients of POPR and YHR the LR test statistics turned out to be as low as .002 for SHR:9 and .164 for SHR:10. Thus, the hypothesis of the equality of these coefficients cannot be rejected. Equations SHR:11-12 make use of the cost of living index as the relevant price index (instead of the implicit deflator of the private consumption expenditure), equations SHR:13-14, in turn, make use of the household gross savings ratio (the relevant data are based on national sources and therefore are not comparable over countries) and, finally, equations SHR:15-16 are estimated by using the instrumental variable method with respect to the real income change rate variable YHR. The respective instruments include, except for the country dummies and the other right-hand side variables, GPR, POP and the lagged values of the unemployment rate, the nominal interest rate, PCR and national income.

Table 7

Some data on recent developments in the household savings ratio

	Mean (s/y):70-82	(s/y):82	(s/y):83
Austria	10.1	10.2	8.3
Belgium	16.5	14.5	14.7
Finland	5.0	6.4	7.6
France	13.3	12.2	11.7
Fed. Rep. Germany	13.4	13.0	11.4
Italy	21.2	20.3	19.1
Norway	2.4	2.1	2.6
Spain	9.9	7.6	7.0
Sweden	3.4	0.3	0.0
United Kingdom	7.6	7.1	5.9

The values for 1983 are based on national sources. They are adjusted by the ECE secretariat to be comparable with the values of the OECD data sample.

Table 8

Average values of the variables used in the empirical analysis

	Observations weighted by population	Unweighted observations
SHR	12.9 (12.8)	10.3 (10.3)
SPR	14.7 (14.7)	13.7 (13.8)
SDR	12.6 (13.0)	13.2 (13.6)
PCR	10.3	9.6
YHR	2.7	2.7
YPR	2.4	2.6
YDR	2.3	2.5
DU	0.6	0.5
RR	0.2	0.3
GPR	4.7	4.9

Numbers in parentheses correspond to the period 1970-82, otherwise the sample period is 1971-82.

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Appendix

In order to find out the exact magnitude of substitution between different sectoral savings, we estimated a consumption function which is analogous to (1), the dependent variable being the volume of private consumption and the RHS variables including corporate and public saving (in real terms). When the respective equation was fitted to our pooled cross-country data, the following results emerged:

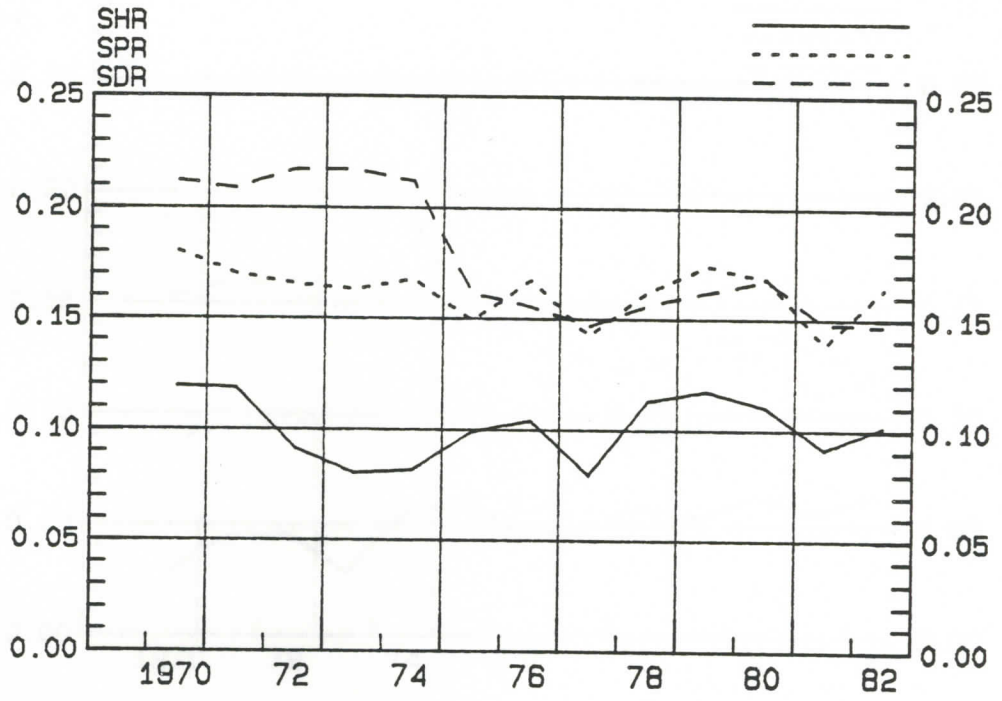
	CQ(-1)	10E5*PCR	10E4*DU	YHQ	SCQ	SGQ	SEE	D-W
(2)	.328	-.181	-.156	.624	.188	.044	4139	1.517
	(7.61)	(1.47)	(2.97)	(14.93)	(2.97)	(1.50)		
(3)	.319	-.207		.641	.248	.065	4291	1.495
	(7.15)	(1.62)		(14.92)	(4.00)	(2.17)		
(4)	.299	-.174		6.45	.258		4365	1.549
	(6.73)	(1.35)		(14.80)	(4.11)			

