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INFLATION INDUCED REDISTRIBUTIONS VIA MONETARY ASSETS IN FIVE EUROPEAN COUNTRIES: 1974-1982

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I. INTRODUCTION

The purpose of this paper is to estimate empirically the magnitudes of inflation induced redistributions through monetary assets and liabilities in five EEC countries during the turbulent 1974/82 period(1) and to break down these redistributions into anticipated and unanticipated components by using data on survey-based inflationary expectations(2).

Inflation caused redistribution through monetary assets can be separated into an anticipated component, which is due to the fact that inflation even when perfectly anticipated may affect the ex ante real rate of interest, and to an unanticipated component which is induced by the uncertainty of inflation. Both components result in welfare costs of inflation. The first decreases the Bailey (1956) - Cagan (1956) social surplus from the use of money balances and the second makes the income or the expenditure associated with a given stock of monetary assets or liabilities more uncertain from the point of view of individual units or sectors in the economy. Since the nature of the costs that are inflicted by anticipated and unanticipated redistributions differs, it is desirable to separate empirically these two types of redistributions. Beyond the welfare oriented question, however, it is also interesting to find out which sectors gained and which sectors lost as a result of inflation and to quantify the amounts involved.

Depending on whether the nominal rate of interest adjusts fully, not at all, or partially to changes in expected inflation, induced redistribution will be zero, equal to the loss of purchasing power on money

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(1) Monetary assets refer to all financial obligations (including narrowly defined money) whose redemption value is fixed in nominal terms. The five countries are Italy, the UK, France, Belgium and Germany.

(2) Previous literature on the redistributional effects of inflation includes Budd and Seiders (1971) and Wolff (1979). The studies closer to the present one are however those of Bach and Ando (1957), Bach and Stephenson (1974), Cotula and De Stefani (1979) and Cotula and Masera (1980).

or somewhere in between. Previous studies on the redistributional effects of inflation did recognize that redistributions depend on the extent of adjustment in the nominal rate but did not always incorporate this effect into their estimates of redistribution. For example Bach and Ando (1957)and Bach and Stephenson (1974) estimated inflation induced redistribution in the U.S. as the actually realized rate of inflation multiplied by the net monetary positions(3) of each sector. A similar procedure is followed by Threadgold and Taylor (1979) for the UK. Obviously this calculation will be correct when the nominal rate does not adjust at all to expected inflation. Otherwise it will be an upward biased measure of redistribution. At the other extreme is the study by Cotula and Masera (1980) and Caranza and Villani (1981) for Italy which assumes that the entire nominal rate of interest is a compensation for expected inflation. To the extent that the ex ante real rate of interest is not zero this procedure will also bias the redistribution figures.

This paper differs from the above mentioned studies in several respects. Firstly it recognizes the existence of an inflationary premium in nominal rates but allows the data to determine by how much the ex ante real rate changes (if at all) when expected inflation changes. Secondly it recognizes that the nominal rate may include a real component. Finally it breaks down redistribution into anticipated and unanticipated components.

This paper is part of a wider project whose description and main results can be found in Cukierman and Mortensen (CM) (1985). The basic statistical material on financial assets and liabilities used here is drawn from the studies which examine the individual countries considered in this paper (Baché, Lennan, Connolly, Reati, Wittelsberger (1985)). The data on expectations is from Papadia and Basano (1981).

(3) Throughout this paper "net monetary positions" are defined as the balance between monetary assets and liabilities.

CM point out that conventional national accounts, concentrating only on flows of income and disregarding wealth changes, give a distorted picture of the income of the various sectors of the economy. This distortion is particularly large in periods of high inflation because the loss (gain) of purchasing power on net monetary assets (liabilities) held by the various sectors is not deducted from (added to) their income. Consequently CM measure these losses and correct sectoral income(4) accounts and some relevant ratios (savings rate, budget deficit etc.). The macroeconomic meaning of the resulting figures is then discussed.

The focus of the present study is different. It attempts to measure an economic phenomenon, i.e. the redistribution of wealth, caused by inflation between debtors and creditors, taking into account the fact that the nominal rate of interest may include a compensation for expected inflation, rather than to correct conventional national accounts.

Some of the highlights of the empirical results of this study are:

1. The main losers from inflation induced redistribution through monetary assets are households and the major gainers are governments and non financial enterprises. Except for Italy, financial institutions gain significantly from the redistribution in their favour on holdings of non-interest bearing assets measured as a proportion of their gross disposable income. The redistribution is quite small however as a percentage of GDP.

2. The absolute size of redistribution increases with the rate of inflation. In relatively high inflation countries like Italy, the UK and France, households have lost on average around 4% of consumption per annum during the sample period as a result of inflation, while governmental revenues have increased by nearly 8% in Italy and nearly 4% in the UK.

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(4) The correction used by CM is equal to total redistribution in the extreme case in which the nominal rate does not adjust at all to expected inflation.

3. Although the average value of unanticipated redistribution within each sector and country tends to be small over the sample period, the standard deviation of unanticipated redistribution is usually much higher, indicating that the year by year contribution of unanticipated redistribution to total redistribution is much higher than is suggested by the average figures.

4. The effects of inflation uncertainty on the various sectors, as measured by the standard deviation of the unexpected redistribution in relation to the size of each sector, are more pronounced in the high inflation countries. Thus while the standard deviation of unexpected redistribution in the household sector is less than 2% of household consumption in Germany, it is nearly 7% in Italy.

5. The tax on real money balances varies substantially among countries as well as between the household and the enterprise sectors.

6. Within a given country over the sample period the elasticity of demand for real money balances, with respect to the expected depreciation in the real value of money, is smaller than one in absolute value. However when measured cross sectionally over high and low inflation countries this elasticity becomes greater than one in absolute value above a high enough rate of inflation. This suggests that there is a difference between the short and the long run elasticity of money demand with respect to the expected rate of depreciation in the value of money. This phenomenon arises both in the household and in the enterprise sector.

The conceptual framework of the study is discussed in section II. The estimation method, the data and related problems are discussed in section III. Main results appear in section IV. This is followed by concluding remarks. Annex 1 contains the basic data on redistribution. Annex 2 looks into the problem of defining the expected purchasing power loss of money when inflationary expectations are stochastic. Annex 3 describes the data on monetary assets and liabilities while Annex 4 contains time series data on financial assets and liabilities.

II. THE CONCEPTUAL FRAMEWORK

Inflation caused redistribution of wealth through monetary assets can be broken down into two distinct parts: expected redistribution and unexpected redistribution. The first component may arise when for any number of reasons, such as the existence of a Mundell effect or slow adjustment of nominal rates to expected inflation or the existence of non interest bearing assets, the ex ante real rate of interest depends either temporarily or permanently on the expected rate of inflation. Obviously when the nominal rate adjusts fully and instantaneously to changes in the expected rate of inflation this component of redistribution is zero. The second component is caused by inflation uncertainty and is, other things equal, an increasing function of this uncertainty. These two components of inflation induced redistribution are fundamentally different. Although both are induced by inflation, the first is known in advance and therefore agreed upon willingly by the parties to the nominal contract. The unexpected component is by contrast a pure windfall loss or gain that does not represent a renumeration for a productive service. Since a major purpose of this paper is to evaluate the relative size of these two components, the conceptual framework that follows explicitly breaks down total redistribution into expected and unexpected components.

Let i_N and i_I be the nominal interest rates in the absence and in the presence of inflation respectively. Let π and P be respectively the purchasing power loss (PPL) on monetary assets and the rate of inflation. To a first approximation the relationship between π and P is given by(5);

(1) $$\pi = -P$$

The ex ante real rate of interest in the presence of inflation, using the approximation in (1) is defined as :

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(5) The exact relationship for deterministic variables is given by $1/\ (1+P) = 1 + \pi$. However, when the rate of inflation is a random variable this relationship does not extend to the conditional expected values of P and π . This problem is dealt with in Annex 2 to this paper.

$$(2) \qquad r_I^e = i_I + \pi^e$$

where π^e is the PPL expected to occur on one unit of a monetary asset during the period for which the nominal rate of interest i_I is defined. In the absence of inflation the ex ante real rate is simply equal to the nominal rate, i.e.:

$$(3) \qquad r_N^e = i_N$$

We define the expected component of inflation induced redistribution per unit of monetary asset as the difference between the values of the ex ante real rate with, and without, inflation. Formally, expected redistribution is obtained by substracting (3) from (2)

$$(4) \qquad R^e \equiv r_I^e - r_N^e = i_I + \pi^e - i_N$$

Depending on whether i_I adjusts partially or fully to expected PPL the expected component of redistribution will be negative (lenders will suffer a loss and borrowers will enjoy a gain compared to a no inflation situation) or zero. Given data on the nominal rates of interest with and without inflation and on the expected PPL, π^e, it is possible to estimate the expected component of redistribution R^e.

Alternatively R^e can be evaluated by first estimating the average propensity of i_I to adjust to changes in π^e. Denoting this propensity by α we have

$$(5) \qquad i_I = i_N + \alpha\pi^e$$

Substituting equation (5) into (4)

$$(6) \qquad R^e = (1+\alpha)\pi^e$$

so that expected redistribution can also be estimated by getting estimates of α and π^e. Note that when $\alpha = -1$ the ex ante real rate is independent of expected PPL and the expected component of redistribution is zero. For $\pi^e < 0$ this component is negative (lenders lose and borrowers gain) or positive depending on whether $\alpha > -1$ or $\alpha < -1$.

As noted at the beginning of this section, expected redistribution is only one component of total redistribution which is defined as the difference between the ex post real rate in the presence of inflation and the ex post real rate with no inflation. More formally let

(7) $$r_I = i_I + \pi$$

be the realized or ex post real rate of interest. The ex post real rate in the absence of inflation is, from equation (3),

(8) $$r_N = i_N$$

Total redistribution per unit of monetary asset is given by the difference between (7) and (8).

(9) $$R \equiv r_I - r_N = i_I + \pi - i_N$$

The actual PPL, π, on monetary assets can be broken down into an expected and an unexpected component.

(10) $$\pi = \pi^e + u$$

where u is the difference between the actual PPL during a period and the PPL that was expected to take place at the beginning of the period. u is also equal to the unexpected redistribution per unit of monetary asset which we denote by R^u.

(11) $$R = i_I + \pi^e - i_N + u \equiv R^e + R^u$$

(2)

Equation (11) separates total per unit redistribution into an expected component R^e and an unexpected component R^u(6). Given data on π and π^e the unexpected per unit component can be estimated from equation (10).

In order to compare the methodology of this work to previous studies on inflation induced redistributions, it is useful to use (6) in order to rewrite (11) as

(11a) $$R = (1 + \alpha)\,\pi^e + u \equiv R^e + R^u$$

Bach and Ando (1957) and Bach and Stephenson (1974) estimate total per unit inflation induced redistribution on monetary assets by using π. In terms of equation (11a) this reduces to the assumption that $\alpha = 0$ which means that the nominal rate of interest does not adjust at all to changes in expected PPL. π is also the per unit correction applied by Cukierman and Mortensen (1985) to conventional income flows. Again equation (11a) suggests that this correction is equal to total per unit redistribution only if either $\pi^e = 0$ or $\alpha = 0$. The other extreme is the strong version of Fisher's theory of interest for which $\alpha = -1$. In this case there is no anticipated redistribution. As a result total redistribution reduces to unexpected redistribution only. If in addition there is no inflation uncertainty, this component too becomes zero and total redistribution is identically zero. In the general case α may be different than -1 and there is inflation uncertainty. As a result both expected and unexpected redistributions are non zero.

Using equation (11) total inflation induced redistribution through monetary assets in sector i (R_{it}) can be calculated as

(12) $$R_{it} = (i_{It} + \pi^e_t - i_N)L_{it} + \pi^e_t M_{it} + u_{t+1}(L_{it} + M_{it})$$

where L_{it} and M_{it} are the net monetary positions of sector i in interest bearing monetary assets (IBA) and non interest bearing monetary assets

(6) This result can also be obtained starting with the Hicksian (1939) definition of income, reconsidered by Jump (1980) and Cotula & Masera (1980), once one sets it in a framework of uncertainty and distinguishes ex ante and ex post Hicks income.

(NIBA) respectively at the beginning of period t, and u_{t+1} is the unexpected PPL during period t. The first two terms of equation (12) are the anticipated redistributions on IBA and on NIBA(7) respectively. The last term is the unanticipated redistribution on the total net monetary position of sector i.

Equation (12) provides the conceptual framework on which most of the empirical results presented in this paper rely. Note that the difference $i_{It} - i_N$ reflects the extent to which the nominal rate adjusts to changes in expected PPL. For simplicity of presentation, equation (12) has been derived on the basis of the approximation in equation (1) so that second order terms do not appear. However the results presented below are computed on the basis of the exact equation(8).

III. DATA AND PROBLEMS OF ESTIMATION AND STANDARDIZATION

In order to estimate redistributions across sectors by using equation (12) it is necessary to obtain data on net monetary positions on IBA and NIBA by sectors, nominal interest rates, the zero PPL nominal rate and expected PPL. This section describes the data used and the solutions adopted when the available data did not satisfy all the requirements of the conceptual framework in section II. It also discusses the sensitivity of the results to changes in the estimation procedure. In addition the form chosen to present the redistribution results is illustrated in this section.

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(7) Since for NIBA $i_{It} = i_N = 0$ expected redistribution on NIBA is given, using (4), by $\pi^e_t M_{it}$

(8) The exact counterpart of equation (12) is

$$R_{it} = (i_{it} + \pi^e_t - i_N + i_{it}\pi^e_t) L_{it} + \pi^e_t M_{it} + u_{t+1} \left[(1 + i_{It}) (L_{it} + M_{it})\right]$$

III.1 The data on net monetary positions

Collecting data on financial assets and liabilities of the various sectors in the countries considered in this study (Germany, France, United Kingdom, Italy and Belgium) is a demanding task as explained in the "country reports" (Baché, Lennan, Connolly, Reati and Wittelsberger 1985).

The most relevant problems from our point of view are:

1. a straight distinction between assets and liabilities on which a financial return is paid ("interest-bearing assets" - IBA) and those on which no financial return is available ("non-interest-bearing assets" - NIBA) is not always easy;

2. The sectors are not uniformly defined as between countries. This is particularly true for the Government sector and, as far as Germany is concerned, the household sector.

A description of the data on the net monetary positions together with data sources, assumptions used and related issues is contained in Annex 3. The figures on the financial positions of the various sectors over the years in the sample appear in Annex 4.

III.2 Implications of the heterogeneity of financial assets for measured redistribution

It is clear that the financial assets (liabilities) held by the various sectors of the economy are of heterogeneous nature. The main types being: currency, deposits of various maturities with banks and other financial institutions, treasury bills, bonds and funds placed with insurance companies.

Each asset, in turn, may be denominated in domestic or in (any) foreign currency. Ideally, one would have liked to break down monetary assets by size of interest paid on those assets and by currency of denomination. Data limitations prevented such an elaborate procedure. Instead all monetary assets were separated into two categories: 1) "interest-bearing assets" (IBA) which yield a financial return; 2) "non-interest-bearing assets" (NIBA) defined as the asset which yields a zero financial return and which may, in what follows, be loosely called "money"(9). Calculations of redistribution were made under the assumption that all monetary assets are denominated in local currency. We believe that the approximation involved in this procedure does not seriously distort the picture of redistribution. Firstly, in most countries the bulk of monetary currency assets are denominated in local currency. Secondly, even for the part which is denominated in foreign currency it can be shown that if: (a) the interest rate differential between the home and the foreign country is equal to the rate of change in the exchange rate; (b) the "null PPL" interest rates are equal across countries; then this procedure will not cause any bias in the measurement of redistribution. This can be seen as follows: Total, per unit, redistribution on a foreign currency denominated asset is given by

$$(13) \qquad R^* = i_I^* + s + \pi - i_N^*$$

where s is the actual rate of devaluation of the local currency over the relevant period; i_I^* and i_N^* are respectively the nominal interest rates in the foreign currency with and without inflation. $i_I^* + s + \pi$ is the actual real return on a foreign currency investment in terms of local purchasing power and i_N^* is the actual real rate on the foreign currency

(9) The exact definition of what is considered as IBA and what as NIBA is given in Annex 3.

asset in the absence of inflation. The difference between those two realized real rates yields the total per unit correctly measured inflation-induced redistribution on the foreign currency denominated asset.

