

**Income inequality and income sources:
Towards a SAM based analysis of income distribution**

by

Utz-Peter Reich

Mainz University of Applied Sciences (em.)

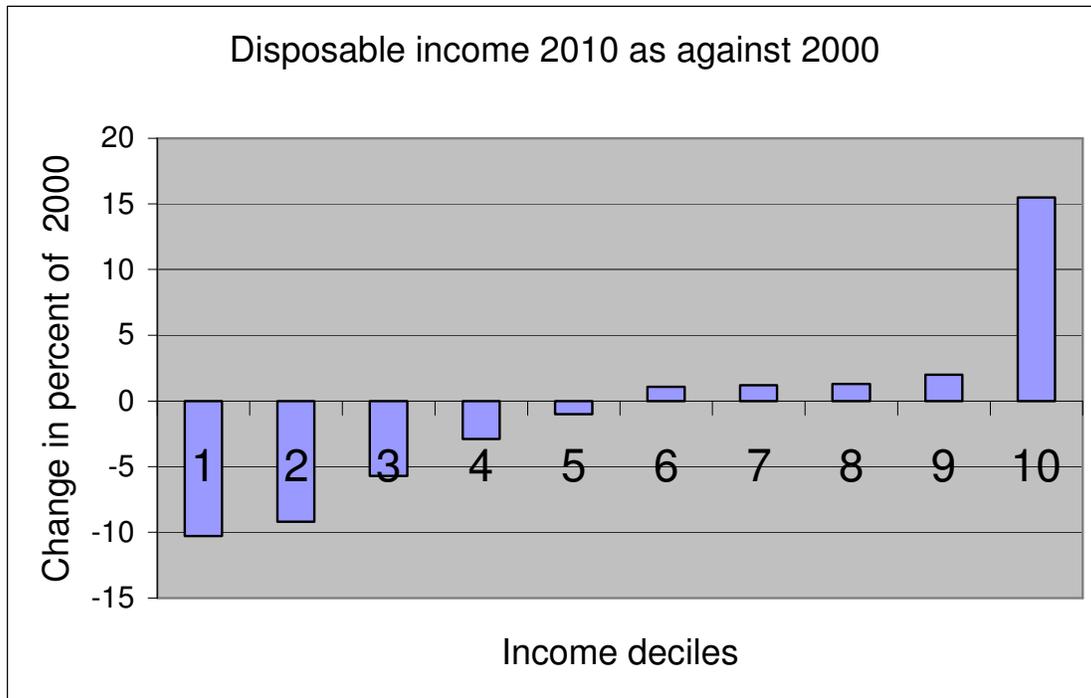
Abstract

Modern income studies are firmly rooted in, and restricted to, the microeconomic approach to economics. Following the theory of the household they begin by defining a concept of “personal income” observable in household surveys, and end by correlating its distribution over households to other variables of the same households. Households are thus the one and only object of investigation. While such focussing of attention may be necessary for certain purposes it also has its short-comings. It seems that the current trend of social income distribution towards income polarisation cannot be explained by looking at households alone, and that other institutional units, by their participation in the distribution process, also determine, or exert an influence on it. As a consequence it is necessary to enlarge the scope of distributional research, and to consider all institutional units of an economy, thus adding a macro-economic perspective to the micro approach. The means for carrying out such project can be found in social accounting matrices (SAMs), which describe every income by type and by source in its flow through the whole circuit of the economy. The paper makes a first experimental step in the direction using a SAM of Portugal in year 2000.

1. Introduction

A few weeks ago, the German weekly “Der Spiegel” published the following graph:

Figure 1 Variation of households’ disposable income in Germany



Source: Der Spiegel (15/2012, p.19)

It is a picture that strikingly demonstrates the new drive towards social polarisation. The two lowest income brackets experienced a loss of 10 percent of their income, an income which lies at the lowest level mere reproduction anyhow, while the top 10 percent had their income grow by 15 per cent, over the last decade. The middle of the population have stayed more or less at their initial level. Assume the income of the top ten percent is five times that of the lowest group (500:100), - surely a conservative assumption, - the top decile could have shared 20 dollars of its 15 percent growth with the two poorest deciles, and still have kept an increase of 55 dollars. One can sharpen the model by asking has income growth of the top ten been achieved at the expense of the bottom twenty? Have 20 dollars of income growth of the first been financed by an equivalent loss of the second? The correlation is there, but is there causality?