where CQ denotes the volume of private consumption expenditure, YHQ households' disposable income, SCQ corporate saving and SGQ public saving, all at constant prices. Observations are weighted by population.

Clearly, there is some degree of substitution between different sectoral savings: the coefficient of SCQ is approximately one third of that of YHQ, and even the coefficient of SGQ deviates from zero at a marginal level of significance.

FIGURES 1.1 - 1.10

AUSTRIA: SAVINGS RATIOS



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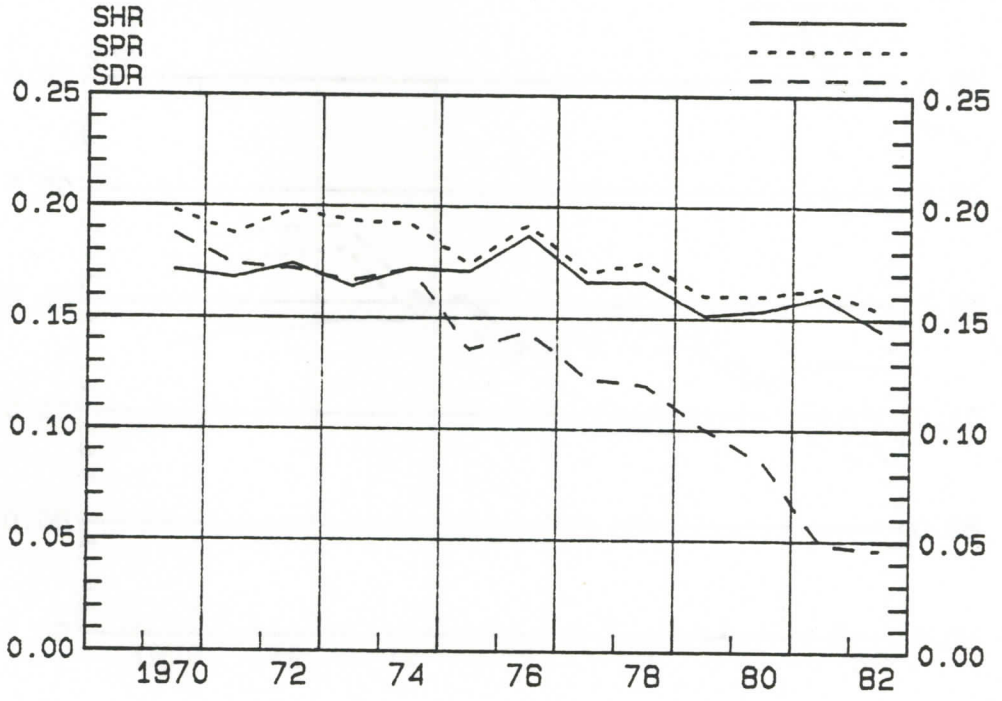