Suppose now that instead of using (13) we use (11) in order to calculate the redistribution on the foreign currency denominated asset. Total per unit redistribution is then (using (10))

(11b) $$R = i_I + \pi - i_N$$

Obviously the per unit redistribution obtained in (11b) will be equal to that obtained from (13) if

(14) $$i_I^* + s - i_N^* = i_I - i_N$$

Jointly sufficient conditions for (14) are

(15) (a) $$i_I - i_I^* = s \equiv s^e + s^u$$

(b) $$i_N^* = i_N$$

where s^e and s^u are the expected and unexpected components of the rate of depreciation of the local currency respectively. With s^u set identically at zero, equation (15a) is an ex ante Interest Rate Parity (IRP) condition. The bulk of the evidence suggests that this condition is usually satisfied. However (15a) requires ex post IRP which differs from ex ante IRP by a serially uncorrelated white noise process s^u. This means that condition (15a) is satisfied up to a white noise process or in other words that it is satisfied on average. As far as condition (15b) is concerned, evidence presented in Table 1 below suggests that, at least for the countries in the sample, the null PPL interest rates differed at most by 1,5% and in most cases by much less than that. Thus there is suggestive (but not conclusive) evidence supporting the view that the biases caused by assuming that all monetary assets are denominated in local currency are not serious.

The inability to break down monetary assets by the size of interest rate paid, forces us to assume that all IBA yield the same interest rate. This does not cause any problems in the measurement of unexpected redistribution since this redistribution does not depend on the magnitude of the interest rates paid on the assets. It may cause biases in the measure of expected redistribution. However if the response of the nominal interest rate to changes in expected PPL is the same for all IBA, the fact of ignoring differences in the levels of interest rates across types of monetary assets does not bias the measure of expected redistribution either. This can be seen by noting from equation (6) that expected redistribution depends only on π^e and α and not on the levels of the interest rate. Hence as long as α is identical for all types of IBA, expected redistribution is independent of the distribution of those assets by interest rates. A situation of this kind would arise if interest rates on various assets differed only by constant factors which do not affect the extent to which the nominal return on each asset reacts to inflation.

III.3 Estimates of interest rates and expectations

In order to implement equation (12) empirically, data is needed on interest rates and on the PPL on money, π^e.

The expected purchasing power loss of money and the resulting forecasting errors, u, are obtained from Papadia and Basano (1981) where survey information is used to build one year ahead consumer price inflationary expectations. This survey data has been collected three times a year starting from the beginning of the seventies for all the countries in our sample by the Directorate General for Economic and Financial Affairs of the European Economic Community (EEC)(10). A representative survey of individuals is asked whether they believe that the future (over the next twelve months) rate of inflation will be higher, lower or equal to the present one. Thus the current rate of inflation provides the benchmark against which to quantify the answers to the survey. Using essentially the

(10) The number of respondents in the sample varies between 2500 and 5000.

latest information on the current rate of inflation as an anchoring device, Papadia and Basano derive a quantitative measure for the twelve months ahead expected rate of inflation from which the expected PPL on monetary assets can be calculated. Since the data on the stock of monetary assets refers to the beginning of each year, π^e is calculated as the PPL expected to occur over the next twelve months in December of the previous year. Given π^e and the realization, π, of PPL over the forecast horizon, the forecast error u is calculated by using equation (10).

The interest rate data used is from the Eurocurrency and the national one year deposit markets(11). The basic data on both the Euro-currency rate and the national rate appear in Papadia (1982). In order to get some feeling on the sensitivity of the results to the interest rate used, the redistributions in equation (12) were estimated alternatively with the Eurocurrency rate and the national rate as a proxy for i_{It}. The results which appear in the next section are based on the Euro-currency rate as a proxy for i_{It}.

Finally, to implement equation (12) we need an estimate of i_N - the ex ante interest rate in the absence of inflation. This was done by identifying for each of the countries in the sample, a few periods with the lowest inflation during the period 1958-1981 and by taking as an estimate of i_N for each country the average realized real rate in the national market during those periods(12). Only the rate in the national market

(11) For data sources see Papadia (1982).

(12) This procedure is strictly correct if (1) i_N does not change over time, (2) $\alpha = -1$ over the periods of low inflation, i.e. Fisher's equation holds perfectly. (3) On average over the periods considered there is no difference between the ex ante and the ex post real rate because forecasting errors cancel out. (4) During low inflation periods there is no divergence between interest rates on the eurocurrency and national money markets.

is used because in most of the countries the Eurocurrency market did not exist during many of the low inflation periods. The resulting estimates of i_N appear in panel A of Table 1. It can be seen from the table that except for France (with a no inflation real rate of 1,22%) the estimates for all the other countries fluctuate in a narrow range between 2,4% and 2,8%.

For comparison purposes, the average ex ante real rate during the period 73/80, which is characterized by a higher inflation, is displayed in panel B of Table 1(13). A comparison of the real rate from panel A with the (equivalent) national ex ante real rate in panel B suggests that for all countries the real rate during the seventies is lower than during the lowest inflation periods and the more so in the relatively high inflation countries; Italy and the UK. Although not conclusive this seems to suggest that $\alpha > -1$ which implies that the ex ante real rate tends to decrease with inflation.

TABLE 1

A. Average nominal ($\bar{i}$) and ex post real ($\bar{r}$) interest rate and average loss of purchasing power of money ($\bar{\pi}$) in the five years with lowest consumer price inflation in the period 1958-1981(%).

(National rates)

	B	D	F	I	UK
$\bar{i}$	5,06	4,44	4,44	3,66	5,76
$\bar{\pi}$	-2,34	-1,54	-3,04	-1,22	-2,84
$\bar{r}_N \simeq \bar{i}+\bar{\pi}$	2,60	2,80	1,22	2,39	2,76

(13) These calculations rely on the survey based expectations derived in Papadia and Basano (1981).

B. Average ex ante real rate in the period 1973/1980

B		D		F		I		UK	
Euro rate	Nat.	Euro rate	Nat.	Euro rate	Nat.	Euro rate	Nat.	Euro rate	Nat.
2,77	0,36	1,81	1,89	2,33	,55	0,00	-2,52	-0,36	-1,42

Countries are indicated by their initials: B = Belgium, D = Deutschland, or Germany, F = France, I = Italy, UK = United Kingdom.
Source: Panel A: Statistical annex of European Economy various issues.
Panel B: Papadia (1982).

To check for the robustness of the results to different estimating methods two variants of the procedure illustrated in this section have been tried: interest rates observed on national financial markets rather than those of the euro-currency markets have been used; inflationary expectations calculated on the basis of autoregressive equations have been substituted for the ones based on survey data. The first change will affect (see eq. 12) total redistribution via its effect on its expected component on interest bearing assets. The second change will not affect the total but only the split between the expected and the unexpected component.

The results of these alternative methods can be, for some countries in particular periods, quite different, but the overall behaviour of the estimates and the broad qualitative results highlighted in the introduction are confirmed.

III.4 Sectoral breakdown and standardization of the data on redistribution.

In order to evaluate the orders of magnitude of redistribution, the economy has been divided into five basic sectors: Households, Enterprises, Government, Financial institutions and the Rest of the World. The paper focuses on the inflation induced redistribution among these five sectors viewing each sector as a primary agent(14).

(14) Clearly this is not always so. Enterprises are owned, directly or indirectly, by households or, in many countries, by the Government. The Government is "owned" (as pointed out by Bach & Ando along lines of "Ricardian equivalence") by tax-payers and so on. Ideally one would have liked to identify redistributions across primary agents but the existing data makes such a task impossible. Nevertheless for many macro oriented aggregate issues the sectoral classification used in the text yields a lot of pertinent information.

An important question within the context of inflation induced redistribution is how large is this redistribution in relation to the "size" of each of the concerned sectors. In order to evaluate the importance of the redistribution phenomenon for the various sectors of the economy, the inflationary redistributions are presented for each sector, as percentages of a normalizing sector specific variable which reflects the size of the sector. The normalizing variables chosen are: consumption for the household sector, gross investment for the enterprise sector, total tax revenue for the government sector, exports for the rest of the world sector and gross disposable income of financial institutions for this sector(15).

IV. ESTIMATES OF INFLATIONARY REDISTRIBUTION AND ITS COMPONENTS ACROSS SECTORS

The full set of normalized redistribution figures during the 1974/82 period for each country, sector and year appear in annex 1. To recapitulate those figures are obtained by using equation (12), the null expected PPL interest rate from panel A of Table 1 and the one year deposit rates in the Eurocurrency market. All the summary results presented in this section are based on the redistribution figures that appear in annex 1.

IV. 1. An overall view of redistributions

Before going into a detailed analysis of the results it is useful to get a feel for the empirical importance of inflationary redistributions. This is done in Table 2 in which the yearly average inflationary redistributions over the whole sample period considered are given for all countries and each sector.

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(15) Gross disposable income of financial institutions measures the income available to these institutions for final consumption and saving. Since final consumption of all enterprises is defined as zero, gross disposable income equals (apart from the change in actuarial reserves for pensions of residents in the accounts of Italy and the United Kingdom) gross savings. Gross saving equals gross operating surplus (gross trading profits) less net interest paid, net current transfers paid, taxes and net distribution.

Redistributions in terms of a uniform standardizing variable, total GDP, were also calculated and are shown in Annex 1

From the table it appears that the phenomenon of redistributions is by no means of trivial empirical magnitude. Thus households in the UK, Italy and France have lost, year after year, the equivalent of nearly 3,8% of their consumption because of the loss on their net monetary positions. The loss is smaller, ranging from 1,4% to 2,2%, for the two other countries but still quite large. Thus households have lost a non trivial amount of wealth because of: 1) holding NIBA (loosely labelled from now onwards as "money"(16)); 2) the nominal interest rate not moving on a one to one basis with respect to expected inflation; 3) unexpected inflation.

TABLE 2

Total redistributions on net monetary positions
(1974-1982)*

	I	UK**	F ***	B	D
Households: total redistributions as % of consumption	-3,77	-3,81	-3,80	-2,18	-1,38
Non financial enterprises:total redistributions as % of investment	1,85	1,32	0,50	-3,55	0,33
Government: total redistributions as % of revenue	7,87	3,96	2,59	2,29	0,95
Rest of world: total redistributions as % of exports	0,66	-3,38	-0,07	0,16	0,06
Financial institutions:total redistributions as % of gross disposable income	-38,65	44,41	93,27	116,54	22,01
Average rate of PPL %	-14,43	-12,46	-9,95	-7,35	-4,78

* I-Italy, UK-United Kingdom, F-France, B-Belgium, D-Germany.
** 1975-1982
*** 1974-1981

(16) Depending on the countries (see annex 3) NIBA broadly correspond to base money or M1 concepts.

Non financial enterprises have generally gained, being net debtors, by seeing the real value of their liabilities reduced by inflation. Only in the case of Belgium, due to the loss on money and the high level of real interest rates in the second half of the 70's, have enterprises lost from inflation.

The government has been one of the main beneficiaries from inflation being a net debtor and having a large share of it in "money" terms. Thus, because of inflation, the Government has increased its tax and other revenue by about 8% in Italy, 4% in the UK, and over 2% in Belgium and France. Only in Germany, due to the low level of inflation and the relatively small level of indebtedness of the Government, has there been a small redistribution in its favour.

The redistributions between each of the individual countries and the rest of the world are relatively small except in the case of the UK which has gained resources from the rest of the world to the tune of just over 3% of its exports. These gains reflect to a large extent the position of the sterling as a reserve currency. The size of redistribution in the financial sectors of the different countries in comparison to their gross disposable income is very substantial reflecting the large redistribution on non-interest-bearing accounts.

Table 2 also reveals that the average size of redistribution is usually higher in countries with larger rates of depreciation of monetary assets. This holds for practically all sectors. For convenience the countries in the table are arranged by their average rate of PPL during the sample period.

IV.2. Expected versus unexpected redistributions

Table 3 breaks down the total redistribution from Table 2 into average expected and unexpected components for each of the sectors. Again

for convenience the countries are arranged by descending order of their average PPL during the sample period. It is apparent from Tables 2 and 3 that in general when average total redistribution is large, average expected redistribution is substantially larger than average unexpected redistribution. However these averages hide two quite different types of behaviour for the two components of redistribution. While the sign of expected redistribution is usually the same over time within a given sector and country, the sign and size of unexpected redistribution fluctuates substantially over time within a given sector and country (17). As a result average unexpected redistribution tends to be small in comparison to average expected redistribution because negative and positive values of unexpected redistribution tend to offset each other. Thus the contribution of unexpected redistribution to total redistribution within any given period is usually much larger than what would seem to be the case when only average figures are considered. This also makes sense from a theoretical point of view because the expected value of unexpected redistribution is zero. Otherwise this redistribution would contain a systematic component and it would not be unexpected. Since the average values of unexpected redistribution in Table 3 are estimates of the expected value of unexpected redistribution it is not surprising that they are not too far away from zero.

(17) See annex 1.

TABLE 3

Average expected versus average unexpected redistributions
(1974/82 for all countries except France - 1974/81 and UK - 1975/82)

Country	Expected * redistribution	Unexpected* redistribution	Standard deviation of unexpected redistribution - σ_u
A, Households			
I	-4,02	0,25	6,7
UK	-3,64	-0,18	3,0
F	-2,62	-1,18	0,9
B	-0,95	-1,23	2,2
D	-1,45	0,08	1,8
B, Entreprises			
I	2,35	-0,50	9,5
UK	1,09	0,23	3,2
F	-2,12	2,62	1,8
B	-5,07	1,52	2,3
D	0,64	-0,31	4,3
C, Government			
I	8,23	-0,36	7,9
UK	3,65	0,31	3,9
F	2,31	0,28	0,3
B	0,95	1,34	2,4
D	0,90	0,05	0,3
D, Rest of the World			
I	0,35	0,32	0,9
UK	-3,31	-0,06	0,7
F	-0,18	0,12	0,1
B	0,23	-0,07	0,2
D	0,03	0,04	0,3
E, Financial Institutions			
I	-39,16	0,51	13,4
UK	-45,08	-0,67	4,6
F	99,28	-6,01	3,3
B	117,86	-1,33	6,8
D	21,39	0,63	5,4

* Both expected and unexpected redistributions are measured as percentages of: consumption for households, investment for enterprises, revenue for government, exports for rest of the world and gross disposable income for financial institutions.
Country initials are: I-Italy, UK-United Kingdom, F-France, B-Belgium and D-Germany.

In order to quantify the normal variability of unexpected redistribution it is useful to compute for each country and sector the standard deviation of unexpected redistribution around its theoretical expected value which is zero. The resulting expression, denoted by σ_u, appears in the last column of Table 3. Comparison of σ_u with the corresponding average values of expected and unexpected redistributions reveals several interesting features. Firstly this standard deviation is usually higher than the absolute value of mean unexpected redistributions. This suggests that the contribution of unexpected redistribution to total redistribution is much more substantial than what is shown by the means of unexpected redistributions alone(18). Secondly for the two high inflation countries (Italy and the UK), σ_u is higher in most sectors than the value of σ_u in the same sector in the lower inflation countries . Since σ_u can be taken as a gross measure of the uncertainty inflicted by inflation on the various sectors, this finding suggests that all sectors in the high inflation countries experienced a higher level of uncertainty than in the low inflation countries(19). In the high inflation countries σ_u is even higher than the mean values of expected redistribution in some sectors, suggesting that for these countries and sectors unanticipated redistribution dominates the scene(20). Thirdly average expected and unexpected redistributions in the household sector are generally negative. The first finding reflects the net positive position of households in monetary assets and the less than full adjustment of the nominal rate of interest to expected inflation over the period. The second finding reflects the predominance of underestimates of inflation during the second part of the seventies which were partly compensated for by overestimates in the eighties. The counterparts of these findings are the predominantly

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(18) A fuller appreciation of this fact can be obtained from the raw redistribution figures in Annex 1. In the United Kingdom the shift in emphasis from direct to indirect taxation involved a large unanticipated loss on monetary assets of households in 1979, while a large unanticipated gain was recorded in 1982 when the slowdown in inflation was a lot faster than predicted.

(19) This result is consistent with the joint finding that the mean and the variance of inflation are positively related (Logue and Willet (1976)) and that inflation variance and inflation uncertainty are positively related (Cukierman and Wachtel (1982)).

(20) Further details and implications of uncertainty appear in subsection IV.5 below.

positive average expected and unexpected redistributions enjoyed by the enterprise and government sectors, which are usually net borrowers in monetary assets. It is of interest to note, finally, that most of the relatively large redistribution in favour of the domestic sector in the UK is contributed by the anticipated component. Furthermore, as can be seen from the data on the UK in Annex 1, most of this expected redistribution is on NIBA, underlining the role of sterling as a reserve currency.