It is at this point, at the latest, where the distributional exercise turns into the political; where it is not enough to deal with statistical probabilities and measures of dispersion or variance, but where the source of a certain income must be questioned and judged. Could an income tax on the rich be an effective remedy to the observed polarisation? It is tempting to call for government intervention where the distribution of private benefits threatens the cohesion of society. But all flows of income are part of a complex system of payables and receivables between many different institutional units, and the direct effect of an action of one unit on another unit may be counteracted by the indirect effect this action has on all other units. The interaction between direct and indirect effects of an action within an economic circuit is well known and well studied in traditional input-output-analysis. There it focusses on economic

production and the circulation of products through an economy. It is time to extend the technique to the social problem of income distribution as well.

The paper is structured as follows: We begin with a brief review of the history of national accounts, social accounting matrices forming their last stage. They provide the tool for a macroeconomic approach to economics of distribution. We then contrast the microeconomic view which has been critical of social accounting from their very start, and explain its shortcomings in dealing with income distribution. The experimental part of the paper follows with a simple example to point out the interrelationship of different forms and flows of income. It shows how the external decision of a company to distribute or not distribute their profit may affect the internal income distribution between households. The final part of the paper takes an existing SAM for Portugal in year 2000 to demonstrate how it may be used for analysing social income distribution in a larger framework than that of mere household samples and panels.

2. Development of national accounts

Income and money forming the substance of social cohesion their study has always represented a focus of social science, in general, and economics, in particular. “National accounts” have been created for observing the distribution of the wealth of nations, and between the classes of society. Some truths have been discovered as a result and are now well established. All national income, so the accounts say, derives from production. A modern economy, being based on division of labour, and creation of money as a means of measuring and transacting economic value, generates income as a claim to its national product both of which aggregates must then be equal in size, by definition.

The “institutional sector accounts” were the first to be developed in full statistical complexity. They deal with income as a reward to factor inputs. The wage share – as opposed to the profit share – serves as an important indicator in assessing the value of labour input in national product, as opposed to the value contributed by capital. As a result it has been a long-standing goal of organised labour to follow a productivity-oriented policy of wage determination, which means that an increase in total factor productivity be shared equally between the two factors, keeping the factor shares more or less constant over time.

The institutional sector accounts – now often called the “core” of the system of national accounts – establish a distinction between “primary” and “secondary” income. Primary income transactions are made to the participants in the process of production, either directly as producers, or indirectly, as owners of capital. A term “mixed income” has been created to cover the case where both qualifications are held by one and the same person (“self-employed”). “Secondary” income comprises all other income transactions, such as social benefits accorded by government, or by private organisations of social security. The idea behind this distinction is that secondary income has no original basis, but is conditioned on the existence of primary income, which, itself, is derived from production.

The main purpose of the core income accounts, - or rather the purpose for which they have mainly been used, - is to establish a bridge from the output produced in an economy (production account) to its use (final consumption, capital formation), closing the circuit of the flow of goods and services in this way. The concept of “disposable income” was created, and has formed the fixed point of income analysis ever since.

There is a second approach to national accounting, which has developed side by side with the institutional accounts. Inter-industrial accounts, or – as they became named in a rather crude

way –“input-output tables” have been constructed, in order to describe the flows of goods and services through an economy in a more detailed manner than is possible by means of institutional sector accounts. These latter answer questions such as who (which sector) performs what kind of transactions (what?). Input-output tables supply the additional information about the addressee of a transaction (to whom). They can do so because they reduce the scope of their transactions, restricting themselves to transactions in products, and leaving aside transactions of income. The detail in analysis of production is paid for by negligence in the area of distribution.