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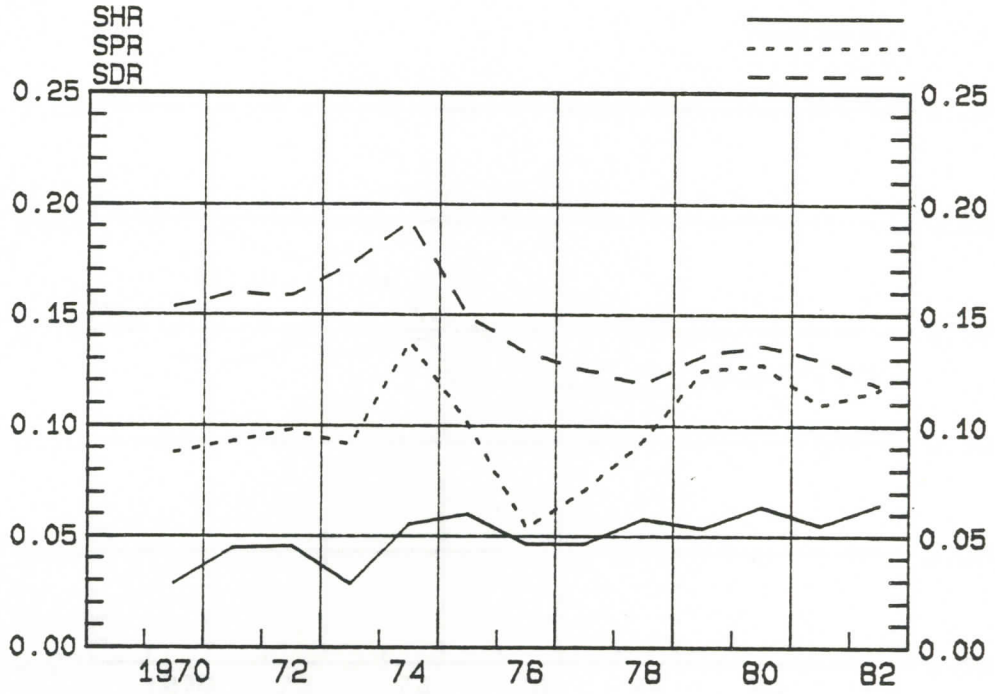
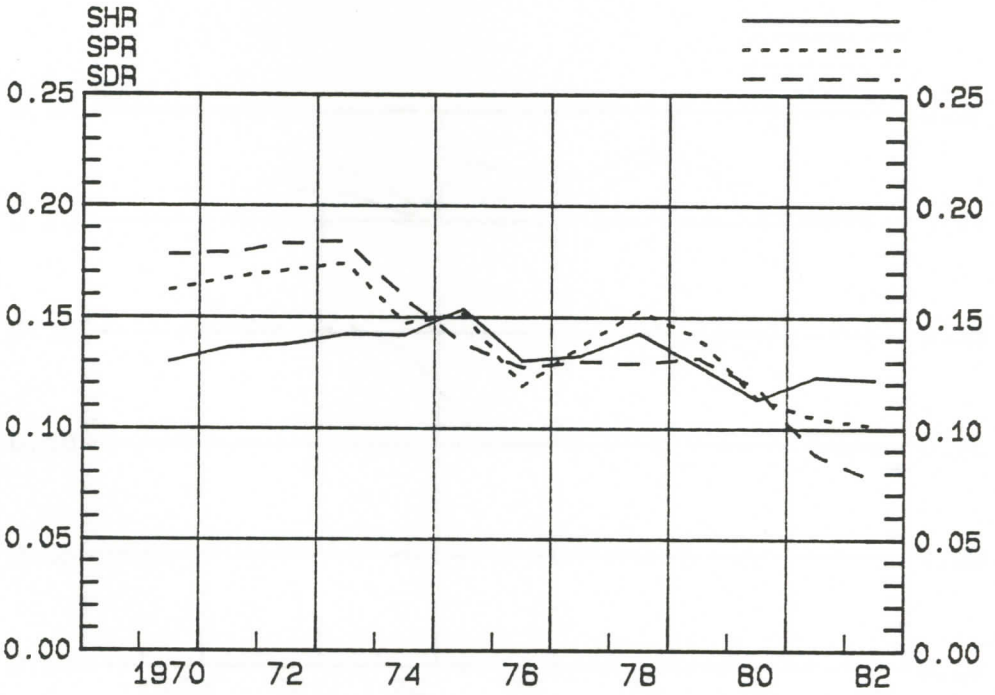
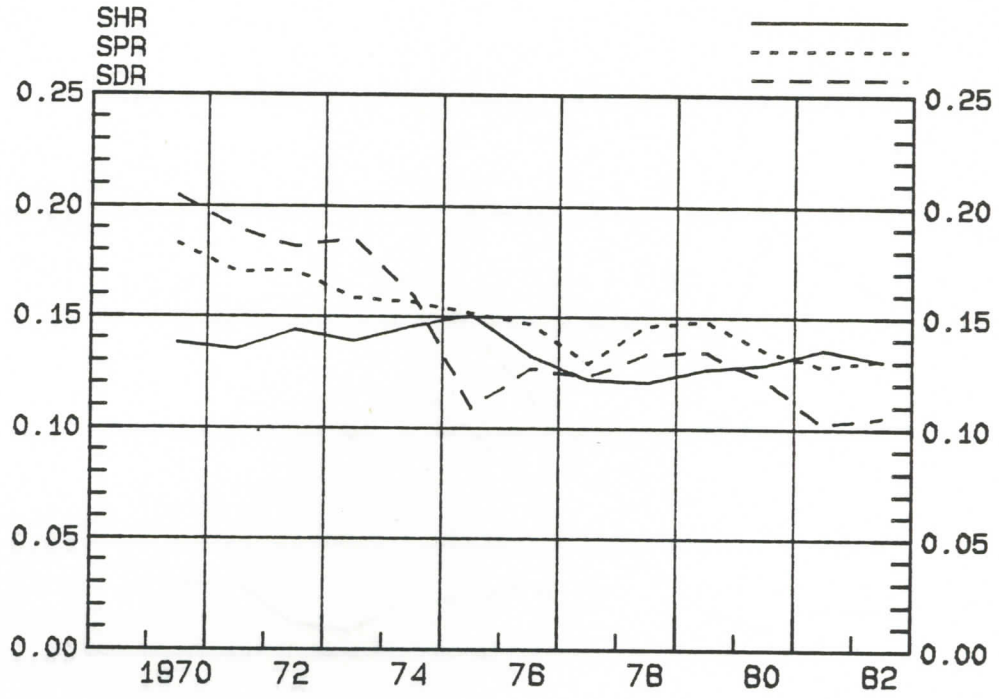