IV.3 The expected tax on real money balances - A cross country comparison

Expected redistribution has two distinct components: one is expected redistribution on NIBA, more commonly known as the (expected) inflation tax on money(21). This component of redistribution is captured by $\pi^e_t M_{it}$ which is the second component on the right hand side of equation(12)(22). The data of this study makes it possible to evaluate the importance of the tax on real money balances for various sectors of the economy(23). This subsection focuses on the distribution of this tax across sectors and countries.

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(21) The total tax on real money balances also includes an unanticipated component. Since this component is qualitatively different from the anticipated component it is excluded from the discussion of this subsection which focuses on the anticipated component. Obviously when there is no uncertainty as in Bailey's (1956) steady state, the expected and the total tax on real money balances become identical.

(22) The detailed figures on this component appear in the second column of Annex 1.

(23) By contrast most previous empirical work was at the economy wide level (Cagan (1956), Bailey (1956) and recently Fischer (1981, 1982)).

The main beneficiary of the inflation tax (IT) is obviously the government. Table 4 suggests that this tax added about 6% on average to government revenues in Italy and a little less than 1% in Germany. The other countries are somewhere in between. With the notable exception of the UK the relative contribution of the expected inflation tax to governmental revenue increases with the average rate of inflation of the country.

The main "payers of inflation tax" are the household and the enterprise sectors. We consider households who have paid the largest fraction of the inflation tax first. The tax they paid ranges from a maximum of 2,57% of consumption in France to a minimum of 0,57% for Germany(24).

TABLE 4

Average expected government revenues from the inflation tax as % of total government revenue - IT

Country	Italy	UK	France	Belgium	Germany
IT	5,75	1,32	2,24	1,63	0,94
π^e	-14,92	-10,98	-8,75	-6,77	-4,47

Source: Annex 1.

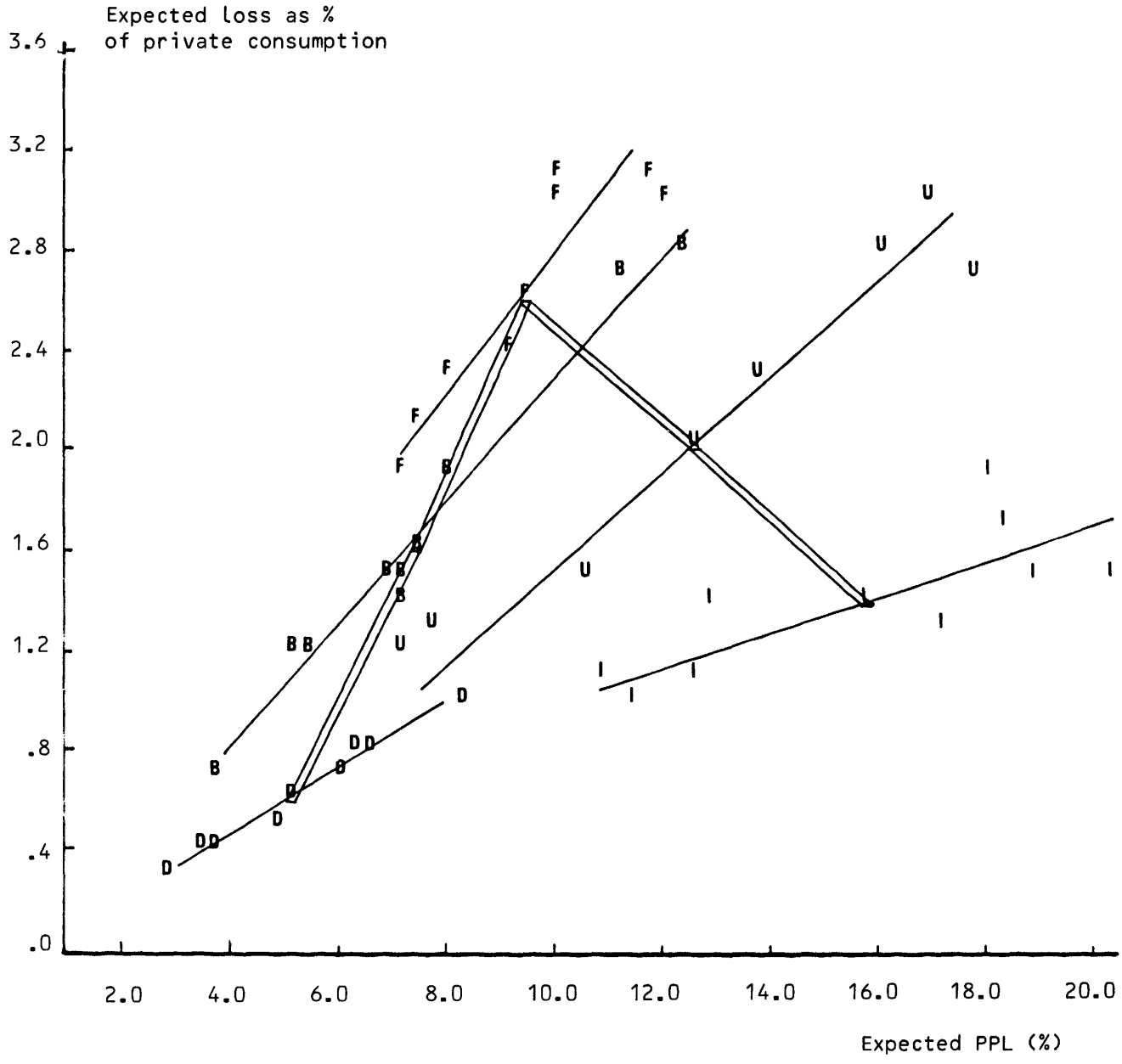
(24) See Annex 1. Whether this is a large or a small figure is something of a moot point. Buiter (1981) expressed the judgement that his estimates of the inflation tax for the UK (of the same order of magnitude as ours) were indeed "very small". Cotula and Masera (1980) on the other hand stressed, the importance of the inflationary tax in the Italian economy. If we consider the fact that for France, whose households realized the largest loss, this represented the income of more than 800 000 people which, year after year, has been lost by the household sector because of the holding of money balances, this may look a sizeable amount but ultimately what is big or small depends on the standard of comparison.

It is interesting to find out how the expected inflation tax paid by households differs with the change in the expected purchasing power loss of money. This is done in figure 1 where the losses realized by households on money balances are plotted against the expected purchasing power loss of money. If we consider the observations relating to single countries (described by hand drawn fitted lines) we can see that the losses are more or less proportional to expected PPL. In any given year the inflationary tax as a percent of consumption is given by $R_t = \frac{M_t}{C_t} \cdot \pi^e_t$, i.e. the ratio of money balances held by the households to private consumption multiplied by the expected PPL. The approximately linear nature of the relationship country by country in figure 1 shows that any change in the ratio of money to consumption which has occurred in the period has not been strong enough to weaken the relationship between expected losses and expected inflation(25). Although a careful analysis of the data may find some evidence that households indeed economize on money balances when expected inflation grows, this is by no means a striking phenomenon.

If, however, we consider only the underlined observations which give the average expected loss on money and the average expected PPL over the whole period for each country a striking phenomenon appears: cross sectionally, the inflation tax grows as expected inflation increases, reaches a maximum (corresponding to the average observation for France) where expected PPL is around 10% and then decreases dramatically. One interpretation of this finding is that households are unable to escape, year after year, the inflation tax by reducing real money balances. However, if we compare different countries with different inflation histories it

(25) The pattern is practically identical if we standardize by GDP rather than by consumption.

Fig. 1: Loss on holdings of NIBA by households (inflation tax as a % of private consumption) with respect to expected PPL (1974/1982)



B = Belgium; D = Deutschland; F = France; I = Italy; U = United Kingdom

Underlined observations denote sample averages

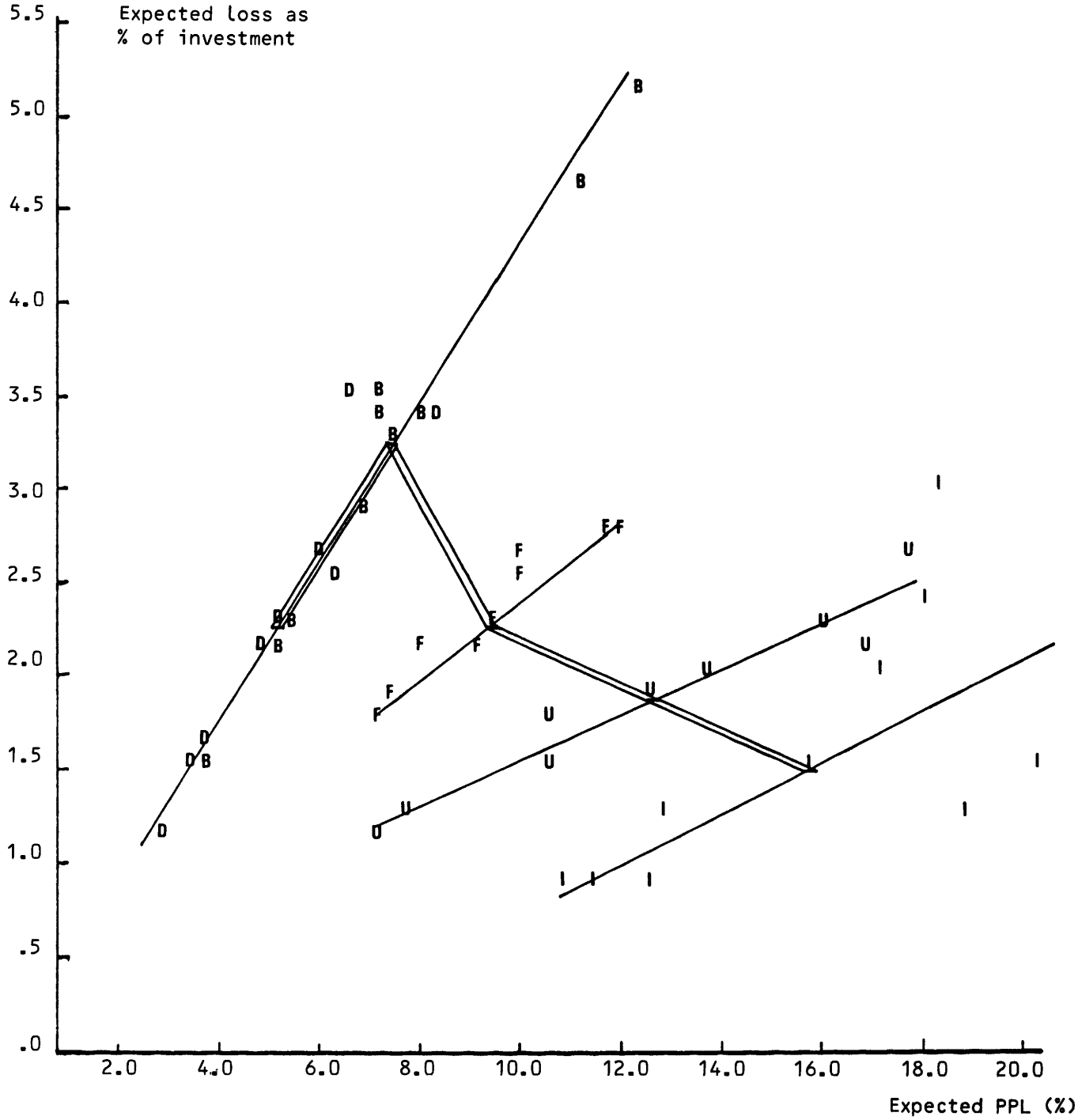
appears that financial systems adapt themselves over time and allow households in the country with the highest inflation rate to protect themselves by reducing their holdings of real money balances. This suggests that the long run elasticity of money demand with respect to PPL is larger in absolute value than in the short run. The conclusion for economic policy is that over the short run the government can, by increasing inflation, extract additional resources from money holders and the relationship is approximately linear. However, over the long run the financial systems adapt themselves, and severely limit the ability to increase the inflation tax on households.

An implication of figure 1 is that if the rate of inflation is kept above 10% for a long enough period (nine years in our sample), the inflation tax levied on households actually becomes a negative function of expected inflation.

A similar picture emerges if one considers the inflation tax paid by non-financial enterprises expressed as a % of gross investment and given in figure 2. Furthermore, one can observe that the slopes of the fitted lines in figure 2 decrease, by and large, as we move from left to right, i.e. from countries with low to countries with high inflation. Thus there is, apparently, a worsening trade-off between inflation and inflationary tax in the sense that a larger and larger amount of inflation has to be engineered to give the same revenue.

The fact that cross-sectionally the inflation tax first increases, reaches a peak, and then decreases with inflation, is reminiscent of the argument that, because the elasticity of money demand with respect to expected inflation is an increasing function of expected inflation, the expected tax on real money balances is an inverted U function of expected

Fig. 2: Loss on holdings of NIBA by enterprises (inflation tax as a % of investment) with respect to expected PPL (1974/1982)



B = Belgium; D = Deutschland; F = France; I = Italy; U = United Kingdom

Underlined observations denote sample averages

inflation (Cagan (1956), Bailey (1956), Sargent and Wallace (1981)). But there is an important difference. In our sample all countries operate in the range in which the elasticity of the demand for money by both households and firms is smaller than unity in absolute value. On the other hand, as we move from a country like Germany, which has had a persistently low rate of inflation, to a country like Italy with a high inflation history, the inverted U reappears. In the cross sectional comparison, the inflation tax ultimately goes down with inflation, because countries with persistent inflationary experiences develop more efficient near moneys and introduce other money saving devices. The cross sectional inverted U-shaped curve reflects those elements which tend to make the long-run elasticity of money demand with respect to inflation larger than one, although it is smaller than one in the short-run within any given country. The upshot is that, because of costs of adjusting the institutional structure to inflation, there is a substantial difference between the expected inflation tax that can be extracted at x% expected inflation in a country with a mild inflationary history and a country with a high and persistent inflation. In the latter country the inflation tax will be substantially lower.

In most countries financial institutions share in the benefits of the inflation tax. Those benefits are, as a percentage of gross disposable income of those institutions, relatively large and range from 31% of income in Germany to 131% for Belgium. In Italy financial institutions actually pay an inflation tax which was on average during the sample period 43% of their income (see Annex 1 for details)(26).

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(26) It should be remembered, however, that the relationship between the central bank and the financial institutions is often of a complexity which is not easily captured by our distinction between IBA and NIBA. Thus, for instance, compulsory reserves held by commercial banks with the Banca d'Italia are remunerated at 5,5%, a rate which is not zero, but is not a market rate either. The solutions adopted for this kind of problem are given in the data appendix. We are aware, however, that the estimated share-out of the inflationary tax between Government and financial institutions is by no means perfect and is heavily influenced by the institutional characteristics of each country.

Finally, the rest-of-the-world sector does not feature any important expected inflation tax, except in the case of the UK in which the average inflation tax paid by this sector is 3,4% of British exports. As a matter of fact, this tax in the case of the UK is the major component of total redistribution from the foreign to the domestic sector. Again it reflects the special position of the sterling as a key currency(27).

IV.4 Expected redistribution on interest bearing assets

Unlike NIBA for which the nominal rate is zero, the interest rate on IBA is free to adjust to expected inflation. It is therefore interesting to check to what extent this adjustment prevented expected redistributions from taking place through IBA.

Table 5 presents the average expected redistributions on IBA in terms of the normalizing variables for each sector. In the seventies in most countries the nominal interest rate did not adjust sufficiently to compensate lenders for the expected depreciation in the purchasing power of money. As a result, in all countries except Belgium, expected inflation has redistributed income away from the household sector. The main beneficiaries of this transfer are enterprises and Government in Italy and the UK and mostly enterprises in Germany. Thus, during the second half of the seventies, an increase in inflation, even when expected, tended to redistribute resources away from lenders in favour of borrowers but a change in this pattern can be seen in the last two years studied because of the substantial increase in the real rate of interest.

It is appropriate to note that the expected losses suffered by households are particularly large in the high-inflation countries: Italy and the UK, while in the other countries (Belgium and France, in particular) these losses are negligible. However, this average behaviour hides sizeable offsetting redistributions, particularly in Belgium over the

(27) To a much smaller extent, this is also true for the German Mark and the French Franc.

years. This can be seen more clearly from figure 3 which presents the yearly expected losses (or gains) of the household sector on IBA in each country as a function of expected PPL. It is clear from the figure that the almost zero average redistributions for Belgium and France (marked by underlined capital letters) hide violent offsetting fluctuations in these redistributions over the years.

