

THE ESTIMATE OF WEALTH VARIATIONS AT THE HOUSEHOLD LEVEL

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Abstract

Wealth variations at the household level can be measured using both macro data from National Accounts and micro data from sample surveys. As a contribution to the LWS project, which aims at the harmonisation of micro data on household wealth, we discuss a possible definition of wealth variation at the micro level. The starting point are the National Accounts, whose definitions, however, show several problems when applied in a micro context. The aim of this paper is to shed light on such differences, discussing their origins and effects. As the study of wealth evolution requires data on individual wealth over time, we analyse how this kind of information can be extracted from sample surveys, using retrospective and prospective questions in cross-section surveys or panel samples. The problems that arise in data collection are also discussed. Moreover, we consider the consequences on wealth measurement arising from the variation in household composition and incomplete definitions of wealth. Finally, for a full understanding of the process of wealth accumulation, it is necessary to be aware of the influence of other factors, like ability, personal origins, luck etc. and of their interaction.

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1. Introduction

Wealth variations at the household level can be measured using both macro data from National Accounts and micro data from sample surveys. As a contribution to the LWS project, which aims at the harmonisation of micro data on household wealth, we discuss a possible definition of wealth variation at the micro level. The starting point are the National Accounts, whose definitions however show several problems when applied in a micro context. The aim of this paper is to shed light on such differences, discussing their origins and effects. In addition, the study briefly reviews issues of a more practical nature in the estimation of micro wealth variation of households. The paper is organised as follows:

- in the second paragraph, we describe the definitions of wealth variation adopted in the National Accounts;
- the third paragraph discusses the adoption of the conceptual framework of wealth variations used in the National Accounts to the single household. We show that micro and macro notions can differ, even with respect to the same concept. First, macro data do not give information on important aggregates that mostly net out at the national household sector level (such as capital transfers between households); moreover the notion of what can be considered “current” versus “extraordinary” may change switching from the macro to the micro point of view, suggesting different attributions between income and wealth variation;
- finally, in the fourth paragraph, we discuss further issues in measuring wealth variation at the micro level. As the study of wealth evolution requires data on individual wealth over time, we analyse how this kind of information can be extracted from sample surveys, using retrospective and prospective questions in cross-section surveys or panel samples. The problems that arise in data collection are also discussed. Moreover, we consider the consequences on wealth measurement arising from the variation in household composition and incomplete definitions of wealth. Finally, for a full understanding of the process of wealth accumulation, it is necessary to be aware of the influence of other factors, like ability, personal origins, luck etc. and of their interaction.

2. National Accounts sources of wealth variation for households

In the National Accounts¹ changes in wealth are recorded in the *Accumulation Accounts*, an ordered set of flow accounts describing “the various causes of changes in the assets and liabilities of units and the change in their net worth (ESA95 §8.44)”.

The set of accounts constituting the Accumulation Accounts is articulated in three components. The *capital account* records “assets by resident units and measures the change in net worth due to saving and capital transfers (ESA95 §8.46)”. Acquisition of financial assets and liabilities are instead recorded in the *financial account*. Finally, the *account of other changes in assets* records changes in net worth due to other variations in the volume of assets and to their revaluation.

These accounts identify four basic sources of variations in the net wealth of households: savings S_t , capital transfers T_t , capital gains CG_t and other volume variations VV_t :

$$DW_t = S_t + T_t + CG_t + VV_t \quad (1)$$

Let us briefly analyse how these items are defined in the National Accounts².

2.1 Savings

By definition savings represent the residual part of national disposable income which is not used for final consumption expenditure. In practice, saving is the final balancing item in the *current accounts* that records the production of income and its use for final consumption. Saving is used to increase wealth by purchasing fixed or financial assets or to

¹ The standard references for National Accounts are the European System of Accounts, 1995 (ESA95) for the EU Members and the System of National Accounts, 1993 (SNA93) for the whole World. The two systems are consistent, even if in some cases ESA concepts are more detailed than those of the SNA as ESA applies to a more restricted group of countries. For what follows, when not stated otherwise, the reference is to ESA95; where it is not, the difference with the SNA93 definitions will be highlighted.