This lacuna has been remedied in a third step of development, extending the technique of input-output accounting into the field of income transactions by means of “social accounting matrices” (SAM). Such accounts complement the product flow information assembled in supply and use tables, by information about income flows. The main task which such statistical work must solve is disaggregation of household consumers, in the same detail as input-output tables disaggregate establishment producers. This is not an easy task, and still the main impediment to reliable information, but it represents a means – and the only one, for that matter, – to relate the benefit of an income to its economic source. Traditional income analysis is insufficient in that it treats income as homogeneous, independent of the source through which it has been gained. Re-establishing this link, which exists in reality, in theory as well, is a political desideratum, and it is possible in practice by putting statistical resources into the construction of a SAM, as the third (and last) part of a full-fledged and perfect national accounting system.

3. Development of distributional analysis

While national accounting systems as outlined above became installed and developed over time, strongly favored by politics, statistical offices and economists related to them, there also developed a strong current against them, rooted in economic theory. The divide has been there from the beginning. When at Vienna, Austria, in year 1926, the first idea of a statistical measure of the national income was ventilated within the German Economic Association, all theoreticians spoke out against it, insisting that income was essentially of an individual nature, that a concept of national income was non-sense, and served only as “a means of political agitation” (Diehl, K. 1926). Micro-economic foundation of macroeconomics has been a methodological prescription for theory ever since, and it has also entered the issue of distribution.

As pointed out before, national accounts deal with income distribution mainly as factor rewards. They focus on producing units and supply little information about households and individual welfare. With the advent of computer technology this handicap of the top-down approach can be remedied. It has become possible to collect and process masses of data on a much larger scale than before, and to establish the bottom-up approach to macrostatistics as a strong competitive technique. As a result, the national accounts lost influence in the distributional arena, micro-simulation overtook the journals and is now the ruling method in research on income and wealth.

The new research frontier has offered new insights into the economic condition of individual households, but it has also brought with it side effects that demand careful attention. Dealing with masses of data creates its own problems, beginning with the design, and organisation of surveys, assurance of representativity of samples, handling of missing data, etc. While these problems of statistical realisation occupy the scientific mind, they leave little room for outside theoretic speculation, for venturing into complex models of causality, searching for hidden abstract variables and social constants. A recent example may illustrate the point.

In their paper “Does size matter? The impact of changes in household structure on income distribution in Germany” A. Peichl, N. Pestl and H. Schneider ask whether the growth of the income gap observed in Germany may be related to a change in household structure, and they find this is “indeed strongly” so. They explicitly warn, however, that “based on the results one cannot state that there is a *causal* relationship between household structure and income inequality” (p. 119), acknowledging, implicitly, the fact that a logical reason for such connection is not really evident. But if this is so the question arises why you would investigate such relationship, at all. The answer, coming up to a critical mind may be, you check the correlation because the data are there. Number of people living in a household is a simple and unflinching data to collect in a survey, (as are age and sex) so why not run the available software over it (Krämer 2012).

At a higher level of generality the suspicion exists, that distributional research is governed by the suitability of concepts for mass scale surveys rather than by speculation about hidden causal, and perhaps more difficult to observe, relationships. The scientific effort required simply to run, control and continue mass scale surveys, samples and panels and to assure their legitimacy seems to demand so much intellectual attention that little capacity is left for speculating about meaning and consequences of distributional concepts or phenomena.

Take the concept of income. Whatever its specific operational definition for the purpose of a survey, it is always treated as homogeneous. Not only does one abstract from its source which may be legitimate, if one takes it simply as a means to acquire goods and services, but even in terms of welfare, the central microeconomic variable, it is deficient. There are three main types of income, basically, labour income, capital income and transfer income. While being homogeneous in terms of the amount of products each income can purchase, they are not equal and not directly comparable in terms of welfare. It clearly makes a difference to a person’s welfare whether a certain income has been gained from property, from a forty hours’ week of work, or as an un-employment benefit. And the preferences individual households might express vis-a-vis these three forms of an income if they had the choice are so obvious that they have never even been asked in a survey. And yet, such evident inhomogeneity in welfare content is not taken note of in traditional income analysis, in spite of the microeconomic perspective, a deficit which it shares with its underlying theory of households as mere consumer behavior studies.