TABLE 5

Average expected redistribution on interest-bearing assets by sector and country*

Country \ Sector	Household	Enterprises	Government	Rest of the world	Financial Institutions
Italy	-2,67	3,85	2,48	0,38	4,23
UK	-1,64	2,85	2,33	0,09	-19,35
France	-0,05	0,13	0,07	0,09	-1,97
Belgium	0,65	-1,93	-0,68	0,23	-12,89
Germany	-0,88	2,86	-0,04	0,29	-9,34

* Redistribution is measured as a percentage of: consumption for households, investment for enterprises, revenue for government, exports for rest-of-the-world and gross disposable income for financial institutions.

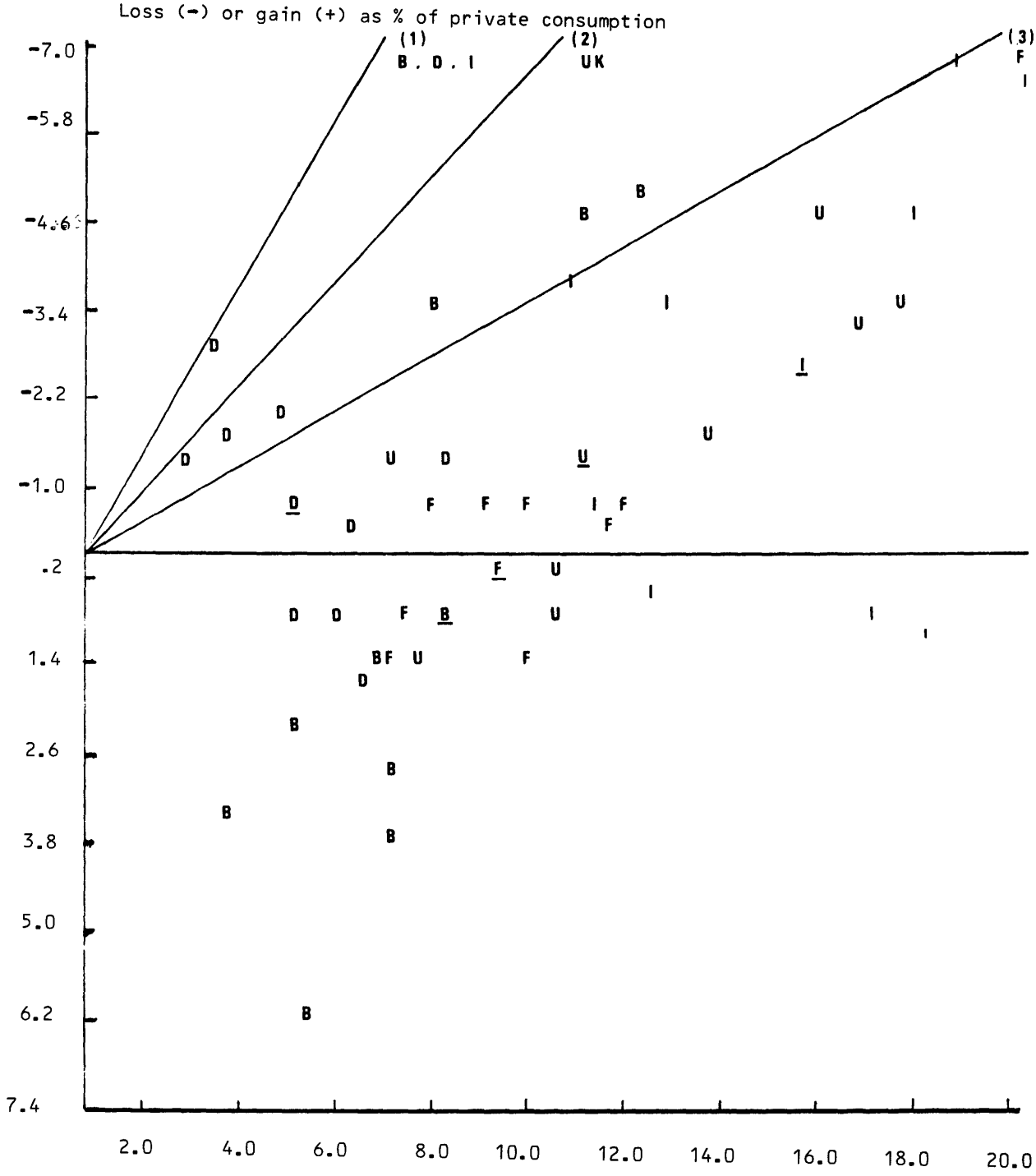
Source: Annex 1.

Figure 3 reveals some additional facts: firstly, within a given country there is little apparent connection between expected redistribution and expected PPL. However, cross sectionally, expected losses of households first decrease, bottom out and then increase with the expected loss in the purchasing power of money.

Figure 3 can be used to illustrate the fact that ignoring Fisher's premium in interest rates when calculating redistributions on IBA (as Bach

(5)

Fig. 3: Expected losses (-) or gains (+) on IBA held by households (as % of private consumption) with respect to expected PPL (1974-1982)



B = Belgium; D = Deutschland; F = France; I = Italy; U = United Kingdom
Underlined observations denote sample averages. If the nominal rate of interest did not compensate at all for expected inflation and losses were estimated by $\frac{\text{IBA}}{\text{consumption}} \pi^e_t$, the estimated losses of Belgian, German and Italian households on their holdings of IBA would fall around line (1), for UK households around line (2) and for French households around line (3).

and Ando (1957) and Bach and Stephenson (1974) do) may seriously bias the resulting redistribution figures. The redistributions plotted in figure 3 are defined as

$$(16) \qquad R_{Ht} = (i_{It} + \pi_t^e - i_N) \frac{L_{Ht}}{C_t}$$

where L_{Ht} and C_t are, respectively, net IBA and total consumption of the household sector. Disregarding Fisher's premium makes

$i_{It} = i_N$ in which case equation (16) reduces to

$$(16a) \qquad R_{Ht} = \pi_t^e \frac{L_{Ht}}{C_t}$$

so that per unit expected redistribution is measured just by π_t^e. The ratio of net IBA to consumption (L_{Ht}/C_t) has not changed to such an extent in the sample period considered as to substantially alter the linear relationship between redistributions and expected PPL. Hence for the case in which interest rates do not adjust at all to inflation, observed expected redistributions on IBA in each country should be scattered around the upward sloping line whose slope is L_{Ht}/C_t. This ratio has been approximately unity for Belgium, Germany and Italy, 2/3 for the UK and 1/3 for France. These lines are drawn as benchmark lines in figure 3.

It is clear that the observations do not fall at all around these lines being scattered consistently below them. The conclusion is that by overlooking the inflationary premium contained in the nominal rate of interest, one biases substantially the estimates of inflationary redistributions on IBA.

IV.5 Unexpected redistribution and uncertainty versus total redistribution - a further look

The point is often made that a large part of the cost of inflation is induced by its unpredictability (28). Given inflation uncertainty, the larger the net monetary position of a sector in relation to its size, the heavier the burden of inflation uncertainty on this sector. The variance σ_u (29), which incorporates both the effect of inflation uncertainty and of the net position of the sector in monetary assets relative to some measure of the sector's size, is a measure of the vulnerability of the sector to inflation uncertainty. In particular, it reflects the fact that sectors with higher net monetary positions in relation to their size will suffer more from inflation uncertainty. It can be seen from the last column of Table 3 that all sectors in the two high inflation countries (Italy and the UK) sustain (by the σ_u measure) higher exposure to uncertainty than the respective sectors in the low inflation countries (Germany, Belgium and France). However, within the last group this relationship is not always monotonic because of differences in net monetary positions across countries. For example, French households have sustained a smaller exposure to uncertainty than Belgian or German households, because the ratio of the net monetary position to consumption is much lower in the French household sector.

We saw in subsection IV.2 above that average unexpected redistributions across sectors and countries were generally not very large in relation to total average redistributions. The argument was made there that, because of offsetting movements in unexpected redistribution over the years, this grossly underestimates the contribution of unexpected redistribution to total redistribution. This point is illustrated by Tables 6 and 7, which bring out the relative size of unanticipated redistribution (UR) in the household sector of the various countries on a yearly basis.

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(28) Fischer and Modigliani (1978) and Fischer (1981). Note that variability and unpredictability are distinct concepts which tend to be positively related. Further details appear in chapter 4 of Cukierman (1984).

(29) See Table 3 and subsection IV.2 above.

TABLE 6

Relative size of unanticipated redistribution in comparison to total redistribution in the household sector.*

Year	ITALY				U.K.				FRANCE				BELGIUM				GERMANY			
	TR	UR	FU	π	TR	UR	FU	π	TR	UR	FU	π	TR	UR	FU	π	TR	UR	FU	π
1973	–	–	–	11,13	–	–	–	–	–	–		7,82	–	–	–	6,07	–	–	–	7,24
1974	-14,39	-9,50	66	19,68	–	–	–	16,07	-6,51	-2,69	41	13,16	-12,05	-4,59	38	13,55	0,24	2,76	1138	5,54
1975	2,70	9,32	345	10,10	-9,84	-3,46	35	19,97	-1,11	0,42	38	8,78	-5,28	2,40	45	9,90	-0,68	-0,70	103	5,10
1976	-14,32	-9,44	66	18,03	-5,63	1,96	35	13,01	-4,31	-1,18	27	8,98	-4,80	0,44	9	7,06	-1,99	0,59	30	3,52
1977	6,42	7,03	109	12,31	-2,33	1,73	74	10,79	-2,37	-1,10	47	8,24	-0,02	0,26	1178	5,92	-2,48	-0,39	16	3,33
1978	1,12	1,77	158	10,42	-3,56	-1,04	29	7,81	-2,41	-1,79	74	8,85	1,98	1,05	53	3,76	-2,81	0,51	18	2,46
1979	-8,39	-6,74	80	15,82	-5,96	-5,88	99	14,77	-4,78	-1,64	34	10,55	-0,44	-3,10	700	4,86	-5,63	-3,78	67	5,04
1980	-7,37	0,85	12	17,57	-3,36	2,84	84	13,15	-4,35	-0,74	17	12,04	1,30	-3,71	284	7,04	-0,95	0,45	47	5,20
1981	-2,70	5,39	200	15,32	-2,13	-0,66	31	10,71	-4,54	-0,75	17	12,51	0,51	-1,79	351	7,48	-0,89	-0,79	89	5,94
1982	2,99	3,54	118	13,90	2,30	3,04	132	5,87	–	–	–	8,69	-0,81	-2,03	251	7,85	2,79	2,04	73	4,46

π – Purchasing power loss of money TR – Total redistribution UR – Unanticipated redistribution $FU = \left| \frac{UR}{TR} \right| \times 100$

* – The third column in each country (labelled FU) gives the absolute value of the percentage of unanticipated out of total redistribution. TR and UR are measured as percentages of total consumption.

Source: Annex 1 and Table 1 of this paper and Table 1 of Papadia (1984).

TABLE 7

Yearly averages over countries of $\left|\frac{UR}{TR}\right| 100$ in the household sector and purchasing power loss of money (PPL)

Year	Average of UR	Average of $\left\|\frac{UR}{TR}\right\| 100$	Average PPL
1973	-	-	8,07
1974	-3,51	321	13,60
1975	1,60	113	10,77
1976	-1,53	33	10,12
1977	1,51	285	8,12
1978	0,10	66	6,66
1979	-4,23	196	10,21
1980	-0,06	89	11,00
1981	0,28	138	10,39
1982	1,65	143	8,15

Source: Calculated from Table 6.

Table 6 brings out the fact that unanticipated redistribution is an important component, and in some years the dominant component of redistribution. This is particularly striking in Italy where unanticipated redistribution is usually above 60% of total redistribution and in some years even higher, in absolute value, than total redistribution. But even in a low inflation country like Germany, unanticipated redistribution is usually more than one half of total redistribution in absolute value.

Another interesting feature brought out by Table 6 is that unanticipated redistribution away from the household sector increases when the rate of inflation increases (UR is large and negative) and decreases, becoming a redistribution in favour of households (UR being positive), when the rate of inflation decreases. This is clearly seen for Italy, France and Belgium in 1974 which is a year of dramatic acceleration of inflation and of a large unanticipated redistribution away from households in those countries. A similar phenomenon occurs in the UK in 1975, in Italy in 1976 and in all the countries in 1979. The reverse phenomenon occurs in Italy,

France and Belgium in 1975; the rate of inflation goes down quite sharply and UR becomes positive, i.e. household actually gain on this component. A similar phenomenon occurs a year later in the UK and in Italy in 1977 and to varying degrees in most countries in the eighties. These movements can be seen more compactly in Table 7 in which the average values of UR, PPL and the relative size of UR in each year over countries are presented. A comparison of the column for the averages and the averages of PPL suggests that in years of increasing inflation average UR is usually negative, while it is usually positive in years of decreasing inflation. A comparison of the averages of $\left|\frac{UR}{TR}\right| 100$ with average yearly PPL suggests that the relative importance of unanticipated redistribution as a fraction of total redistribution increased with the rate of inflation (30).

The argument is sometimes made that since unexpected redistributions cancel out at the aggregate level they should not be considered as a "cost" of inflation. Even if we were willing to accept the social welfare function implicit in this statement, the argument would be true only in a world of risk neutral individuals. For risk averse individuals, unexpected redistribution, even with a zero expected value, represents a real cost,which increases with the variance of the unexpected redistribution. It may be concluded that the evidence of Tables 3, 6 and 7 suggests that during the second half of the seventies uncertain inflation imposed non-negligible costs on households and other sectors with relatively large net monetary positions like enterprises and government. These costs were particularly high in relatively high inflation countries: Italy and the UK. The results for the beginning of the eighties suggest that the relative size of the unanticipated redistribution associated with an unpredicted slowdown of inflation may also be substantial.

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(30) Similar general characteristics emerge in the other sectors particularly so in the enterprise and government sector. The detailed relevant data appears in Annex 1.

Secondly, the effect of non-indexed taxation of interest on net real after tax redistribution has been abstracted from. The discussion focuses instead on before tax redistributions(32). Thirdly, survey-based inflatonary expectations of the type used in this study depend on a number of restrictive assumptions(33). However because of the inherent elusiveness of inflationary expectations to exact empirical measurement, any attempt to measure inflationary expectations including various versions of rational expectations must rely on some restrictive assumptions. Thus, in spite of these limitations, we believe that the present study sheds some new light on the phenomenon of inflation-induced redistribution in Western Europe over the recent past. Future work on this issue may need to deal more explicitly with the effects of nominal and differential taxation on redistribution.

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(32) As a result, inflation-induced changes in ex ante real rates, which are caused by differential nominal taxation of lenders and borrowers of the type discussed by Birati and Cukierman (1979), are abstracted from.

(33) See Papadia and Basano (1981) for details.