² Our attention will be focused on the household sector defined as “small groups of persons who share the same living accommodation, who pool some, or all, of their income and wealth and who consume certain types of goods and services collectively, mainly housing and food” (ESA95, §2.75). With respect to SNA, for what concerns the household sector, ESA assumes that “several types of household production of goods, such as weaving of cloth and the making of furniture, are not significant in EU Member States and therefore need not be recorded (ESA95, §1.24)”.

extinguish liabilities. It is worth noticing that savings can also be negative, when consumption exceeds income. In this case, dissaving will cause the liquidation of assets or the increase of liabilities that compose wealth. The definition of savings strongly depends on the definition of income. In the National Accounts, income is defined as “the maximum amount that a household or other unit can afford to spend on consumption goods or services during the accounting period without having to finance its expenditure by reducing its cash, by disposing of other financial or non-financial assets or by increasing its liabilities (SNA93, §8.15)”³.

2.2 *Capital transfers*

Transfers represents a unilateral transaction in which one institutional unit provides a good, service or asset to another unit without receiving from the latter any good, service or asset in return as counterpart (SNA93, §8.3 and §8.27). Transfers can be classified as current and capital. Capital transfers involve wealth variations, while current transfers are considered part of income and are destined for either consumption or saving during the accounting period. In particular, capital transfers “involve the acquisition or disposal of an asset, or assets, by at least one of the parties to the transaction. Whether made in cash or in kind, they should result in a commensurate change in the financial, or non-financial, assets shown in the balance sheets of one or both parties to the transaction (ESA95, §4.145)”. For each unit, transfers are of two kinds: received and given; their contribution to wealth can be positive or negative, depending on the period of time. Transfer can be intended among units of the same sector or between sectors. Of course, when considering all the sectors (all institutional units and the rest of the world), transfers should sum to zero.

2.3 *Capital gains*

Capital gains and losses are the changes in wealth due to variation in prices of assets or liabilities. “Holding gains and losses accrue to the owners of assets and liabilities purely as a result of holding the assets or liabilities over time, without transforming them in any way (SEC95, §1.46)”. Nominal capital gains can be divided into neutral capital gains, for the part

³ For further details on household income definitions see The Canberra Group (2001).

due to the variation of general price level, that allows to recover purchasing power, and real capital gains, reflecting changes in the relative prices of assets, for the residual part.

2.4 Other volume variations

Variation of net worth is also attributable to “other wealth variations due to volume variations” that are all the changes in the volume of financial assets and liabilities not due to financial transactions. These variations are recorded in the *account of other changes in the volume of assets* and are the effect of catastrophic losses, uncompensated seizures, other changes of volume in financial assets and liabilities that cannot be otherwise classified, and changes in classification rules and account structure (SNA93, §12.4 and SEC95, §8.53).

3. Micro concepts of wealth variations at the household level

From a research perspective, macro data provide reliable estimates of totals and trends but cannot be used to perform analyses focused on individual characteristics and distributive aspects. It seems therefore natural to aim at supplementing macro data with information derived from survey data.

As we have seen, macro data are collected following the definitions found in the National Accounts, which are quite consistent among countries. Micro data, on the other hand, are usually collected from a variety of institutions, through surveys that follow the same scheme only roughly. This is one of the reasons why harmonisation at the micro level would be highly convenient⁴.

Micro and macro notions, however, can differ, even with respect to the same concept. Where definitions of wealth variations are concerned, two issues need to be highlighted: a) macro data do not give information on important aggregates that mostly net out at the national household sector level (such as capital transfers between households); b) the notion of what can be considered “current” versus “extraordinary” may change switching from the macro to the micro point of view; this is the case of probabilistic events like lotteries or

⁴ For further details on the integration of macro and micro data, see Ruggles and Ruggles (1999).

insurance, that are not considered as a part of wealth variations in the National Accounts, while they can be deemed an extraordinary event from the micro point of view.

Let's discuss how the four items examined in the previous paragraph could be computed in a micro view and the relationship with the corresponding items defined in the National Accounts.

3.1 Savings

The definition of savings at the micro level does not present significant changes compared to the macro aggregate. In household surveys, savings are commonly derived throughout an indirect computation on the basis of data on income and consumption; as the collection of both income and consumption data is a demanding task, involving many items, some of which are particularly problematic (i.e. imputed rents), the aggregate of savings may have a lower reliability than its components. It is important to observe that savings, unlike the aggregate found in national accounts, may frequently assume negative values in the micro framework.

3.2 Capital transfers

In National Accounts, transfers between households are not taken into account as they net out for the sector as a whole. The only exception arises from transfers that occur from, or to, non-resident households (e.g. remittances by emigrants), which are recorded as an aggregate figure in macro data. Consequently, most of the capital transfers that occur within the households sector, and often affect a consistent part of their wealth, cannot be observed at the macro level.

