An analysis of income distribution by linking household surveys with national accounts measurements.

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Abstract

The study of income distribution is a topic of wide discussion, however, its measurement in statistical terms is a great challenge, given the need to combine sources of information that describe the activities of a household as a unit of statistical observation, being the household surveys the instrument, in combination with other data sources that report measurements of greater aggregation, such as national accounts. Greater knowledge of income distribution through quantitative proposals provides elements of analysis and the eventual generation of distributional indicators. This paper proposes a method for disaggregating macroeconomic aggregates from Mexico's national accounts household sector, based on detailed information from the National Survey of Household Income and Expenditure (ENIGH), later combined with administrative data that provide greater elements to tune-up the distributions. The underlying idea of this proposal is that the identification of a characteristic variable in the treatment of information based on the ENIGH allows to address the inclusion of other administrative data sources, while the combination of both for the development of distributional breakdowns broadens the use capacity in statistical developments, such as the generation of distributional indicators. The results presented for the case of Mexico cover the series of 2004-14, even years and 2005, in which it was possible to identify specific patterns in the distribution of income in Mexico and the income components affecting them.

Keywords: Income; households; National accounts; surveys.

1. Introduction

The study of the distribution of income is of interest both in the economic aspect and in social and public policy issues. In the international statistical context, based on the Stiglitz-Sen Report, the purpose of which was to identify the limits of GDP as an indicator of economic performance and social progress, defined within a set of recommendations aimed at reinforcing statistical measures, prominence to the distribution of income, consumption and wealth. This recommendation refers to data on income, consumption and average wealth are significant measures, however, do not provide information on living standards, so it is important to link them with a distributional approach of households differentiating levels of income and wealth. Likewise, in terms of the generation of indicators of material well-being, it emphasizes the importance of the household perspective on the economy as a whole, and the use of available national income as a more adequate indicator than those derived from production, where finds GDP.

In the context of the financial crisis of 2008, the Data Gaps Initiative of the G-20[1] Group of Economies was presented in 2009 in a set of 20 recommendations for strengthening information collection. Recommendation #16 states that statistical experts should seek to compile distributional

[1] The Financial Crisis and Information Gaps. Report to the G-20 Finance Ministers and Central Bank Governors. IMF Staff and the FSB Secretariat. October 29, 2009.

information in parallel with aggregate figures, where relevant, that the Organization for Economic Co-operation and Development (OECD) should continue efforts to link national accounts with distributional information. Currently, the referred Data Gaps Initiative is in its second stage and the issue of household distribution information is maintained as recommendation #9.

At the end of 2010, the OECD created the Expert Group to measure the Disparities in the National Accounts framework, whose purpose was the attention of this recommendation. The objective of this Expert Group was to develop a framework for the elaboration of distributional measures, combining the macro aggregates of National Accounts (NA), with information at the micro level [2] of the Household Surveys available in each country, the results summarized an experimental exercise. It is within the framework of the work of this Expert Group and, in particular, the experimental exercise developed for the case of Mexico, the beginning of the proposal presented in this document.

The ambit developed for the particular case of Mexico extends its scope of measurement to the series 2002-14, even years and 2005, and to the incorporation of variants in the proposal of the Group of Experts commented. In this way, the present document addresses in its section 2 the elements used in the Household Income and Expenditure Survey of Mexico (ENIGH) and the way in which it was treated for the purpose of this experimental exercise. Section 3 describes the applicable elements of the National Accounts, as a conceptual framework, and reference data of the exercise carried out. Section 4 describes the method applied in obtaining the exercise for the Mexican series. As a conclusion, point 5 addresses the scope and limitation found in the proposal developed, and some considerations that could serve to continue reinforcing an exercise of this nature.

2. National Income and Expenditure Survey (ENIGH)

The ENIGH collects data from a representative set of households that, when expanded based on population factors, reach the totals at the country level. In the case of Mexico, the ENIGH is only one source of micro data that is concerned with measuring income and consumption. This survey aims to provide a statistical overview of the performance of the incomes and expenditures of households in their amount, origin and distribution; additionally, it provides information on occupational and socio demographic characteristics of the household members, as well as the characteristics of the infrastructure of dwellings and household equipment. It is published every two years, while their target population is the domestic or foreign households that ordinarily have residence in the private dwellings within the country.

The sampling scheme is probabilistic, two-stage and by conglomerate, where the selected unit is the dwelling and the observation unit is the household. The rising period is quarterly and is carried out from August 11 to November 18 of the survey years. This period is divided into ten tens, in each one of them the information is collected for seven consecutive days. This survey is available since 1984, and since 1992 it is done every two years, except 2005 because it was an extraordinary exercise. The series of surveys series used in this paper is from 2004 to 2014, even years 2005.

The income collected by the ENIGH consist of an aggregate of current income, which must meet the requirements of been received or performed with a defined frequency, of immediate availability. That is, the transactions made with this income or expenditure should contribute immediately to the satisfaction of the primary needs of households, in addition, they cannot cause changes in the equity of the household. Within the ENIGH the current income, both monetary and non-monetary, is divided in five major types of income: 1) Labour Income; 2) Property Income; 3) Transfers; 4) Estimate of

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[2] According to the Canberra Group Handbook on Household Income Statistics 2011, the Household income measurement has two main traditions: the macro approach, having its roots in national accounts and in particular the accounting based standards laid out in the System of National Accounts (SNA); and the micro approach, having its roots in microeconomics and particularly the study of poverty and its effect on different socio-economic groups within society. Pg. 4

imputed rental of owner-occupied dwelling; and, 5) Other current income.