It is at this point, therefore, where the macroeconomic approach must come back into play. This does not mean that you simply return to the top-down approach trying to disaggregate macroeconomic figures into variables that you consider more meaningful from an individualistic point of view. It means that you construct a relationship between factor shares as brought out in the national accounts and personal income distribution as surveyed under the micro-economic approach. Atkinson (1983) made this plea already the “main concern” of his book (p.220), and it serves as a good starting point, still today.

We begin with the Ricardian model where the three kinds of factor incomes identify three separate classes of society: Labour income goes to workers, capital income to capitalists, rent to landlords. The model is not true today where workers have accumulated savings for life-cycle reasons, either directly through the capital market, or indirectly through some fund. Also not all profit is being distributed. A considerable portion remains within the institution where it has been earned, so that it may not form part of personal income distribution. A third major difference is caused by the increased role of the state. Part of the wealth of the personal sector is held in the form of government bonds and other government liabilities. The interest

paid on this national debt is a component of personal income, even though it has no counterpart in a return to a productive factor, but is paid out of taxes. “These considerations mean that total national income does not match up directly with the total personal income” (Atkinson 1983, p. 222). To go, rather, from gross national product to personal income, we have to take the following steps:

Gross national product
- Consumption of fixed capital
= National income

- Retained company profits
- Taxes on production (e.g. corporation tax)
- Profits accruing to government
+ Government transfers to persons (e.g. pensions)
+ Interest paid by government
+ Capital gains
+ Missing imputed income (e.g. home production)
= Personal income before tax

It is not the exact content, and order of steps designed by Atkinson (1983) that we want to show here, but the spirit of his theoretical endeavour. “In order to relate the distribution of factor shares to that by persons we have, therefore, to trace through these links and to take account of classes of income, such as government transfers, that did not appear in our earlier discussion (about factor shares, UPR).” (ibid. p. 222) The steps outlined above are not only a statistical procedure applied in order to link one concept of income to another. We take them, - this is the gist of our paper – as a link of causality as well. How much, we ask, is quantitative inequality in personal income not only related to, but caused by, inequality in quality between different kinds of income, stemming from different sources. The obvious difference in welfare content has already been noted. But here we focus not on this, but on the economic source which generates a certain income and the forces that distribute it within the overall economic circuit. The question is: Where does the money go? Where does the value added generated in a certain production end up, finally, after all processes of primary and secondary distribution have been completed? Or, the question put the other way around: Where does the income of a certain person come from? Where does it originate, in which production? It is time to open up our minds, and rather than trying (in vain) to explain income distribution of households merely by characteristics of these same households, accept the fact that they are all members of a comprehensive economic process where products and income circulate in a regulated way and determine one another.

4. An illustrative example: distributed and retained profits

Table 1 Distributed profits in a social accounting matrix

	GDP	NF	FC	GG	HH	CE	OS	HH1	HH2	HH3	HH4
GDP								10	20	30	40
NF	40										
FC	20										
GG	15										
HH	25										
CE		30	10	15	10						
OS		10	10	0	15						
HH1						10	0				
HH2						15	5				
HH3						20	10				
HH4						20	20				

Table 1 shows a simple scheme illustrating the working of a social accounting matrix in respect to profits retained by the enterprise where they have been generated. The first row and column contain aggregate GDP expenditure (row) and production (column). It is assumed that all GDP is delivered to households, classified into four income groups (HH1 to HH4). Columns and rows 2 to 5 are assigned to institutional units producing GDP, namely non-financial corporations (NF), financial corporations (FC), general government (GG), and households all together (HH). Value added in these four sectors is registered in the first column. The second column shows the two forms of income in which this value added is made available to its earners, namely compensation of employees (CE) and operating surplus (OS). Of the value added in non-financial corporations (40), for example, 30 are distributed as compensation of employees and 10 are retained as profits (bold figures). Households generate a value added of 25 of which 10 are paid out to employees while 15 are mixed income. Households are unincorporated so that they do not have operating surplus (except for home owners), but an income mix rewarding labour effort and capital supply, jointly. All employees' compensation, no matter where it has been earned, is distributed to households. They cannot be retained or received anywhere else. Operating surplus, however, may be paid out or retained where it has been generated. In figure 1 all surplus is handed over to households, but not in even shares. HH1 earn 10 compensation of employees and no profit, while HH4 earn 20 of each. Assuming that the number of households is the same in each class, HH1 represent the poor, and HH4 the rich households, with HH2 and HH3 lying in the middle. The Gini coefficient of this distribution is .25.