Annex 1

Basic data on redistribution

for the years 1974-1982 (1975-1982 for the UK, 1974-1981 for France)

A. Redistribution as a percent of sector specific flows.

BELGIUM REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-4.84	-2.61	-4.59	(38)	-12.05
1975	-4.90	-2.78	2.40	(45)	-5.28
1976	-3.42	-1.82	.44	(9)	-4.80
1977	1.18	-1.46	.26	(1178)	-.02
1978	2.04	-1.10	1.05	(53)	1.98
1979	3.36	-.70	-3.10	(700)	-.44
1980	6.11	-1.10	-3.71	(284)	1.30
1981	3.70	-1.40	-1.79	(351)	.51
1982	2.62	-1.40	-2.03	(251)	-.81
AVERAGE	.65	-1.60	-1.23	(56)	-2.18
		ENTERPRISE			
1974	6.82	-4.59	3.64	(62)	5.87
1975	7.14	-5.04	-2.01	(2181)	.09
1976	5.19	-3.36	-.38	(27)	1.45
1977	-1.88	-2.78	-.25	(5)	-4.91
1978	-3.33	-2.09	-1.07	(16)	-6.49
1979	-5.83	-1.42	3.39	(88)	-3.86
1980	-10.99	-2.20	4.36	(49)	-8.83
1981	-8.26	-3.32	2.69	(30)	-8.89
1982	-6.22	-3.50	3.31	(52)	-6.40
AVERAGE	-1.93	-3.14	1.52	(43)	-3.55
		GOVERNMENT			
1974	5.39	3.21	5.22	(38)	13.82
1975	5.03	3.06	-2.50	(45)	5.59
1976	3.57	1.77	-.45	(9)	4.89
1977	-1.20	1.36	-.26	(259)	-.10
1978	-1.98	1.02	-1.01	(51)	-1.97
1979	-3.35	.64	3.05	(897)	.34
1980	-6.25	1.01	3.72	(245)	-1.52
1981	-4.13	1.32	1.95	(226)	-.86
1982	-3.19	1.26	2.37	(543)	.44
AVERAGE	-.68	1.63	1.34	(59)	2.29
		REST OF WORLD			
1974	.34	.00	.26	(43)	.60
1975	.30	.00	-.12	(66)	.18
1976	.25	.00	-.03	(12)	.22
1977	-.06	.00	-.01	(15)	-.07
1978	-.08	.00	-.03	(30)	-.11
1979	.01	.00	-.01	(327)	.00
1980	.35	.00	-.18	(103)	.17
1981	.41	.00	-.17	(69)	.24
1982	.55	.00	-.36	(190)	.19
AVERAGE	.23	.00	-.07	(45)	.16
		FINANCIAL INSTITUTIONS			
1974	-104.47	180.18	-18.36	(32)	57.36
1975	-119.49	249.59	6.45	(5)	136.55
1976	-145.37	275.64	2.56	(2)	132.83
1977	24.48	116.96	.65	(0)	142.08
1978	44.53	99.71	2.39	(2)	146.63
1979	56.01	48.76	-5.96	(6)	98.81
1980	72.36	62.33	-2.35	(2)	132.34
1981	36.97	78.72	.90	(1)	116.59
1982	19.00	64.86	1.78	(2)	85.64
AVERAGE	-12.89	130.75	-1.33	(1)	116.54

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF: CONSUMPTION FOR HOUSEHOLDS, INVESTMENT FOR ENTERPRISES, REVENUE FOR GOVERNMENT, EXPORTS FOR REST OF WORLD, GROSS DISPOSABLE INCOME FOR FINANCIAL INSTITUTIONS

GERMANY REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS o/o OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-1.54	-.98	2.76	(1138)	.24
1975	.55	-.53	-.70	(103)	-.68
1976	-2.10	-.48	.59	(30)	-1.99
1977	-1.73	-.36	-.39	(16)	-2.48
1978	-2.96	-.36	.51	(18)	-2.81
1979	-1.56	-.29	-3.78	(67)	-5.63
1980	-.67	-.73	.45	(47)	-.95
1981	.60	-.70	-.79	(89)	-.89
1982	1.48	-.73	2.04	(73)	2.79
AVERAGE	-.88	-.57	.08	(6)	-1.38
		ENTERPRISE			
1974	5.14	-3.34	-7.18	(133)	-5.38
1975	-2.12	-2.20	2.11	(95)	-2.22
1976	7.60	-2.04	-1.66	(43)	3.90
1977	5.86	-1.55	1.03	(19)	5.34
1978	9.37	-1.41	-1.24	(19)	6.71
1979	4.59	-1.06	8.48	(71)	12.00
1980	1.93	-2.44	-1.01	(66)	-1.51
1981	-1.83	-2.50	1.89	(77)	-2.45
1982	-4.82	-3.40	-5.19	(39)	-13.41
AVERAGE	2.86	-2.22	-.31	(93)	.33
		GOVERNMENT			
1974	-.35	1.77	.02	(1)	1.44
1975	.12	1.01	.01	(1)	1.13
1976	-.15	.78	-.06	(11)	.57
1977	-.02	.62	.06	(9)	.66
1978	.11	.59	-.10	(17)	.60
1979	.11	.48	.89	(60)	1.48
1980	.06	1.18	-.11	(10)	1.13
1981	-.05	1.02	.17	(15)	1.15
1982	-.17	1.03	-.47	(119)	.39
AVERAGE	-.04	.94	.05	(5)	.95
		REST OF WORLD			
1974	.33	-.41	-.40	(83)	-.48
1975	-.17	-.27	.16	(56)	-.29
1976	.65	-.22	-.14	(46)	.29
1977	.53	-.19	.09	(20)	.43
1978	.82	-.16	-.10	(19)	.56
1979	.45	-.13	.81	(71)	1.13
1980	.14	-.33	-.06	(25)	-.25
1981	-.08	-.33	.05	(16)	-.35
1982	-.11	-.33	-.06	(11)	-.49
AVERAGE	.29	-.26	.04	(63)	.06
		FINANCIAL INSTITUTIONS			
1974	-17.82	51.32	12.75	(28)	46.25
1975	5.23	26.74	-2.24	(8)	29.73
1976	-21.63	28.42	1.87	(22)	8.66
1977	-17.00	22.72	-1.05	(23)	4.67
1978	-27.07	21.42	1.15	(26)	-4.51
1979	-14.11	15.79	-9.05	(123)	-7.37
1980	-5.45	35.89	1.01	(3)	31.45
1981	4.17	35.06	-1.08	(3)	38.16
1982	9.61	39.21	2.26	(4)	51.08
AVERAGE	-9.34	30.73	.63	(3)	22.01

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF: CONSUMPTION FOR HOUSEHOLDS, INVESTMENT FOR ENTERPRISES, REVENUE FOR GOVERNMENT, EXPORTS FOR REST OF WORLD, GROSS DISPOSABLE INCOME FOR FINANCIAL INSTITUTIONS

FRANCE REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-.81	-3.01	-2.69	(41)	-6.51
1975	1.40	-2.93	.42	(38)	-1.11
1976	-.90	-2.23	-1.18	(27)	-4.31
1977	.76	-2.02	-1.10	(47)	-2.37
1978	1.25	-1.87	-1.79	(74)	-2.41
1979	-.77	-2.37	-1.64	(34)	-4.78
1980	-.51	-3.10	-.74	(17)	-4.35
1981	-.79	-3.00	-.75	(17)	-4.54
AVERAGE	-.05	-2.57	-1.18	(31)	-3.80
		ENTERPRISE			
1974	3.90	-2.45	5.43	(79)	6.87
1975	-7.20	-2.56	-.95	(9)	-10.70
1976	4.27	-2.00	2.51	(52)	4.78
1977	-3.76	-1.76	2.56	(86)	-2.97
1978	-6.19	-1.74	4.25	(116)	-3.68
1979	3.56	-2.10	3.68	(72)	5.14
1980	2.43	-2.70	1.65	(120)	1.38
1981	4.00	-2.65	1.81	(57)	3.16
AVERAGE	.13	-2.25	2.62	(525)	.50
		GOVERNMENT			
1974	-.45	3.45	.77	(20)	3.78
1975	.66	3.22	-.12	(3)	3.75
1976	-.47	1.81	.11	(8)	1.45
1977	.33	1.63	.14	(7)	2.10
1978	.46	1.50	.26	(12)	2.22
1979	.01	1.84	.56	(23)	2.41
1980	.02	2.22	.25	(10)	2.49
1981	.01	2.26	.26	(10)	2.53
AVERAGE	.07	2.24	.28	(11)	2.59
		REST OF WORLD			
1974	.33	-.29	.43	(91)	.47
1975	-.31	-.30	-.03	(4)	-.63
1976	.31	-.22	.16	(65)	.25
1977	-.08	-.19	.02	(6)	-.25
1978	-.14	-.20	.03	(9)	-.31
1979	.21	-.29	.17	(193)	.09
1980	.17	-.35	.10	(119)	-.08
1981	.21	-.34	.07	(130)	-.06
AVERAGE	.09	-.27	.12	(174)	-.07
		FINANCIAL INSTITUTIONS			
1974	-25.17	77.60	-7.89	(18)	44.54
1975	54.91	99.84	1.60	(1)	156.34
1976	-51.88	116.14	-8.15	(15)	56.12
1977	44.21	112.67	-7.39	(5)	149.50
1978	47.65	70.75	-8.71	(8)	109.69
1979	-28.41	86.19	-8.76	(18)	49.02
1980	-21.37	123.34	-3.96	(4)	98.01
1981	-35.69	123.49	-4.86	(6)	82.94
AVERAGE	-1.97	101.25	-6.01	(6)	93.27

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF: CONSUMPTION FOR HOUSEHOLDS, INVESTMENT FOR ENTERPRISES, REVENUE FOR GOVERNMENT, EXPORTS FOR REST OF WORLD, GROSS DISPOSABLE INCOME FOR FINANCIAL INSTITUTIONS

ITALY REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS o/o OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-3.55	-1.33	-9.50	(66)	-14.39
1975	-4.77	-1.85	9.32	(345)	2.70
1976	-3.86	-1.02	-9.44	(66)	-14.32
1977	1.06	-1.66	7.03	(109)	6.42
1978	.44	-1.09	1.77	(158)	1.12
1979	-.70	-.95	-6.74	(80)	-8.39
1980	-6.75	-1.47	.85	(12)	-7.37
1981	-6.61	-1.49	5.39	(200)	-2.70
1982	.71	-1.26	3.54	(118)	2.99
AVERAGE	-2.67	-1.35	.25	(7)	-3.77
		ENTERPRISE			
1974	5.20	-1.20	11.70	(75)	15.71
1975	9.00	-2.26	-14.74	(184)	-8.00
1976	6.91	-.80	14.65	(71)	20.76
1977	-1.89	-2.98	-10.31	(68)	-15.19
1978	-.71	-.86	-2.51	(61)	-4.08
1979	1.01	-.78	8.49	(97)	8.72
1980	7.88	-1.19	-.87	(15)	5.82
1981	8.35	-1.41	-5.97	(615)	.97
1982	-1.14	-1.97	-4.91	(61)	-8.03
AVERAGE	3.85	-1.50	-.50	(27)	1.85
		GOVERNMENT			
1974	2.56	6.11	10.44	(55)	19.11
1975	3.48	9.19	-10.68	(539)	1.98
1976	3.09	4.70	10.90	(58)	18.68
1977	-.91	8.31	-8.61	(714)	-1.21
1978	-.44	4.44	-2.22	(125)	1.78
1979	.72	3.95	8.58	(65)	13.26
1980	7.00	5.34	-1.04	(9)	11.29
1981	7.39	5.22	-6.95	(123)	5.66
1982	-.60	4.48	-3.65	(1556)	.23
AVERAGE	2.48	5.75	-.36	(5)	7.87
		REST OF WORLD			
1974	1.13	-.12	2.64	(72)	3.66
1975	.39	-.01	-.68	(224)	-.30
1976	.13	.00	.30	(69)	.43
1977	.09	-.02	.55	(89)	.61
1978	.02	-.04	.08	(127)	.06
1979	.04	-.02	.30	(95)	.31
1980	.96	-.03	-.11	(13)	.83
1981	.60	-.05	-.45	(413)	.11
1982	.05	-.02	.24	(90)	.27
AVERAGE	.38	-.03	.32	(48)	.66
		FINANCIAL INSTITUTIONS			
1974	21.93	-67.96	5.27	(13)	-40.76
1975	19.14	-71.22	1.61	(3)	-50.48
1976	.17	-34.20	-29.08	(46)	-63.11
1977	-.38	-56.81	19.09	(50)	-38.10
1978	-.44	-37.54	3.41	(10)	-34.58
1979	.28	-30.86	-14.82	(33)	-45.40
1980	-.99	-38.68	1.78	(5)	-37.89
1981	-2.38	-30.53	9.68	(42)	-23.23
1982	.71	-22.70	7.68	(54)	-14.31
AVERAGE	4.23	-43.39	.51	(1)	-38.65

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF: CONSUMPTION FOR HOUSEHOLDS, INVESTMENT FOR ENTERPRISES, REVENUE FOR GOVERNMENT, EXPORTS FOR REST OF WORLD, GROSS DISPOSABLE INCOME FOR FINANCIAL INSTITUTIONS

U.K. REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1975	⁻3.40	⁻2.99	⁻3.46	(35)	⁻9.84
1976	⁻4.82	⁻2.76	1.96	(35)	⁻5.63
1977	⁻1.81	⁻2.25	1.73	(74)	⁻2.33
1978	⁻1.36	⁻1.16	⁻1.04	(29)	⁻3.56
1979	1.14	⁻1.23	⁻5.88	(99)	⁻5.96
1980	⁻3.56	⁻2.64	2.84	(84)	⁻3.36
1981	.00	⁻1.47	⁻.66	(31)	⁻2.13
1982	.72	⁻1.46	3.04	(132)	2.30
AVERAGE	⁻1.64	⁻2.00	⁻.18	(5)	⁻3.81
		ENTERPRISE			
1975	6.63	⁻2.03	4.53	(50)	9.13
1976	7.82	⁻2.16	⁻2.05	(57)	3.61
1977	3.35	⁻1.95	⁻2.03	(326)	⁻.62
1978	2.23	⁻1.09	1.06	(48)	2.20
1979	⁻1.90	⁻1.18	5.71	(217)	2.63
1980	5.86	⁻2.59	⁻2.89	(767)	.38
1981	.00	⁻1.42	.64	(82)	⁻.78
1982	⁻1.18	⁻1.64	⁻3.15	(53)	⁻5.97
AVERAGE	2.85	⁻1.76	.23	(17)	1.32
		GOVERNMENT			
1975	4.30	2.06	3.89	(38)	10.25
1976	6.83	1.81	⁻2.41	(39)	6.22
1977	2.94	1.46	⁻2.38	(118)	2.02
1978	2.36	.79	1.54	(33)	4.69
1979	⁻1.89	.82	8.20	(115)	7.13
1980	5.08	1.81	⁻3.54	(106)	3.34
1981	.00	.94	.82	(47)	1.75
1982	⁻.97	.84	⁻3.60	(96)	⁻3.74
AVERAGE	2.33	1.32	.31	(8)	3.96
		REST OF WORLD			
1975	⁻.18	⁻4.26	⁻1.34	(23)	⁻5.78
1976	.14	⁻4.23	.67	(20)	⁻3.41
1977	.02	⁻4.04	.76	(23)	⁻3.26
1978	.17	⁻1.93	⁻.32	(15)	⁻2.08
1979	⁻.28	⁻1.70	⁻1.09	(35)	⁻3.07
1980	1.22	⁻4.52	.42	(14)	⁻2.88
1981	.00	⁻2.79	⁻.06	(2)	⁻2.85
1982	⁻.40	⁻3.77	.44	(12)	⁻3.73
AVERAGE	.09	⁻3.40	⁻.06	(2)	⁻3.38
		FINANCIAL INSTITUTIONS			
1975	⁻44.80	112.31	⁻2.98	(5)	64.54
1976	⁻56.94	95.85	1.37	(3)	40.28
1977	⁻23.67	71.43	3.23	(6)	50.99
1978	⁻16.11	33.76	⁻2.10	(14)	15.55
1979	14.55	34.93	⁻10.95	(28)	38.53
1980	⁻36.36	71.30	3.79	(10)	38.73
1981	.02	42.08	⁻.90	(2)	41.20
1982	8.51	53.79	3.15	(5)	65.44
AVERAGE	⁻19.35	64.43	⁻.67	(2)	44.41

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF: CONSUMPTION FOR HOUSEHOLDS, INVESTMENT FOR ENTERPRISES, REVENUE FOR GOVERNMENT, EXPORTS FOR REST OF WORLD, GROSS DISPOSABLE INCOME FOR FINANCIAL INSTITUTIONS

B. Redistribution as a percent of Gross Domestic Product

BELGIUM REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS. (AS O/O OF (TOT. RED.)		TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-2.87	-1.55	-2.72	(38)	-7.13
1975	-2.96	-1.68	1.45	(45)	-3.19
1976	-2.06	-1.10	.26	(9)	-2.90
1977	.72	-.89	.16	(1178)	-.01
1978	1.24	-.67	.64	(53)	1.20
1979	2.08	-.43	-1.92	(700)	-.27
1980	3.82	-.69	-2.32	(284)	.81
1981	2.40	-.91	-1.16	(351)	.33
1982	1.71	-.91	-1.32	(251)	-.53
AVERAGE	.45	-.98	-.77	(323)	-1.30
		ENTERPRISE			
1974	1.55	-1.04	.83	(62)	1.33
1975	1.61	-1.14	-.45	(2181)	.02
1976	1.15	-.74	-.08	(27)	.32
1977	-.41	-.60	-.05	(5)	-1.07
1978	-.72	-.45	-.23	(16)	-1.40
1979	-1.20	-.29	.70	(88)	-.80
1980	-2.33	-.47	.92	(49)	-1.87
1981	-1.48	-.59	.48	(30)	-1.59
1982	-1.06	-.60	.57	(52)	-1.10
AVERAGE	-.32	-.66	.30	(279)	-.68
		GOVERNMENT			
1974	2.04	1.22	1.98	(38)	5.24
1975	2.05	1.25	-1.02	(45)	2.28
1976	1.44	.72	-.18	(9)	1.98
1977	-.51	.57	-.11	(259)	-.04
1978	-.85	.44	-.43	(51)	-.85
1979	-1.50	.29	1.36	(897)	.15
1980	-2.80	.45	1.67	(245)	-.68
1981	-1.87	.60	.88	(226)	-.39
1982	-1.50	.59	1.11	(543)	.20
AVERAGE	-.39	68	.58	(257)	.88
		REST OF WORLD			
1974	.21	.00	.16	(43)	.36
1975	.16	.00	-.06	(66)	.09
1976	.14	.00	-.01	(12)	.12
1977	-.03	.00	-.01	(15)	-.04
1978	-.04	.00	-.02	(30)	-.06
1979	.01	.00	.00	(327)	.00
1980	.21	.00	-.11	(103)	.11
1981	.28	.00	-.11	(69)	.16
1982	.39	.00	-.26	(190)	.14
AVERAGE	.15	.00	-.05	(95)	.10
		FINANCIAL INSTITUTIONS			
1974	-.80	1.37	-.14	(32)	.44
1975	-.75	1.57	.04	(5)	.86
1976	-.59	1.12	.01	(2)	.54
1977	.19	.93	.01	(0)	1.12
1978	.30	.68	.02	(2)	1.00
1979	.50	.44	-.05	(6)	.89
1980	.82	.70	-.03	(2)	1.50
1981	.43	.91	.01	(1)	1.34
1982	.27	.92	.03	(2)	1.22
AVERAGE	.04	.96	-.01	(6)	.99

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF GROSS DOMESTIC PRODUCT.