At the micro level, capital transfers are usually in the form of gifts and bequests between households. These events can be recorded in sample surveys by collecting retrospective data on inheritance or gifts received or given. Some specific problems arise in dealing with the collection of data on past inheritances and gifts. The main obstacle accrues to defects in memory: data quality may actually be low when one tries to record events that happened in the distant past. Specific interviewing techniques can be applied in order to help the respondent to retrieve the exact year in which the transfer occurred and the

corresponding amount: the year in which the transfer took place may be conveniently connected to specific events in the respondent's life (e.g. marriage, birth of a child...); the evaluation of transfers may be easier if the household has a choice on the matter of the reference set of prices. In general, people are bound to recall more easily an amount in current prices, i.e. what they gave or received at the time of the transfer. However, sometimes the current value is unknown, but one might be able to give an estimate for another point in time (e. g. when the asset was sold). Therefore, reference periods for the evaluation of transfers should be defined flexibly: this practice increases the probability of obtaining a good estimate of the value of the transfer, even if it can bring about further problems, in connection with the estimate of the capital gains. In particular, if the evaluation of a past transfer is relative to a period that lies between the receiving time and the present, it will be difficult to distinguish which part of its value was there from the start, and which corresponds to subsequent capital gains.

A different problem arises if we consider the transfers given. In most cases, when the inheritance is received, the donor's household will exit the sample⁵. Thus, even aside from measurement errors, estimates of transfers given and received will hardly reconcile.

From an analytical point of view, it is worth noting that bequests typically occur in specific cohorts of age, whose wealth is much more likely to be affected by this event than the wealth of other cohorts⁶. As a matter of fact, if we compare the wealth of two individuals at different ages, the difference can strongly depend on the sequence of events that already have taken place in their life. The analyses trying to explain the origin of personal wealth or the impact of inheritance on wealth distribution should take this point into account.

A possible way to overcome this limitation lies in considering both retrospective and prospective questions on transfers. The difference between the two points of view is obvious: while past transfers have occurred, future transfers have not, and might not. Questions on

⁵ This can happen when the person who is leaving the bequest constitutes the object of the survey (for example, in the case of a survey on households, if the family is composed only of that individual). In this case, after the death of this person the corresponding unit will be excluded from the reference population and the bequest will be recorded only as an incoming transfer for the receiving family.

⁶ For some specific analyses, one would need of data on inheritance and gifts of households over the whole life span. In such a case, the inclusion in the survey of questions on expected future transfers could be considered although the reliability of answers is presumably low, mainly for the younger cohorts.

future transfers are subject to greater errors than retrospective ones, as they reflect hypothetical events. The accuracy of the prediction presumably depends on how much the expected event is considered far in time; for younger cohorts, it is difficult to state if the answers given by respondents are expectations, plans or simply hopes.

3.3 Capital gains

Following the National Accounts, capital gains include all the variations of wealth deriving from changes in the prices of its items, without distinction between realised and unrealised gains.

When referring to micro data, two different methods can be used for the estimation of this component: a) a direct measure of capital gains or losses; b) an indirect method, based on price indexes. In principle, following the method sub a), the single price variations of each wealth item should be needed. The survey should include retrospective questions directly asking the value of capital gains for the household in the past. This kind of questions are subject to memory bias, and are quite complex even if we limit the attention to those assets for which capital gains are usually larger, such as dwellings and shares. The alternative estimation method relies instead on the knowledge of specific price indexes, which allows for a computation of capital gains that presumably occurred. It is worth noting that the use of price indexes may provide a severe underestimation of the redistributive effect of capital gains as every single household asset has – in theory – its own price variation, and the price index represents the average trend only. The suggestion is, therefore, to work on detailed price indexes while acquiring specific supplementary information on the composition of assets for individual households (i.e. national/foreign assets, number of shares of different companies held,...).

In terms of analysis, the attention is on the real capital gains, i.e. the variation of values due to price variation net of inflation.

3.4 Other volume variations

What is the most relevant form taken by other volume variations in the estimation of wealth variations? Doubtless the catastrophic losses due to earthquakes or floods,

contemplated by the National Accounts, may take place even if they are presumably rare events. At the micro level, however, the items collected under *other volume variations* may have more familiar faces. Similarly to the macro case, this section contains probabilistic events that can modify household wealth; even if they are not as significant at the macro level like catastrophes, they represent an extraordinary event for the individual household.