Table 2, in contrast, demonstrates the case where profits generated in the corporate sector are not distributed, but retained within their enterprises. Property income of HH3 and HH4 shrinks from 10 to 5 for each, as a result, so does their consumption expenditure. Retained profits are automatically transformed into own capital formation which shows up now in the row of GDP for column OS. The Gini coefficient of this distribution is .156. Artificial as it is the shift from figure 1 to figure 2 shows how decisions at the very locus of production affect

income distribution at the end of consumer units, even in this over-simplistic example. Actually income generated and income received are much further apart and controlled in various different processes of distribution and redistribution, as pointed out by Atkinson. It takes a full-fledged social accounting matrix to correctly map all these flows into a single table, and the ensuing flow analysis will be more involved, accordingly.

Table 2 Retained profits in a social accounting matrix

	GDP	NF	FC	GG	HH	CE	OS	HH1	HH2	HH3	HH4
GDP							20	10	20	25	25
NF	40										
FC	20										
GG	15										
HH	25										
CE		30	10	15	10						
OS		10	10	0	15						
HH1						10	0				
HH2						15	5				
HH3						20	5				
HH4						20	5				

5. The case of Portugal

Social accounting matrices are known in many countries, but they are difficult to construct and not part of the regular reporting activity of statistical offices, demanded by international organisations. Often the work goes only up to the first step, the construction of a “national accounting matrix” (NAM), which means that the institutional national accounts are being presented not as a series of accounts ordering payables and receivables, but as a table where payables of an account form a column and receivables form the corresponding row of a matrix (e.g. Statistisches Bundesamt 2005). Often it is left to private initiative and research, as it is, for example, in Portugal (Santos 2007). In this paper we use a SAM constructed for Portugal in year 2000, received from Susana Santos by private communication. It is a matrix of some hundred rows and columns, difficult to communicate on paper. Headings of the rows and columns are shown below.

Table 3 Organisation of a SAM for the purpose of distributional analysis

Portugal 2000				
1. Products			1	
3. Generation of income	Compensation of employees	Male	Primary/lower secondary	3a-1
			Upper or post secondary	3a-2
			Tertiary	3a-3
		Female	Primary/lower secondary	3a-4
			Upper or post secondary	3a-5
			Tertiary	3a-6
	Mixed income	Male	Primary/lower secondary	3b-1
			Upper or post secondary	3b-2
			Tertiary	3b-3
		Female	Primary/lower secondary	3b-4
			Upper or post secondary	3b-5
			Tertiary	3b-6
		Net operating surplus		3c
		Other taxes less subsidies on production		3d
4. Allocation of income	Non-Financial corporations		4a	
	Financial corporations		4b	
	General Government		4c	
		Wages and salaries	4d-1	
	Households classified by main source of income	Mixed income (including property income)		4d-2
		Income in connection with old age (retirement)		4d-3
		Other transfer income		4d-4
	NPISH		4e	
	5. Secondary distribution	Non-Financial corporations		5a
		Financial corporations		5b
General Government		5c		
		Wages and salaries	5d-1	
Households classified by main source of income		Mixed income (including property income)		5d-2
		Income in connection with old age (retirement)		5d-3
		Other transfers income		5d-4
NPISH		5e		
10. Rest of the world		Current+ capital		10
FISIM				
<hr style="border-top: 1px dashed black;"/>				
2. Industries			2	
6.---9. Capital	use of income stat. discr.	consumptn. cap. form.	6 --- 9	
			Total	

Source: Susana Santos, private communication

As said before, a social accounting matrix, while being derived from, and consistent with, the national accounts, is different in that it extends into the distributional area more thoroughly

than the accounts. For Portugal 2000, labor force is broken down by education and sex, and households are grouped into four types corresponding to the source of their main income.