GERMANY REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-.83	-.53	1.49	(1138)	.13
1975	.34	-.33	-.44	(103)	-.42
1976	-1.30	-.30	.37	(30)	-1.24
1977	-1.08	-.23	-.24	(16)	-1.55
1978	-1.82	-.22	.31	(18)	-1.73
1979	-.95	-.18	-2.30	(67)	-3.44
1980	-.41	-.45	.28	(47)	-.58
1981	.38	-.43	-.49	(89)	-.55
1982	.91	-.45	1.26	(73)	1.72
AVERAGE	-.53	-.35	.03	(176)	-.85
		ENTERPRISE			
1974	1.11	-.72	-1.55	(133)	-1.16
1975	-.43	-.45	.43	(95)	-.45
1976	1.54	-.41	-.34	(43)	.79
1977	1.19	-.31	.21	(19)	1.08
1978	1.95	-.29	-.26	(19)	1.40
1979	1.00	-.23	1.86	(71)	2.63
1980	.44	-.56	-.23	(66)	-.35
1981	-.40	-.55	.42	(77)	-.54
1982	-.99	-.70	-1.07	(39)	-2.76
AVERAGE	.60	-.47	-.06	(62)	.07
		GOVERNMENT			
1974	-.15	.74	.01	(1)	.60
1975	.05	.42	.00	(1)	.47
1976	-.06	.33	-.03	(11)	.24
1977	-.01	.27	.03	(9)	.29
1978	.05	.26	-.04	(17)	.26
1979	.05	.21	.39	(60)	.64
1980	.02	.51	-.05	(10)	.49
1981	-.02	.47	.08	(15)	.52
1982	-.08	.48	-.22	(119)	.18
AVERAGE	-.02	.41	.02	(27)	.41
		REST OF WORLD			
1974	.08	-.10	-.10	(83)	-.12
1975	-.04	-.06	.04	(56)	-.07
1976	.16	-.05	-.03	(46)	.07
1977	.13	-.05	.02	(20)	.11
1978	.20	-.04	-.03	(19)	.13
1979	.11	-.03	.20	(71)	.27
1980	.04	-.08	-.02	(25)	-.06
1981	-.02	-.09	.02	(16)	-.10
1982	-.03	-.09	-.02	(11)	-.14
AVERAGE	.07	-.07	.01	(39)	.01
		FINANCIAL INSTITUTIONS			
1974	-.21	.61	.15	(28)	.55
1975	.08	.42	-.04	(8)	.47
1976	-.33	.43	.03	(22)	.13
1977	-.23	.31	-.01	(23)	.06
1978	-.37	.30	.02	(26)	-.06
1979	-.21	.24	-.14	(123)	-.11
1980	-.09	.57	.02	(3)	.50
1981	.07	.61	-.02	(3)	.66
1982	.19	.77	.04	(4)	1.00
AVERAGE	-.12	.47	.01	(26)	.36

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF GROSS DOMESTIC PRODUCT.

FRANCE REDISTRIBUTION OF WEALTH CAUSED BY INFLATION*
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1974	-.50	-1.84	-1.64	(41)	-3.98
1975	.87	-1.81	.26	(38)	-.69
1976	-.56	-1.39	-.73	(27)	-2.68
1977	.47	-1.26	-.68	(47)	-1.47
1978	.78	-1.16	-1.11	(74)	-1.50
1979	-.48	-1.48	-1.02	(34)	-2.98
1980	-.33	-1.97	-.47	(17)	-2.77
1981	-.52	-1.95	-.49	(17)	-2.96
AVERAGE	-.03	-1.61	-.74	(37)	-2.38
		ENTERPRISE			
1974	.95	-.60	1.32	(79)	1.67
1975	-1.68	-.60	-.22	(9)	-2.49
1976	1.00	-.47	.58	(52)	1.11
1977	-.84	-.39	.57	(86)	-.66
1978	-1.32	-.37	.91	(116)	-.79
1979	.76	-.45	.79	(72)	1.10
1980	.53	-.58	.36	(120)	.30
1981	.85	-.56	.38	(57)	.67
AVERAGE	.03	-.50	.59	(74)	.11
		GOVERNMENT			
1974	-.18	1.39	.31	(20)	1.52
1975	.27	1.33	-.05	(3)	1.55
1976	-.20	.79	.05	(8)	.64
1977	.14	.71	.06	(7)	.92
1978	.20	.65	.11	(12)	.96
1979	.01	.82	.25	(23)	1.08
1980	.01	1.03	.12	(10)	1.16
1981	.01	1.07	.12	(10)	1.20
AVERAGE	.03	.97	.12	(12)	1.13
		REST OF WORLD			
1974	.07	-.06	.09	(91)	.10
1975	-.06	-.05	.01	(4)	-.12
1976	.06	-.04	.03	(65)	.05
1977	-.02	-.04	.00	(6)	-.05
1978	-.03	-.04	.01	(9)	-.06
1979	.04	-.06	.03	(193)	.02
1980	.04	-.07	.02	(119)	-.02
1981	.05	-.08	.02	(130)	-.01
AVERAGE	.02	-.06	.02	(77)	-.01
		FINANCIAL INSTITUTIONS			
1974	-.36	1.11	-.11	(18)	.64
1975	.62	1.13	.02	(1)	1.77
1976	-.49	1.10	-.08	(15)	.53
1977	.38	.98	-.06	(5)	1.30
1978	.62	.93	-.11	(8)	1.44
1979	-.39	1.17	-.12	(18)	.67
1980	-.28	1.61	-.05	(4)	1.28
1981	-.44	1.53	-.06	(6)	1.03
AVERAGE	-.04	1.20	-.07	(9)	1.08

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF GROSS DOMESTIC PRODUCT.

ITALY REDISTRIBUTION OF WEALTH CAUSED BY INFLATION*
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1973	-2.27	-.85	-6.07	(66)	-9.19
1975	-3.12	-1.21	6.10	(345)	1.77
1976	-2.47	-.65	-6.05	(66)	-9.18
1977	.68	-1.06	4.48	(109)	4.10
1978	.28	-.69	1.12	(158)	.71
1979	-.44	-.60	-4.26	(80)	-5.30
1980	-4.27	-.93	.54	(12)	-4.66
1981	-4.24	-.95	3.46	(200)	-1.73
1982	.46	-.81	2.27	(118)	1.92
AVERAGE	-1.71	-.86	.18	(128)	-2.40
		ENTERPRISE			
1974	1.17	-.27	2.62	(75)	3.52
1975	1.85	-.47	-3.04	(184)	-1.65
1976	1.38	-.16	2.93	(71)	4.15
1977	-.37	-.59	-2.02	(68)	-2.98
1978	-.13	-.16	-.47	(61)	-.76
1979	.19	-.15	1.60	(97)	1.64
1980	1.56	-.24	-.17	(15)	1.15
1981	1.69	-.29	-1.21	(615)	.20
1982	-.22	-.38	-.94	(61)	-1.53
AVERAGE	.79	-.30	-.08	(139)	.42
		GOVERNMENT			
1974	.79	1.88	3.22	(55)	5.89
1975	1.10	2.90	-3.37	(539)	.63
1976	1.03	1.57	3.63	(58)	6.22
1977	-.31	2.85	-2.95	(714)	-.41
1978	-.16	1.61	-.80	(125)	.64
1979	.26	1.43	3.11	(65)	4.80
1980	2.65	2.02	-.39	(9)	4.27
1981	2.92	2.06	-2.75	(123)	2.24
1982	-.25	1.87	-1.53	(1556)	.10
AVERAGE	.89	2.02	-.21	(360)	2.71
		REST OF WORLD			
1974	.23	-.02	.55	(72)	.76
1975	.08	.00	-.14	(224)	-.06
1976	.03	.00	.07	(69)	.10
1977	.02	-.01	.13	(89)	.15
1978	.00	-.01	.02	(127)	.01
1979	.01	-.01	.08	(95)	.08
1980	.22	-.01	-.03	(13)	.19
1981	.15	-.01	-.11	(413)	.03
1982	.01	-.01	.06	(90)	.07
AVERAGE	.08	-.01	.07	(133)	.15
		FINANCIAL INSTITUTIONS			
1974	.24	-.73	.06	(13)	-.44
1975	.33	-1.22	.03	(3)	-.86
1976	.00	-.75	-.64	(46)	-1.39
1977	-.01	-1.20	.40	(50)	-.80
1978	-.01	-.75	.07	(10)	-.69
1979	.01	-.68	-.33	(33)	-1.00
1980	-.02	-.85	.04	(5)	-.83
1981	-.06	-.81	.26	(42)	-.61
1982	.02	-.68	.23	(54)	-.43
AVERAGE	.05	-.85	.01	(28)	-.78

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF GROSS DOMESTIC PRODUCT.

U.K. REDISTRIBUTION OF WEALTH CAUSED BY INFLATION *
EURO INTEREST RATE CALCULATIONS

	EXP.RED. ON INT. BEARING ASSETS	EXP.RED. ON NON INT.BEAR. ASSETS	UNEXP. REDISTRIB. ON NET MONETARY POS.	(AS O/O OF) (TOT. RED.)	TOTAL REDISTRI-BUTIONS
		HOUSEHOLD			
1975	-2.10	-1.85	-2.14	(35)	-6.09
1976	-2.92	-1.67	1.18	(35)	-3.41
1977	-1.09	-1.36	1.04	(74)	-1.41
1978	-.82	-.70	-.63	(29)	-2.15
1979	.69	-.75	-3.58	(99)	-3.63
1980	-2.14	-1.59	1.71	(84)	-2.02
1981	.00	-.90	-.40	(31)	-1.30
1982	.44	-.88	1.85	(132)	1.40
AVERAGE	-.99	-1.21	-.12	(65)	-2.33
		ENTERPRISE			
1975	1.29	-.40	.88	(50)	1.78
1976	1.49	-.41	-.39	(57)	.69
1977	.60	-.35	-.36	(326)	-.11
1978	.40	-.20	.19	(48)	.40
1979	-.34	-.21	1.02	(217)	.47
1980	1.03	-.45	-.51	(767)	.07
1981	.00	-.23	.10	(82)	-.12
1982	-.19	-.26	-.49	(53)	-.94
AVERAGE	.53	-.31	.06	(200)	.28
		GOVERNMENT			
1975	1.84	.88	1.66	(38)	4.38
1976	2.85	.76	-1.01	(39)	2.60
1977	1.23	.61	-1.00	(118)	.84
1978	.91	.30	.59	(33)	1.80
1979	-.74	.32	3.20	(115)	2.78
1980	2.07	.74	-1.44	(106)	1.36
1981	.00	.40	.35	(47)	.74
1982	-.42	.37	-1.57	(96)	-1.63
AVERAGE	.97	.55	.10	(74)	1.61
		REST OF WORLD			
1975	-.05	-1.07	-.34	(23)	-1.46
1976	.04	-1.16	.18	(20)	-.94
1977	.01	-1.17	.22	(23)	-.95
1978	.05	-.53	-.09	(15)	-.57
1979	-.08	-.46	-.30	(35)	-.84
1980	.32	-1.18	.11	(14)	-.75
1981	.00	-.73	-.02	(2)	-.74
1982	-.10	-.97	.11	(12)	-.96
AVERAGE	.02	-.91	-.01	(18)	-.90
		FINANCIAL INSTITUTIONS			
1975	-.97	2.44	-.06	(5)	1.40
1976	-1.48	2.48	.04	(3)	1.04
1977	-.75	2.27	.10	(6)	1.62
1978	-.54	1.12	-.07	(14)	.52
1979	.46	1.10	-.35	(28)	1.22
1980	-1.27	2.49	.13	(10)	1.35
1981	.00	1.45	-.03	(2)	1.42
1982	.28	1.75	.10	(5)	2.13
AVERAGE	-.53	1.89	-.02	(9)	1.34

* ESTIMATED USING EURO-CURRENCY INTEREST RATES AND EXPRESSED AS PERCENTAGES OF GROSS DOMESTIC PRODUCT.

Annex 2

Stochastic inflationary expectations and the definition of the ex ante purchasing power loss of money.

Of course if p^e_t (the rate of inflation expected at t to prevail at t + 12) is a proper random variable, then

2.1) $$E\left[1/(1 + p^e_t)\right] \neq 1/1 + E(p^e_t)$$

because the expected value of the loss of purchasing power of money, (the reciprocal of the rate of inflation) is different from the reciprocal of the expected rate of inflation.

If one has information about the whole distribution of inflationary expectations, there is no practical problem in computing the expected purchasing power loss of money. Short of that, one can assume that inflationary expectations are represented by a point estimate, i.e. a degenerate random variable. This is what is implicitly done in the main text. Alternatively, if one has available estimates of the first two moments of the distribution of inflationary expectations, one can assume that these conform to a known two-parameter distribution and compute, from this information, the expectation of the purchasing power loss of money. This is what is suggested by Hartmann and Makin (1982): examples are given in their paper assuming that the aggregate price index is either a lognormal or a gamma variate.

To check for the robustness of the estimates presented in the main text, the suggestion of Hartmann and Makin is implemented in this annex. In particular it is assumed that the logarithmically defined rate of inflation is a normal variate.

To check for this assumption, the Shapiro-Wilk (1965) test of normality was applied to the log-rates of inflation in the EEC countries. The result of this test, given in Table 2.1, show that one cannot reject the hypothesis of normality. It should be noted, however, that the alternative hypothesis that the natural rate of inflation is distributed normally is not rejected either. This is indirect evidence that we are dealing with a relatively weak empirical phenomenon.

Let us define P_t^e as the price level expected at time t to prevail at time t + 12, and for convenience, the ln of the perfectly known current price level is normalized to be zero.

Given the assumption of normality of p_t^e, which is the expected log-rate of inflation i.e.

2.2) $$p^e_t \sim N(\mu, \sigma^2)$$

we have that the aggregate price level expected for t + 12 conditional on period's information is distributed log-normally, i.e.

2.3) $$P^e_t \sim \Lambda\ (\mu, \sigma^2)$$

while the reciprocal of P_t^e is distributed as (Aitchison and Brown (1957))

2.4) $$1/P^e_t \sim \Lambda \quad (-\mu, \sigma^2)$$

Given the properties of lognormal distributions, the expected value of the purchasing power loss of money is

2.5) $$E(1/P^e_t) = \exp\ (\ -\mu\ + 1/2\ \sigma^2)$$

and if we have estimates for μ and σ^2 we can obtain estimates of the expected purchasing power loss of money.