The first class of events we consider is related to insurance. Non-life insurance premiums are paid by households to insurance companies in order to provide cover against accidents that can cause injuries or damage. Only if the event happens will the household receive the claim. From the household side, National Accounts classify aggregate insurance premiums as current transfers from the family to the insurance company, for the quota necessary to balance for the claims received in exchange; the remaining part, which represents the payment for the services offered by the insurance company, is considered a part of final consumption expenditure. Insurance claims are treated as current transfers from the insurance company to the claimant (ESA95, §4.109-116). From the household point of view, when the claim received constitutes a substantial amount, it is hardly perceivable like a current transfer, although it usually reconstitutes the value of an asset that has been damaged or lost (e. g. the destruction of a dwelling). In that case, no wealth variation occurs, but for the part not covered by the insurance. The classification of the amount received as a refund for personal injuries is more problematic. In this case a positive variation in wealth coming from the insurance claim is balanced by a loss which is not measured in the household wealth. The case of life insurance (just for the amount covering the event of death) is similar to the one with personal injuries: in this case, however, the wealth variation arising from the claim accrues a person different from the one insured, and sometimes not even part of the household.

A second class of events, that has some analogies with non-life insurance, is related to lotteries and gambling. In this case two elements should be recorded: the amounts paid for lottery tickets or placed in bets and a residual transfer that is paid out to the winners. In the National Accounts these transfers are considered as current and are “regarded in the system as taking place directly between those participating in the lottery or gambling, that is, between households (ESA95, §4.135)”. Consequently, in the macro framework, only the difference among these two aggregates, which represents the payment of the households for

the service provided by the unit organising the lottery or gambling, will be recorded⁷. On the other hand, at the micro level, it is not clear whether those transfers should be considered current or part of the accumulation process. Sometimes the winner of a lottery receives a prize whose value significantly exceeds his income, and which could hardly be consumed in a single period. In other cases the prize consists of an asset that enters wealth directly. Under such circumstances it would seem reasonable, at the micro level, to consider these transfers as capital ones, in contrast to the macro standards.

Finally, there is a specific class of wealth variations related to criminal episodes. These events could also be seen as (involuntary) capital transfers from one household to another. Much in the same fashion as inheritances, if for different reasons, the estimates of wealth lost by the victim cannot be balanced with the gains realised by its counterpart. This phenomenon can be important for a non-negligible share of households; the collection of related data is advisable.

4. Further issues in measuring wealth variations at the micro level

As shown above, a full reconciliation between macro and micro definitions is not possible; the analysis of wealth variations at the micro level should take into account phenomena that are not usually considered at the macro level; moreover, some events tend to change their nature – from current to extraordinary – depending on the point of view, suggesting their inclusion in the capital account rather than in the current one.

Apart from theoretical issues, the analysis of wealth variations at the micro level should take into account some further points.

4.1 Household composition

Wealth may vary with household composition: one person may detach herself from a household to form a new one, alone or together with a person in the same condition, or a

⁷ When non-resident households take part to the gambling, a transfer will be recorded among the household sector and the rest of the world.

single person may join other people in a previously existing household. These changes tend to modify the household wealth distribution. A proper way to deal with such a phenomenon would be to separate family holdings among household members and to estimate individual wealth. However, it is often impossible to attribute a specific quota of wealth items to each member, as assets are often purchased and used by all the family and their property cannot be divided. At the household level, the only way to achieve our goal seems to consist in taking into account variations in family composition, and treating the corresponding changes in wealth as extraordinary “other changes in volume”.

4.2 Wealth definitions

The analysis of wealth variations may be seriously affected by an incomplete definition of wealth. As assets are mostly fungible, the analysis of wealth data considered in a somewhat restricted definition of wealth may show apparent changes in the total amount of wealth whereas only changes in allocation have occurred. For example, in Italy, the law establishes that a percentage of an employee’s salary should be retained by the employer and refunded, with interest calculated following a special rule, to the employee when he leaves the job (whatever the reason) as a lump-sum retirement payment. Although this sum constitutes without doubt a form of compulsory saving for the household, it may be difficult to collect information on the corresponding amount directly from the employee, who tends to consider this part of his wealth as not disposable. If that amount is not included in the wealth definition due to the measurement problems described above, one might find a number of unexplained changes in wealth, mainly concentrated around the retirement age. In general, the more the wealth definition is complete, the less the inexplicable changes in household wealth are frequent.