In a normal SAM the order of rows and columns follows that of the national accounts. This implies a manner in which sectors are defined as endogenous as opposed to those which are considered exogenous, a partition that is fundamental in input-output analysis. In line with the national accounts it is usually production and value added that are called endogenous, while “final” demand is taken as exogenous and running the model. In this way, the analysis is focussed on describing the circuit of products through the establishments of an economy, under the laws of supply and demand. In this paper, however, the question is not about circulation of products, but about circulation of income. The question is: given a certain value added generated in industries, how is this value added transformed into individual income, appropriated, distributed and re-distributed through the economy, before it is finally being used for acquiring products. The national accounts show these flows for different institutional sectors, but only in an aggregated manner. All households are assembled in one sector, often together with private non-profit organisations. The institutional accounts also show only one side of a transaction, the sender or the receiver, not both together. The SAM Portugal 2000, in contrast, reveals primary and secondary income flows between units, and disaggregates four classes of households. This allows a detailed study of income distribution.

The acknowledged purpose of studying distribution rather than production leads to a reconsidering of aggregation and disaggregation, on the one hand, and of the distinction between exogeneity and endogeneity, on the other. This reordering of accounts (rows and columns) has been performed in table 3. The exogenous variable ought to be value added, in this case, and endogenous are the different mechanisms of distribution and redistribution, while it is less interesting to know from which producer and which industry a particular value added is being derived. Three operations have been performed, therefore, on the original table for our purpose:

1. Products and industries have been aggregated to one vector each (row/column 1, and 2 resp.)
2. The industries vector (row/column 2) has been shifted to the exogenous part of the table (2. quadrant), together with a vector of headings 6 –9, aggregating consumption and capital formation.
3. The rest of the world and the banking imputation are treated as endogenous.

In order to explain this re-organisation we return to the simple example of tables 1 and 2. The tables reflect the sector ordering of national accounts, where final use appears at the end of the accounting process and is treated as exogenous (2. quadrant) This definition of exogeneity allows, by means of the Leontief inverse, to calculate the amount and type of value added contained in a product of final use. It describes the flow of production. For analysing the flow of income it is preferable to define the exogenous variables as in table 4:

Table 4: Redefining exogeneity

	GDP	NF	FC	GG	HH	H1	H2	H3	H4	CE	OS
GDP						10	20	30	40		
NF	40										
FC	20										
GG	15										
HH	25										
H1										10	0
H2										15	5
H3										20	10
H4										20	20
CE		30	10	15	10						
OS		10	10	0	15						

In table 4 vectors CE (compensation of employees) and OS (operating surplus) have been placed to the right side of the table (2. quadrant) as the exogeneous vectors, while all institutions are endogenous. In this way the table mirrors table 1 where the industries between which products circulate are endogenous, thus focussing on production, while in table 4 institutions circulating their income are endogenous. In this arrangement we can determine, for example, what an increase in HH1, the poorest household's, income by one unit would entail in terms of CE and OS generated in producing institutions NF (nonfinancial corporations), FC (financial corporations), GG (generalovernment) or unincorporates enterprises run by households (HH). Applying the Leontief inverse in the usual manner yields the result that all sectors contribute in the proportion shown in rows CE and OS, i.e 65 percent must come from employee' compensation and 35 percent from operating surplus of the four sectors together.

The question here is not where do the products go, but where does the money go? Where does the "harvest" of production, the first appearance of which is an abstract bookkeeping figure in some institutional accounts called "value added" end up, at last, after all social transformations into different kinds of income have been performed? The primitive example above shows how the single decision of paying out or not paying out a dividend may alter final income distribution. Analysing now the complete picture of an actual economy we can find more realistic effects.