As far as μ (the mean of the log-rate of inflation) is concerned we can obtain its estimate from Papadia and Basano (1981). In fact their original variable for the expected rate of inflation is defined logarithmically. Although they present it on a natural basis, we can compute back the log definition and define it by m.

Papadia and Basano also compute the variance of the naturally defined expected rate of inflation over the respondents to the survey which we denote by s. They stress however in their Appendix A, that to obtain an estimate of the variance of inflationary expectations one needs more stringent assumptions than those required to estimate the mean. Furthermore their estimate refers to the natural, not the log, rate of inflation and, more importantly, it reflects the variance of expectations across individuals, not the dispersion of the expectations, assumed to be homogeneous across agents, which each individual has. Their estimates are therefore only proxies for the required estimate of σ^2. For the purpose at hand, however, i.e. for assessing the practical relevance of the correction, they seem adequate.

Plugging the available estimates of μ and σ^2 into 2.5) we obtain an estimate of the expected purchasing power loss of money:

$$2.6) \qquad E\,(1/P_t^e) = \exp\left\{- m + \frac{1}{2}\, s^2\right\}$$

Equation 2.6) thus takes into account the non-linearity implicit in the definition of the expected purchasing power loss of money.

Table 2.2 presents the differences between the expected purchasing power loss of money calculated according to 2.6) and the one, used in the main text, based on the approximation of equation 2.1). As can be readily seen, the differences, which show that the corrected figures are lower in absolute terms than the approximated ones, are trivial for France, Germany and Belgium, which are the countries where the variance of inflationary expectations has been the lowest. They are somewhat higher for Italy and the UK averaging around one quarter of one per cent in the sample period and reaching a maximum of .71 in Italy in December 1974. Even in the case of these two countries, however, the differences appear to be of orders of magnitude that do not affect the broad lines of our results.

Table 2.1

TEST OF NORMALITY: SHAPIRO-WILK (1)						
ITA	FRA	GER	NL	BEL	UK	DK
,9268*	,9496**	,9472**	,9679***	,9411**	,9307*	,9753***

(1) Test of the hypothesis that the log-rate of inflation is normally distributed.

* Between 5 and 10% probability that the distribution is normal.
** Between 10 and 50% probability that the distribution is normal.
*** Between 50 and 90% probability that the distribution is normal.

Table 2.2

DIFFERENCE BETWEEN THE CORRECTED AND THE APPROXIMATED (LOGNORMAL) EXPECTED PURCHASING POWER LOSS OF MONEY.

DATE	ITA	FRA	GER	BEL	UK
DEC.73	,13	,04	,04	,01	,00
DEC.74	,71	,14	,03	,15	,27
DEC.75	,13	,06	,02	,09	,46
DEC.76	,47	,08	,01	,04	,16
DEC.77	,20	,07	,01	,08	,19
DEC.78	,11	,06	,00	,01	,08
DEC.79	,22	,07	,02	,02	,21
MEAN	,28	,07	,02	,05	,23

Annex 3

Description of the data on monetary assets and liabilities

General methodology

The basic data for the stock of monetary assets and liabilities, defined as all financial assets except equities and financial gold, was drawn from the studies on individual countries (Bachê, Lennan, Connolly, Reati and Wittelsberger (1985)), supplemented by data from national sources referred to in these studies. The country studies use officially-published or furnished asset/liability stock statistics, at end-year, for various sectors of the economy for the 1970's, and in most cases also the 60's, to produce data for the net monetary asset position of five sectors of each economy. One major adjustment to official figures in the country reports has been the exclusion of the central banks of all countries from the financial institution sector and their inclusion in the Government sector. The reasons for this alternative classification are discussed in Cukierman-Mortensen (1985). Figures have only been used here for total monetary assets/liabilities starting from the end of 1973, since data on inflationary expectations are only available from 1973 (Papadia and Basano, 1981) and because this period was considered to be the most likely to produce significant results.

Figures have also been calculated for non-interest bearing monetary assets/liabilities, by sector, for the same period. These comprise of currency and current accounts, including bank reserves at the central bank, for all countries except Italy, where only currency and a portion of bank reserves are included due to the payment there, of interest on current accounts.

In the country studies, sectoral data is given for households (H), enterprises (E), government (G), rest of the world (W), financial institutions (FI). However, despite this seemingly uniform classification, important differences exist in the treatment of sectors in the various countries. While these divergences are noted in more detail under the country headings of this annex, the following major points should be highlighted:

(1) In the Federal Republic of Germany all data on the self-employed, as well as the activities of the personal sector in relation to housing, is included in the E, rather than H, sector.

(2) Public corporations (e.g. railways and the post office), excluding public financial bodies, are included in the E sector for all countries, except the United Kingdom, where they are part of G.

(3) For the UK, the H sector should be equated with the "personal sector" and the E sector relates to "industrial and commercial companies".

In general, where any doubt arises as to the classifications used, ESA (European System of Integrated Accounts, Eurostat, 1979) apply generally to France and Italy, whereas for other countries national concepts prevail.

Users of the series should note that the degree of consolidation varies between countries and that caution should be observed when moving away from comparisons of net positions. For most countries, consolidation is normally carried out within subsectors (i.e. banks are consolidated) but not within sectors (i.e. total financial institutions are not generally consolidated). However, in the United Kingdom consolidation is only carried out at the individual bank level (i.e. a bank and its own subsidiaries are consolidated) but interbank transactions are not e.g. interbank deposits are a major item on both the asset and liability sides of the accounts.

BELGIUM

Data on total monetary assets and liabilities

Basic data is taken from Lennan (1985). This data corresponds to that published annually by Banque Nationale de Belgique (BNB) which gives financial assets and liabilities by credit instrument for debtor and creditor sector at end $_{year}$ Adjustments to the BNB data in the country study include, the conversion of bonds from face value to market prices, the exclusion of shares, the transfer of the BNB from FI to G , the separation of households and enterprises, the exclusion of gold and the amalgamation of the data for individual subsectors into the sectors required.

Data on non interest-bearing assets and liabilities

Data is from various issues of the BNB Monthly Bulletin as follows:

Assets

H & E: liabilities of banks to these sectors in the form of "fiduciary and scriptural" money (Table XIII 2 d) and liabilities of other financial institutions (Table XIII 4 b) to households and firms.
G: liabilities of banks to the public sector and of other financial institutions to public authorities (Table XIII 4 b) plus BNB claims on banks (Table XIII 2 a).
FI: BNB liabilities to banks and other financial institutions - monetary reserve (Table XIII 2 a).

Liabilities

G: BNB "fiduciary and scriptural" monetary liabilities (Table XIII 2 a) plus notes and coin (Table XIII 2 a B 1) plus BNB liabilities to banks and other financial institutions (monetary reserve).
FI: other banks "fiduciary and scriptural" liabilities to firms and enterprises (Table XIII 2 d) plus "scriptural" liabilities of other financial institutions, plus liabilities of 1) banks and 2) other financial institutions to public authorities (Table XIII 4 b) plus certain liabilities of banks to the BNB, less BNB "fiduciary, scriptural" and note and coin liabilities (Table XIII 2 a).

Sectors

See the discussion below in the French paragraph outlining possible discrepancies in the treatment of the split of 'fiduciary money' between the H and E sectors. (1) Public enterprises are included in E. Consolidation is carried out within subsectors, but not between them. The following are the subsectors covered.

H and E : These two sectors are amalgamated in the Belgian accounts. For a discussion of the methods used to split the sectors, see Lennan (1985). It should be noted that 'fiduciary money' has not been attributed totally to H as in official figures (see above).

G : (1) Treasury + BNB (2) Other public sectors (3) Social security.

W : Rest of world.

FI: (1) Banks less BNB (2) Fonds des Rentes (essentially a public body established to regulate the gilts market) (3) Savings banks, etc. (4) Insurance and pension funds (5) Public financial intermediaries.

(1) Since no breakdown of non-interest bearing assets is available for households and firms, "fiduciary" assets of the combined sector was apportioned on a 50:50 basis to each category a procedure which was adopted by Praet (1977).

In the official estimates produced for 1972 and 1973 ("Créances et dettes dans l'économie belge: scission du secteur enterprises et particuliers", BNB May 1976), all "fiduciary" assets were included in the household sector.

FEDERAL REPUBLIC OF GERMANY

Data on total monetary assets and liabilities

Basic data is taken from Wittelsberger (1985). This data corresponds closely to annual data published by the Bundesbank (DBK) but excludes shares and gold, and values bonds at market prices.

Data on non interest-bearing monetary assets and liabilities

Non interest-bearing assets/liabilities were equated with the sectoral classification "currency and sight deposits". Non interest-bearing liabilities of the DBK were defined as bank notes in circulation, total deposits of domestic enterprises and individuals, deposits of domestic banks with the DBK and deposits of domestic public authorities and were taken from the DBK Monthly Report (table II 1(a)) and include coins in circulation. All monetary assets of the DBK were assumed to be interest bearing. To consolidate the accounts for these new sectors, liabilities of the DBK to the FI sector (deposits of domestic banks with the DBK) were entered back into the appropriate asset/liability position. Since all DBK assets are assumed to be interest bearing there is no need to readjust for consolidation already carried out within FI, and now an intrasectoral claim, since this does not arise. Totals were adjusted to conform to the new consolidation. The overall effect is to increase the assets of the FI sector and liabilities of G (FI reserves at the DBK).

Sectors

The H sector is more limited than in other countries. It excludes all household activities which relate to housing (which are included in E). All financial assets/liabilities of the self-employed are included in the E sector. The accounts are subject to a greater

degree of consolidation than in other countries because of the broader coverage of subsectors which are as follows:

H : Households.
E : Enterprises (incl. self-employed, housing and public enterprises).
G : (1) Central, regional and local authorities + DBK (see above) (2) Social Security funds.
W : Rest of world.
FI: (1) Banking institutions less DBK (2) Building loan associations (3) Insurance enterprises.

FRANCE

Data on total monetary assets and liabilities

Basic data is taken from Baché (1985). These figures correspond to those published by INSEE (1980) for the years 1971, 1972 and 1976 with estimates for the intervening years on the basis of flow of funds accounts. For a discussion of the methods used to convert bond prices to market values, exclude gold and shares, and transfer the BdF to the G sector, see Baché (1985).

Data on non interest bearing monetary assets and liabilities

The category "Money" (FIO) in the French accounts includes notes and coin, directly transferable current accounts and reserves of the FI sector with the Banque de France (BdF). Thus this category conforms to our concept of non interest-bearing assets/liabilities (c.f. "Système élargi de comptabilité nationale, méthodes", INSEE 1979, paras. 6.17-6.18, p.161), although the classification is primarily geared to the concept of full liquidity monetary assets. These figures were therefore used for 1972 and 1976. Data for the years between was constructed on the basis of the flow accounts published by the BdF. A comparison between the 1976 figures calculated on the basis of the flow accounts, and the actual figures, showed the following discrepancies:

H	calculated figure	1,2% p.a. below actual 1976 figure.
E	calculated figure	4,6% p.a. above actual 1976 figure.
G	calculated figure	2,9% p.a. above actual 1976 figure.
W	calculated figure	2,8% p.a. below actual 1976 figure.
FI	calculated figure	0,9% p.a. below actual 1976 figure.
TOTAL	calculated figure	0,2% p.a. above actual 1976 figure.

This discrepancy was assumed to apply to each year equally in the period 1972-1980 and the figures for each year calculated on the basis of the flow accounts were adjusted accordingly. In the French financial stock figures the exclusion of the BdF from FI and its inclusion in G is facilitated by the fact that there is no consolidation between subsectors (one of which is the BdF) but only within subsectors (c.f. point 7.03, p. 167, "Les comptes de patrimoine, une première expérience 1971-1972-1976, INSEE, 1980). Thus the BdF (subsector S711) can be subtracted from the FI sector and added to G. The years between 1972 and 1976 were constructed on the basis of the flow accounts. Use of the flow accounts gave very close estimates for assets and liabilities in 1976 (on the basis of the 1972 stock and the flows in the years up to, and including 1976). From 1976 to 1979 the flow figures wsere used to estimate stocks. These calculations produced non interest bearing assets/liabilities for the BdF which were deducted from the FI sector and added to G. No within sector consolidation was carried out.

Sectors

ESA definitions of sectors were used. The following are the sectors covered:

H : Households (including private firms).

E : (1) Large national enterprises (2) Non-financial firms and quasi-firms (3) Private non profit making bodies.

G : (1) State (2) Other central administration (3) Local authorities (4) Social security (5) BdF.

W : Rest of world.

FI: (1) Monetary bodies (excl. BdF) (2) Deposit and savings banks (3) Other credit institutions (4) Insurance companies (5) Mutual societies.

One area where a significant discrepancy could exist between the French and Belgian accounts is in the split of holdings of notes and coin between the H and E sectors. In the Belgian case the split for "fiduciary" money was half and half, while in the French case, although a certain amount of data was taken directly from corporate balance sheets and included in note holdings of the E sector, the remainder was allocated in the proportion of 98% to households and 2% to enterprises (c.f. INSEE, 1980, para. 7.22, p.172).

ITALY

Data on total monetary assets and liabilities

Basic data is taken from Reati (1985). This data is based on figures published by the Banca d'Italia (BI) since 1965. Adjustments to the BI data to calculate bonds at market values, exclude gold and shares and transfer the BI from FI to G are discussed in Reati (1985).

Data on non interest bearing monetary assets and liabilities

The main non interest bearing asset/liability was taken to be currency ("Biglietti e monete") since all sight deposits are interest bearing. The interest rate on large current accounts was as high as 11,7% in 1976, and followed general interest rates quite closely (c.f. BI Annual report 1981, fig. L4), while smaller accounts earned interest at about 2,5 below this level. The interest rate on current accounts moved very much in line with market rates. As far as the BI was concerned,all assets were assumed to be interest bearing. On the liabilities side of the BI, sight deposits under the classification "Depositi presso" and other deposits "Conti vinc. presso" were considered as non interest bearing, as well as one third of compulsory reserves. This figure was arrived at by reference to the fact that the interest rate on reserves is approximately one-third of the market rate of interest. These amounts were added to G non-interest bearing liabilities and FI assets.

Sectors

The ESA definitions of sectors were uniformly used. Public enterprises are included in the E sector. The sectoral classification includes the following subsectors:

H : Families

E : (1) Enterprises (2) Public enterprises

G : (1) Central government (2) Local authorities (3) Social security (4) BI-UIC

W : Rest of world

FI: (1) Credit institutions (2) Other special FI's (3) Insurance companies.

UNITED KINGDOM

Data on total monetary assets and liabilities

Basic data is from Connolly (1985). The figures are based on unpublished CSO data. Bonds are valued at market prices and the data has been adjusted (see Connolly (1985)) to exclude monetary gold and shares and include the Banking Department of the BOE in G. Some discrepancies exist between the figures published in Connolly for total assets and liabilities and the data in this study. This is due to the fact that an additional amount of consolidation was carried out in the Connolly study. It should, however, be noted that the net positions are identical.

Data on non-interest bearing monetary assets and liabilities (1)

Figures are unavailable for sight deposits by sector prior to 1975. Therefore, figures had to be created for the years 1972-1974 on the basis of trends in the more recent years of the ratio of sight deposits plus holdings of notes and coin, to total deposits of each sector. These were compared with a backward extrapolation, on the same basis, of sight deposit liabilities of the FI sector. The two separate estimation procedures produced results which were very similar. In no year did the margin between the two estimates of sight deposits exceed 1,5%. The more general estimation method was accordingly used for the FI sector.

(1) The difficulties arising in the classification of assets into interest bearing and non-interest bearing are referred to in Hibbert (1984).

Non interest-bearing assets/liabilities for each sector were taken as holdings of notes and coin and sight deposits with the FI sector. It should be noted that some distortion on the liabilities side occurs in 1976 when current accounts at Trustee Savings Banks (£200M) were moved in the official statistics from the public sector to other financial institutions. Non interest bearing items in the balance sheet of the

the Banking Department of the Bank of England were taken to be (see discussion in Connolly on the procedures used to isolate the Banking Department):

1) bankers' deposits (excluding special deposits which bear a market rate of interest);
2) notes and coin;
3) public deposits;
4) one sixth of "reserves and other" representing public sector accounts (deducted from FI liabilities and G assets);
5) a further sixth of "reserves and other" was assumed to be non interest bearing accounts of other sectors (deducted from FI liabilities and added to G liabilities).