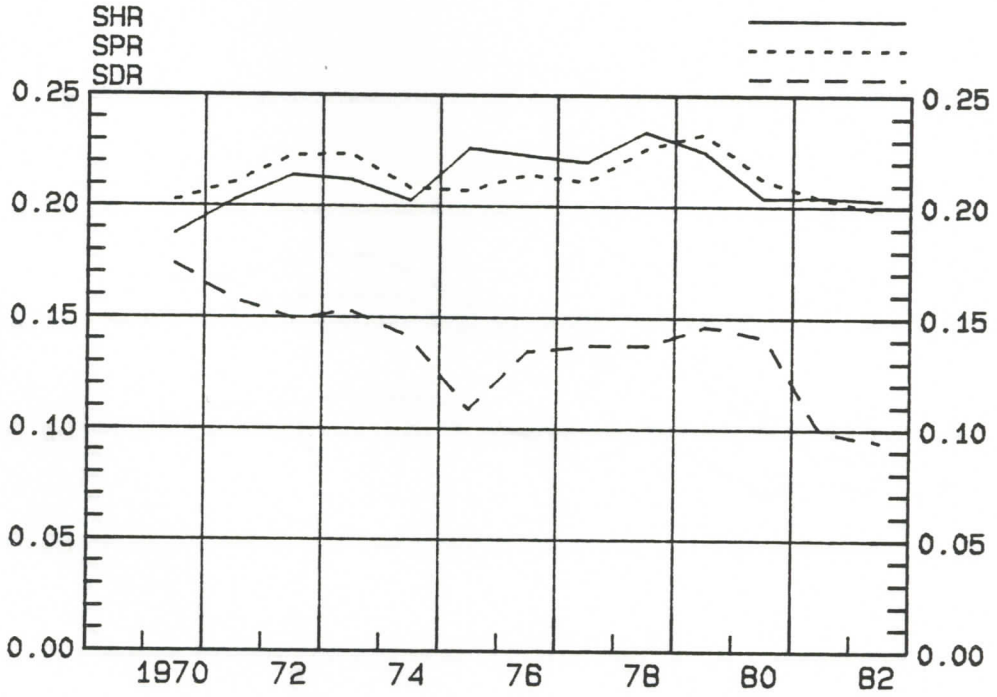
FRANCE: SAVINGS RATIOS



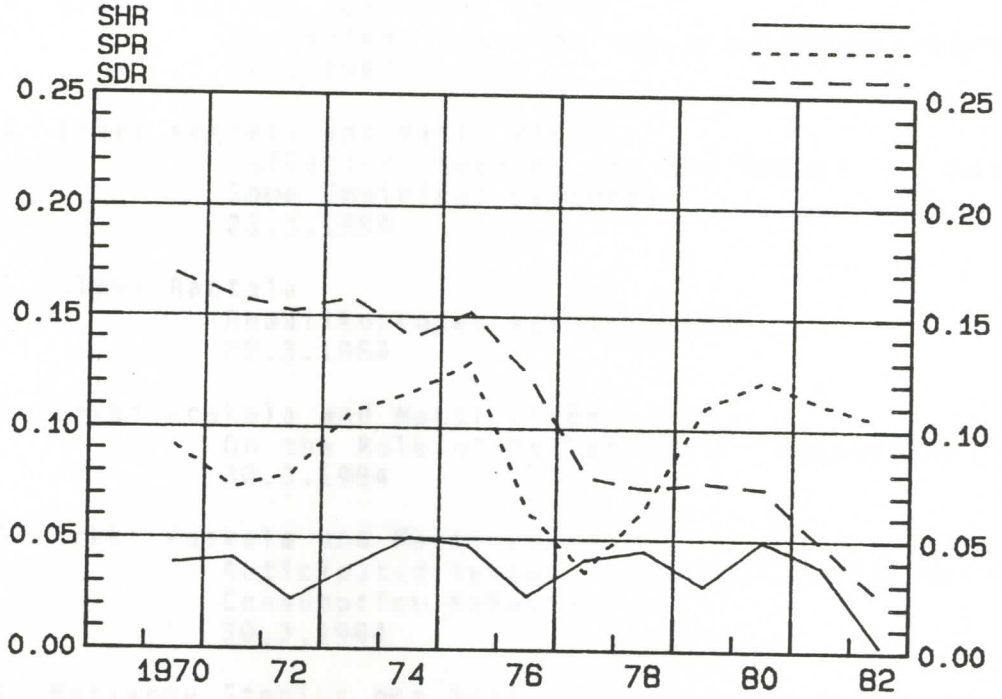
GERMANY: SAVINGS RATIOS



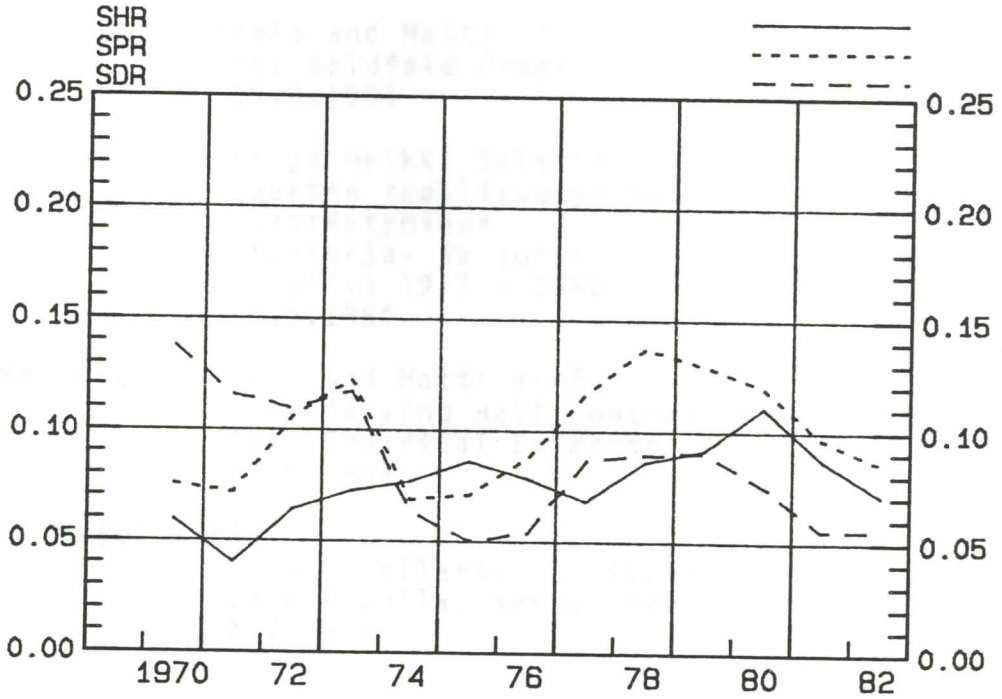
ITALY: SAVINGS RATIOS



SWEDEN: SAVINGS RATIOS



UNITED KINGDOM: SAVINGS RATIOS



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