6. From value added to disposable income

National accounts show the passage from value added to disposable income for the nation as a whole and for five sectors, individually, where in the latter case they reflect the point of view of business accounts in registering the sector's respective ingoings and outgoings without bothering about the complete circuit. The SAM allows answering the question of where a certain value added ends up in disposable income, or the reverse, where a certain disposable

income originates. Table 5 shows the result for compensation of employees. The six columns show how value added generated by a certain group of employees classified by sex and by education, is distributed into disposable income of the five sectors of national accounts, disaggregating the household sector according to type of main income. Thus of the net value added by a male worker of lower education (3a-1) only 63.9 percent arrive at a worker's household (5d-1), 16.8 percent go to the general government (5c), 10.6 percent to pensioners (5d-3). Figure are similar for males with secondary education (3a-2) or tertiary education (3a-3), just as they are for the respective female working force (3a-4 to 3a-6). The negative figures for non-financial corporations are due to capital consumption which overshoots undistributed profits, yielding a negative net disposable income of this sector.

Table 5 Share of net value added generated by different groups of employees(3a-1 to 3a-6) contained in disposable income of sectors and different types of households (5a to 5e)

Disposable income of	Net 3a-1	value 3a-2	added 3a-3	by 3a-4	wage 3a-5	labor 3a-6
5a Nonfinancial corporations	-0,009	-0,008	-0,009	-0,008	-0,008	-0,008
5b Financial corporations	0,015	0,015	0,016	0,015	0,015	0,015
5c General government	0,168	0,165	0,171	0,161	0,160	0,166
5d-1 HHs, wages and salaries	0,639	0,625	0,655	0,602	0,596	0,626
5d-2 HHs, mixed and capital inc.	0,030	0,039	0,025	0,057	0,058	0,053
5d-3 HHs, retirement income	0,106	0,108	0,094	0,120	0,120	0,097
5d-4 HHs, other transfers	0,016	0,022	0,012	0,021	0,028	0,018
5e NPISH	0,019	0,019	0,019	0,018	0,018	0,019
10 Rest of the world	0,005	0,005	0,005	0,004	0,004	0,005

For explanation of headings see table 3

Table 6 Incidence of mixed income, operating surplus, and taxes on production respectively

	Net 3b-1	value 3b-2	added 3b-3	by 3b-4	self- 3b-5	empl. 3b-6	op. s. 3c	taxes 3d
5a	-0,003	-0,004	-0,005	-0,005	-0,005	-0,004	-0,050	-0,003
5b	0,006	0,007	0,010	0,009	0,009	0,007	0,040	0,014
5c	0,081	0,095	0,115	0,100	0,111	0,090	0,146	0,472
5d-1	0,127	0,211	0,323	0,248	0,301	0,176	0,124	0,064
5d-2	0,685	0,568	0,463	0,462	0,487	0,618	0,356	0,044
5d-3	0,072	0,095	0,059	0,127	0,066	0,087	0,156	0,215
5d-4	0,014	0,007	0,012	0,038	0,007	0,006	0,039	0,030
5e	0,011	0,012	0,014	0,013	0,014	0,012	0,025	0,030
10	0,002	0,003	0,003	0,003	0,003	0,003	0,052	0,043

Columns of table 6 are classify mixed income again by sex and education of their earners. Thus 68.5 percent of value added generated by a self-employed un-educated male (3b-1) goes to households living mainly on mixed income, which is symmetric to the situation of employed households: they main part of a value added generated goes to its earner as one ought to expect. A similar figure holds for highly educated female labor (3b-6), namely 61.8 percent. For other labor the figure is lower. Value added created by a self-employed female of lower education flows to mixed income households only at a rate of 46.2 percent. 12.7 percent go to pensioners' households, a sign perhaps that these incomes are earned by necessity as a complement to low pensions. Column 3c shows where net operating surplus of corporations ends up. 35.6 percent go to mixed income households, probably by way of interest payments

and dividends, 15.6 percent go to pensioners, 12.4 percent to workers' households, 14.6 percent flow into disposable income of general government (3c) and 5.2 percent go abroad. The government's share in value added (3d, taxes on production) remains with the government (47.2 percent) or goes to pensioners (21.5 percent).