Sectors

The sectoral classification follows the UK procedure. Thus public enterprises are in G rather than E. We have followed Connolly in including pension funds and life assurance funds in the H rather than the FI sector. The banking department of the BOE has been included in G. The issue department of the BOE is already in G in the UK statistics. The following are the subsectors considered:

H : Personal sector plus life assurance and pension funds.
E : Industrial and commercial companies.
G : Public sector (i.e. central government, local authorities, public corporations and the Issue Department of the BOE) plus BOE Banking Department.
W : Overseas.
FI: (1) Banking sector excluding BOE (2) Other financial institutions.

Annex 4

Basic data on financial assets and liabilities

COUNTRY	UNIT	CURRENCY
Belgium	Thousand Million	BF
Germany	Thousand Million	DM
France	Thousand Million	FF
Italy	Thousand Million	LIT
United Kingdom	Million	UKL

Source: See Annex 3

BELGIUM

		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	H	1821.30	2007.00	2218.90	2587.50	2861.50	3259.30	3612.20	3900.60	4152.90	4519.70
TOTAL	E	367.50	440.80	493.90	546.20	605.20	616.90	659.90	720.50	763.10	828.70
MONETARY	G	400.70	492.60	512.90	557.70	604.60	696.20	799.40	969.50	1113.50	1201.70
ASSETS	W	474.80	613.20	759.80	859.70	937.70	1157.40	1442.40	1864.40	2680.80	3809.70
	FI	2414.60	2836.50	3234.60	3742.10	4178.50	4801.60	5403.50	6164.60	7253.30	8782.10
		115.10	147.00	163.20	186.30	220.60	272.00	299.30	429.90	579.60	685.80
	TO	5594.00	6537.10	7383.30	8479.50	9408.10	10803.50	12216.70	14049.50	16543.20	19827.70
	H	287.90	307.90	328.70	384.20	408.20	450.70	480.40	496.60	505.80	531.30
NON	E	194.70	207.50	221.80	259.30	275.40	303.60	324.80	337.00	330.80	347.40
INT.-BEARING	G	23.00	30.30	33.70	38.30	47.20	39.30	43.80	47.00	44.50	39.50
MONETARY	W	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
ASSETS	FI	11.70	33.60	20.70	.00	.00	.00	.40	.00	.00	.00
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	517.30	579.30	604.90	681.80	730.80	793.60	849.40	880.60	881.10	918.20
	H	359.20	419.90	489.40	556.10	607.40	672.60	800.70	867.90	964.70	1021.80
TOTAL	E	816.70	923.80	1031.50	1202.30	1374.00	1555.90	1683.10	1930.80	2085.90	2326.80
MONETARY	G	1473.00	1646.70	1723.30	1961.60	2157.20	2462.00	2796.00	3153.80	3533.30	4147.50
LIABILITIES	W	550.20	704.70	833.40	970.50	1019.60	1228.60	1436.40	1721.80	2371.70	3127.00
	FI	2328.70	2754.90	3186.20	3661.50	4105.80	4735.40	5324.80	6129.80	7281.90	8849.00
		66.20	87.10	119.50	127.50	144.10	149.00	175.70	245.40	285.70	355.60
	TO	5594.00	6537.10	7383.30	8479.50	9408.10	10803.50	12216.70	14049.50	16543.20	19827.70
	H	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
NON	E	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
INT.-BEARING	G	234.90	272.60	277.10	289.30	308.40	335.90	361.10	372.50	376.50	383.10
MONETARY	W	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
LIABILITIES	FI	282.40	306.70	327.80	392.50	422.40	457.70	488.30	508.10	504.60	535.10
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	517.30	579.30	604.90	681.80	730.80	793.60	849.40	880.60	881.10	918.20

H: HOUSEHOLDS E: ENTERPRISE G: GOVERNMENT
W: REST OF WORLD FI: FINANCIAL INSTITUTIONS TO: TOTALS

GERMANY

		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	H	606.40	680.90	766.90	874.60	980.30	1087.70	1187.10	1301.30	1415.80	1546.90
TOTAL	E	240.40	259.00	285.10	310.00	355.80	399.40	441.80	467.60	504.50	555.10
MONETARY	G	290.80	307.60	319.30	327.80	360.10	372.90	404.20	438.20	483.80	517.30
ASSETS	W	154.50	173.20	184.30	211.90	240.30	264.50	292.60	327.90	393.10	463.00
	FI	1002.80	1123.30	1223.30	1391.40	1544.80	1708.10	1890.40	2046.30	2195.70	2416.80
		.20	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	2295.10	2544.00	2778.90	3115.70	3481.30	3832.60	4216.10	4581.30	4992.90	5499.10
	H	65.80	67.60	74.50	83.70	89.30	100.90	114.20	119.80	124.30	125.00
NON	E	92.50	92.60	102.00	115.50	124.20	132.80	148.80	149.30	157.70	194.20
INT.-BEARING	G	7.90	10.40	10.00	13.90	10.90	11.10	12.70	14.50	13.20	12.20
MONETARY	W	13.30	13.40	14.50	15.20	18.20	16.90	19.70	22.60	26.40	26.30
ASSETS	FI	50.50	56.10	51.00	49.10	55.20	56.60	64.20	69.60	59.00	55.20
		.00	.10	.00	.00	.10	.00	.00	.10	.00	.00
	TO	230.00	240.20	252.00	277.40	297.90	318.30	359.60	375.90	380.60	412.90
	H	49.40	54.50	55.30	62.30	76.00	89.20	105.50	125.10	136.70	148.50
TOTAL	E	815.80	910.20	988.70	1052.80	1133.00	1227.60	1313.40	1442.90	1585.40	1744.10
MONETARY	G	280.50	304.20	323.40	385.20	460.40	513.80	585.80	638.30	690.70	758.10
LIABILITIES	W	191.80	215.50	246.20	286.90	320.80	344.80	384.40	397.30	433.20	480.90
	FI	957.60	1059.60	1165.20	1328.50	1490.90	1657.20	1827.00	1977.70	2146.90	2367.50
		.00	.00	.10	.00	.20	.00	.00	.00	00	.00
	TO	2295.10	2544.00	2778.90	3115.70	3481.30	3832.60	4216.10	4581.30	4992.90	5499.10
	H	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
NON	E	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
INT.-BEARING	G	98.50	105.70	104.60	107.60	118.60	128.10	144.90	152.40	146.70	144.30
MONETARY	W	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
LIABILITIES	FI	131.50	134.50	147.40	169.80	179.30	190.20	214.70	223.50	233.90	268.60
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	230.00	240.20	252.00	277.40	297.90	318.30	359.60	375.90	380.60	412.90

H: HOUSEHOLDS E: ENTERPRISE G: GOVERNMENT
W: REST OF WORLD FI: FINANCIAL INSTITUTIONS TO: TOTALS

FRANCE

		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	H	718.80	826.80	941.30	1099.80	1269.10	1448.40	1663.40	1894.20	2107.30	.00
TOTAL	E	216.30	243.90	287.00	332.00	372.10	432.60	485.90	555.20	608.30	.00
MONETARY	G	289.50	335.70	356.20	463.20	483.80	527.20	489.00	532.40	613.60	.00
ASSETS	W	164.20	218.60	261.10	309.40	401.10	497.10	572.30	672.20	786.40	.00
	FI	1109.80	1307.80	1475.10	1705.20	1971.80	2324.30	2696.60	3110.30	3506.10	.00
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	2498.60	2932.80	3320.70	3909.60	4497.90	5229.60	5907.20	6764.30	7621.70	.00
	H	228.30	249.90	281.90	317.50	350.80	385.70	435.20	493.50	531.30	.00
NON	E	73.20	80.80	92.70	106.80	109.50	123.70	132.00	146.20	152.80	.00
INT.-BEARING	G	43.10	48.30	42.10	48.80	49.90	60.30	85.60	86.10	105.70	.00
MONETARY	W	7.00	8.10	8.50	9.60	10.70	13.30	17.80	18.50	20.40	.00
ASSETS	FI	67.80	83.30	83.50	50.50	51.30	59.00	70.50	79.50	103.80	.00
		.00	.20	.00	.00	.20	.00	.80	3.60	3.00	.00
	TO	419.40	470.60	508.70	533.20	572.40	642.00	741.90	827.40	917.00	.00
	H	272.30	320.20	358.90	411.80	494.30	567.70	652.80	784.50	920.20	.00
TOTAL	E	569.90	650.50	776.70	883.10	1017.70	1151.90	1264.60	1398.50	1532.80	.00
MONETARY	G	390.30	431.80	469.00	509.50	553.60	617.30	737.30	808.50	911.40	.00
LIABILITIES	W	194.20	245.50	272.60	338.30	404.80	501.50	606.80	721.10	825.20	.00
	FI	1062.10	1273.10	1434.90	1632.20	1899.30	2234.20	2578.90	2988.10	3360.50	.00
		9.80	11.70	8.60	134.70	128.20	157.00	66.80	63.60	71.60	.00
	TO	2498.60	2932.80	3320.70	3909.60	4497.90	5229.60	5907.20	6764.30	7621.70	.00
	H	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
NON	E	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
INT.-BEARING	G	207.50	237.00	249.00	229.60	248.70	275.90	326.80	344.60	396.60	.00
MONETARY	W	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
LIABILITIES	FI	211.90	233.60	259.50	303.20	323.70	365.80	415.10	482.80	520.40	.00
		.00	.00	.20	.40	.00	.30	.00	.00	.00	.00
	TO	419.40	470.60	508.70	533.20	572.40	642.00	741.90	827.40	917.00	.00

H: HOUSEHOLDS E: ENTERPRISE G: GOVERNMENT
W: REST OF WORLD FI: FINANCIAL INSTITUTIONS TO: TOTALS

ITALY

		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	H	75848.00	88557.00	98643.00	120997.00	142356.00	172449.00	210193.00	252091.00	299418.00	362085.00
TOTAL	E	34917.00	39083.00	42962.00	50489.00	61958.00	73774.00	85263.00	110773.00	139492.00	158764.00
MONETARY	G	17649.00	22358.00	28850.00	35484.00	41119.00	56059.00	65207.00	81788.00	94510.00	108764.00
ASSETS	W	16045.00	22832.00	22300.00	25162.00	31952.00	37681.00	39529.00	45696.00	68642.00	59451.00
	FI	94559.00	114248.00	125517.00	152100.00	178515.00	217344.00	261936.00	307481.00	353749.00	368443.00
		2793.00	4826.00	6159.00	.00	.00	8907.00	8894.00	6814.00	27543.00	.00
	TO	241811.00	291904.00	324431.00	384232.00	455900.00	566214.00	671022.00	804643.00	983354.00	1057507.00
	H	6934.00	7767.00	8725.00	10137.00	11505.00	13010.00	15254.00	17213.00	19454.00	22840.00
NON	E	1511.00	2444.00	3364.00	2491.00	6338.00	3046.00	3722.00	4398.00	5833.00	10653.00
INT.-BEARING	G	31.00	48.00	38.00	69.00	70.00	478.00	486.00	498.00	496.00	528.00
MONETARY	W	52.00	232.00	42.00	23.00	90.00	189.00	151.00	132.00	272.00	183.00
ASSETS	FI	4520.00	6684.00	8776.00	11636.00	12977.00	14098.00	17309.00	15731.00	16469.00	19326.00
		47.00	45.00	62.00	.00	.00	12.00	31.00	29.00	23.00	71.00
	TO	13095.00	17220.00	21007.00	24356.00	30980.00	30833.00	36953.00	38001.00	42547.00	53601.00
	H	6950.00	9552.00	9825.00	12129.00	13175.00	14828.00	16843.00	19950.00	25924.00	28301.00
TOTAL	E	61831.00	73203.00	87151.00	103213.00	120201.00	139601.00	157775.00	184949.00	235156.00	296715.00
MONETARY	G	52558.00	64204.00	77950.00	100777.00	126215.00	168914.00	206336.00	252473.00	311443.00	332951.00
LIABILITIES	W	24947.00	29957.00	24387.00	26387.00	28170.00	35055.00	42953.00	56610.00	77330.00	50765.00
	FI	95525.00	114988.00	125118.00	140610.00	166918.00	207816.00	247115.00	290661.00	333501.00	334493.00
		.00	.00	.00	1116.00	1221.00	.00	.00	.00	.00	14282.00
	TO	241811.00	291904.00	324431.00	384232.00	455900.00	566214.00	671022.00	804643.00	983354.00	1057507.00
	H	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
NON	E	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
INT.-BEARING	G	13075.00	17205.00	20984.00	24332.00	30951.00	30808.00	36937.00	37986.00	42534.00	53585.00
MONETARY	W	20.00	15.00	23.00	24.00	29.00	25.00	16.00	15.00	13.00	16.00
LIABILITIES	FI	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	13095.00	17220.00	21007.00	24356.00	30980.00	30833.00	36953.00	38001.00	42547.00	53601.00

H: HOUSEHOLDS E: ENTERPRISE G: GOVERNMENT
W: REST OF WORLD FI: FINANCIAL INSTITUTIONS TO: TOTALS

UNITED KINGDOM

		1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
	H	70549.00	78565.00	84829.00	96964.00	106970.00	127628.00	141015.00	164204.00	189293.00	212246.00
TOTAL	E	25523.00	32113.00	34750.00	37633.00	45900.00	53127.00	60805.00	69188.00	73678.00	87252.00
MONETARY	G	12576.00	14319.00	17140.00	19600.00	22100.00	32200.00	33400.00	40600.00	41300.00	46100.00
ASSETS	W	38211.00	53287.00	65080.00	81700.00	110500.00	119700.00	134100.00	159200.00	180500.00	257500.00
	FI	91099.00	125401.00	142658.00	174021.00	219544.00	240248.00	273309.00	328488.00	384035.00	502008.00
		77.00	176.00	75.00	.00	.00	.00	.00	5.00	4.00	6.00
	TO	238035.00	303861.00	344532.00	409918.00	505014.00	572903.00	642629.00	761685.00	868810.00	1105112.00
	H	8624.00	10069.00	12036.00	13541.00	15042.00	17763.00	20693.00	21169.00	22502.00	24444.00
NON	E	1564.00	2453.00	2574.00	3323.00	3857.00	4990.00	5853.00	6047.00	5686.00	7120.00
INT.-BEARING	G	675.00	773.00	757.00	1096.00	1182.00	1416.00	1544.00	1400.00	1800.00	1800.00
MONETARY	W	3612.00	5510.00	6997.00	9405.00	12985.00	13457.00	12890.00	15821.00	18304.00	26962.00
ASSETS	FI	1665.00	2134.00	2324.00	2607.00	2994.00	3573.00	4076.00	5110.00	5010.00	5245.00
		12.00	13.00	18.00	.00	.00	.00	2.00	.00	.00	.00
	TO	16152.00	20952.00	24706.00	29972.00	36060.00	41199.00	45058.00	49547.00	53302.00	65571.00
	H	27906.00	32369.00	35250.00	40296.00	46833.00	53758.00	62705.00	75427.00	86171.00	102067.00
TOTAL	E	38585.00	48602.00	55234.00	56288.00	66791.00	75635.00	83173.00	95527.00	100010.00	116757.00
MONETARY	G	48734.00	51087.00	55616.00	67900.00	79500.00	102000.00	103400.00	115600.00	130400.00	139700.00
LIABILITIES	W	33794.00	47748.00	57274.00	72900.00	97800.00	109400.00	127600.00	153521.00	176151.00	250705.00
	FI	89016.00	124055.00	141158.00	172324.00	213619.00	231992.00	265732.00	321610.00	376078.00	495883.00
		.00	.00	.00	210.00	471.00	118.00	19.00	.00	.00	.00
	TO	238035.00	303861.00	344532.00	409918.00	505014.00	572903.00	642629.00	761685.00	868810.00	1105112.00
	H	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
NON	E	.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
INT.-BEARING	G	5033.00	5561.00	6480.00	7217.00	7940.00	9099.00	10358.00	11200.00	11800.00	11900.00
MONETARY	W	12.00	16.00	18.00	23.00	28.00	31.00	33.00	35.00	37.00	39.00
LIABILITIES	FI	11107.00	15375.00	18208.00	22732.00	28092.00	32069.00	34667.00	38312.00	41465.00	53632.00
		.00	.00	.00	.00	.00	.00	.00	.00	.00	.00
	TO	16152.00	20952.00	24706.00	29972.00	36060.00	41199.00	45058.00	49547.00	53302.00	65571.00

H: HOUSEHOLDS E: ENTERPRISE G: GOVERNMENT
W: REST OF WORLD FI: FINANCIAL INSTITUTIONS TO: TOTALS

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