4.3 Types of sample surveys

The reliability of estimates on wealth variations may vary according to the kind of available data. Questions regarding wealth variations in a single year can be answered with few errors, as information is relative to recent events, easy to remember and to quantify, but only small variations in wealth will be observed based on these questions. In addition, there are events that cannot be mapped on a single year, since they derive from the accumulation

of savings in the past (like claims or shares of pension funds), or they are connected to probabilistic events, more or less expected (like inheritance or lottery prizes) that, if observed in a single year, can provide an inaccurate estimate of wealth variation. In other words, a single year is too short to correctly quantify some slow dynamics of wealth modification.

In order to improve the accuracy level of the image of wealth variations, surveys can be improved with questions regarding past and future events. This type of information is particularly suitable for studying specific wealth items, but it has its limits where data quality is concerned.

Panel surveys record information relative to the same individuals at different points in time. These surveys can be more expensive than their cross-sectional counterparts, because it is necessary to interview the same person in different periods. On the other hand, they allow for a better reconstruction of individual wealth and how it is built during a lifetime. The reasons for using panel data reside mainly in the possibility of attaining further precision in the evaluation of wealth mobility over time. Using panel data, it is possible to overcome the problems of memory linked to retrospective questions and those of inaccuracy in prospective ones; the issue of selection bias may arise, though.

4.4 Problems in data collection

Sample surveys allow for a much more detailed analysis of the sources of wealth variation; however, they suffer from some specific shortcomings. A common problem arises from the differential participation of various segments of the population. Usually refusal rates are higher among the better-off households. Wealth tends to be highly concentrated, and unless specific sampling techniques are employed sample surveys catch a very small fraction of the rich households, who are few and far between to start with. This can represent a limitation in the study of the origins of great fortunes. Another delicate point is related to the reliability of answers provided by the respondents. Sometimes the answers on the possession of assets or on their real value may be affected by reticent behaviour, implying a severe downward bias of estimates. It should also be stressed that all the measurement errors,

including those not causing any bias in the estimates of the levels, can affect the estimation of wealth variations.

4.5 Studying the origin of wealth

In many research papers investigating the origin of household wealth, it is quite common to find sentences stating, for example, that inheritances (or savings) account for a given percentage of wealth held by household. Often the residual is implicitly attributed to the supposed complement, savings (or inheritance). However, we have shown in the previous paragraphs that many other sources of wealth variations other than savings, inheritances and gifts are important at the micro level. If the share of savings to total wealth is x , the contribution of transfers may well be far from its complement $1-x$. Estimates on Italy show that, during the nineties, capital gains were approximately as important as savings in the growth of aggregate household wealth.

A second point that needs to be stressed is that factors explaining the origin of household wealth may be different depending on the perspective (macro versus micro). At the micro level, much more than in the aggregates, the various components may contribute to wealth in both directions, increasing or diminishing it. If the interest is in the origin of wealth from the household's point of view, the indexes based on the ratio of means risk a severe underestimation of the factors with effects that are mainly redistributive (e. g. capital gains) respect to the others, because positive and negative variations cancel out. A measure of the influence of the different factors on household wealth should be based on variance rather than mean decomposition.

An important remark must be made on the relationships among the different factors. Some of the factors affecting wealth are under the control of households (e.g. savings) while others are more unpredictable (e.g. capital gains). Households can modify their saving behaviour or their inheritance plans in reaction to an inheritance received or to an unexpected capital gain. The comprehension of these relationships is necessary to fully account for the role of each factor in determining the amount of wealth held.

A final point concerns the links among the factors discussed above, classified following the conceptual scheme typical of a balance sheet, and those that many studies

investigating the origin of wealth do mention as crucial: efforts, ability, personal origin, luck. Actually these classifications do not match each other. Savings can not be always seen as a mere reflection of the individual efforts, tastes and abilities. For examples, incomes, and correspondingly savings, could well be influenced by the personal origins. Analogously, capital gains or losses are not the mere transposition of random events. If the aim of the study is the classification along these dimensions, further information needs to be collected: for example, risk aversion, intertemporal preferences and characteristics of the parents (and other relatives) of the head of household and the spouse.

5. Conclusions

The aim of this paper is to suggest a definition of wealth variation to be used in micro surveys, in line with the National Accounts. The discussion highlights the existence of several conceptual problems, arising from the application of a macro framework to the individual level. Such differences suggest the adoption of a definition of wealth variation at the micro level slightly different from the one used in the National Accounts.

The above discussion is only a first step in view of the LWS project of harmonisation of the corresponding micro datasets, as each country measures wealth variations using different questions and different kind of surveys. A further step should focus on increasing the level of comparability of the existing sets of questions. This project is ambitious, because the current differences among the surveys are substantial; it seems however necessary to conduct reliable international comparisons.

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