Tables 5 and 6 exhibit shares of distribution. In terms of input-output analysis they represent the columns of the Leontief inverse. It is also interesting to look at the absolute figures of value added distribution. This is done in table 7.

Table 7 The overall incidence of value added (million Euros)

Net disposable income of	Net value added generated by			
	3a comp. empl.	3b mixed inc.	3c oper. surpl.	3d taxes on pro.
5a Nonfinancial corporations	-515,3	-20,0	-1085.7	1.9
5b Financial corporations	929,6	36,4	871.9	-7.9
5c General government	10139,6	450,6	3169.1	-267.8
5d-1 HHs, wages and salaries	38379,0	928,9	2699.1	-36.2
5d-2 HHs, mixed and capital inc.	2412,8	2899,1	7856.6	-25.0
5d-3 HHs, retirement income	6551,4	436,2	3410.4	-121.9
5d-4 HHs, other transfers	1089,3	97,0	842.0	-16.9
5e NPISH	1143,3	59,2	554.7	-17.2
10 Rest of the world	291,1	12,9	1147.5	-24.3

Table 7 describes the distribution of value added generated by wage labour, self-employed, capital and in the form of taxes on production in the economy. The figure is negative for non financial corporations because of large consumption of capital. In contrast, net disposable income of financial corporations is positive and originates mainly in compensation of employees (929.6) and operating surplus (871.9) transferred through payments of interest from other sectors. General government's disposable income also stems mainly from compensations of employees (10139.6) and operating surplus (3169.1).

Incomes of households also result from many sources. Main income comes from the main activity as one would expect, but other distributive flows also play a role. Thus the original source of employees' household income are wages and salaries (38379.0), but some operating surplus accrues to them as property income (2699.1). The bulk of operating surplus does not remain with their producer institutions but is paid out to households of mainly mixed income (7856.6). In other words, the owners of property largely coincide with self-employed labor. The column taxes on production is negative, because in the national accounts value added excludes value added tax, while disposable income of the nation includes it.

8. Conclusion

Traditional income analysis suffers from two defects. It treats income as homogeneous, and thus ignores the differences in effort and welfare by which a particular income has been earned, and it searches all explanatory variables only within the object of a household itself (collected through household survey) ignoring the effect of structural variables embedded in the overall economic network of income flows. A SAM analysis is able to venture into these neglected areas, revealing the composition of disposable income of different social strata in terms of the primary value added generated from production.

The paper has made an exploratory step in this direction. More complex and realistic research may follow. The new method, deviating from established use of SAMs, consists in full (or partial) aggregation of product flows and industries, and a re-cast of the definition of endogenous and exogenous variables. Demonstrating the further power of this approach requires times series of social accounting matrices which are scarce now, and a clear project of the future, as distributional conflicts grow in their demand for political action and statistical data.

References

Atkinson, Anthony B., *The economics of inequality*, Clarendon Press, Oxford 1983

Diehl, K.(ed.), *Volkseinkommen und Volksvermögen. Schriften des Vereins für Sozialpolitik* Bd. 173, Leipzig 1926

Krämer, Walter, *Das Signifikanztest-Ritual und andere Sackgassen des Fortschritts in der Statistik*, in: *Wirtschafts-und Sozialstatistisches Archiv* 5, Heft 4, p. 299-308, 2012

Peichl, Andreas, Nico Pestl and Hilmar Schneider, "Does Size Matter? The Impact of Changes in Household Structure on Income Distribution in Germany", *The Review of Income and Wealth* (1) **58**, March 2012, 118-141.

Santos, Susana, *Macro-SAMs for Modelling Purposes. An application to Portugal in 2003*. Working Paper No. 17/2007/Department of Economics/ Research Unit on Complexity and Economics, ISEG-UTL, 2007.

Statistisches Bundesamt, *Sozialrechnungsmatrix 2000*, Wiesbaden 2005.