The approach used in the exercise consists on the alignment of this data source to the NA framework of the households sector, as part of the accounts by institutional sector. Some important considerations are required to establish an adequate comparison, given the different purposes in each statistic, but highlighting the common observation unit, the household.

3. System of National Accounts, Households sector

The System of National Accounts (SNA) is a set of internationally approved standards that are used to elaborate measurements of economic activity, among which the Gross Domestic Product (GDP) stands out. The structure that follows the scheme of measurement proposed by the SNA starts from the generation of income through a productive process and the way in which this income is distributed and redistributed by institutional sector that for the purposes of measurement presents to the economy; being non-financial corporations, financial corporations, general government, households and NPISH[3].

In its broader structure, the NA are a set of current and accumulation accounts and balance sheets that are compiled for these sectors of the economy and the rest of the world, the link between each account are the balancing items, which the principle of the charge and payment that governs the SNA are the resultant between transactions in the form of resources and uses for each particular sector and the economy as a whole. This paper focuses on the household sector, for the purposes of the SNA, a household can be defined as a group of people who share the same housing, who wholly or partially pool their income and wealth and who collectively consume certain types of goods and services, especially those relating to food and accommodation (2008 SNA, par. 4.149). Households include institutional households composed of people residing in hospitals, nursing homes, convents, prisons, etc. for extended periods of time. In addition, an unincorporated enterprise owned by a household is treated as an integral part of it and not as a separate institutional unit, except when its accounts are sufficiently detailed so that its activity can be treated as a quasi-corporation (2008 SNA par. 4.32).

From the role played by households in the economy, the concepts of income, consumption and savings are highlighted by their meaning. Relevant for this document are the balancing items primary incomes, disposable income, adjusted disposable income, saving, as well as the final consumption expenditures, all of them for the households sector and defined according to the 2008 SNA.

The SNA includes an alternative concept for measuring household income and consumption that takes into account the expenditure incurred by government units and NPISH that benefit households. These Social Transfers in Kind (STiK) include the expenditure by general government and NPISH on the provision of various individual services (health care, education, etc.) and the reimbursement of household purchases of goods and services (such as medical consultations and medicines as well as housing rentals). The relevant alternative national accounts aggregates are called household adjusted disposable income and actual final consumption, which correspond, respectively, to household disposable income and final consumption expenditure to which STiK are added.

4. Method applied to integrate macro-micro statistics

The method developed is based on the characteristics of the two data sources described. The objective sought to fulfill the combination of both is to contribute with its descriptive capacity of the household sector and their own approaches. The survey reports information on variants in their income mechanisms, forms of production, transfers between households, and additional information on demographic aspects that contribute to a detailed analysis of the data. For its part, national accounts describe the total of the household sector as part of the economy through macroeconomic aggregates, showing total figures. Although the 2008 SNA provides for the sub-sectorisation of this institutional

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[3] Non-profit Institutions Serving Households.

sector [4], there is no homogeneous method followed by statistical offices that offers results for international comparability purposes, and if they are, the data sources used would be the ones incorporated in this document. The combination of both statistics offers more and better elements to understand how the household sector performs from a macroeconomic point of view, derived from micro statistics.

The Canberra Group Handbook[5] accurately characterizes micro and macro data. Household income measurement has two main traditions: i) the macro approach, having its roots in national accounts and in particular the accounting based standards laid out in the SNA, and ii) the micro approach, having its roots in microeconomics and particularly the study of poverty and its effect on different socio-economic groups within society.

The exercise developed for Mexico is part of the scheme proposed by the Expert Group convened by the OECD, referred to above, consisting of five generic steps. In the first step, national accounts data should be adjusted to bring them closer to household survey statistics. In this step, basically two adjustments are necessary, the first is because the NPISH non-market production is a final consumption included in the actual final consumption of households, as it is spent by these institutions on behalf of households. The second adjustment is to extract from direct consumption expenditure the direct purchases in the domestic market by non-residents, initially the total amount by type of expenditure is distributed based on a structure that comes from the satellite tourism account, available for the case of Mexico, then these expenses are extracted by final consumption item in the domestic market. With this procedure, a final consumption expenditure is obtained at the national level. The goal of these treatments is to better align the coverage of micro and macro statistics.

The second stage consists of the alignment of the micro data of the household survey, towards the concepts of national accounts. In this process the items of income and expenses that are captured by the household survey are classified and grouped based on the transactions of national accounts. This work consists of analyzing and solving the different approaches of both statistics, as well as their definitions. At the end of this process it will be clear that, as specified in the Canberra Manual, the treatment in micro and macro statistics varies due to the different objectives of two databases [6].

In the third stage and once both statistics are aligned, household survey data are expanded based on national account totals. The household survey offers a greater possibility of disaggregation at the level of observation unit or groupings of the same, so this is the basis for distribution, while the national accounts represent the totals at the macroeconomic level. This process is called 'Adjustment to national accounts totals' within the OECD Expert Group discussed. It is in this part that micro data sources that offer possibilities of alternative openings can be incorporated, additional or complementary, to the household survey. The objective is to combine both approaches and develop distributional measures on the basis of the survey and micro data available at country level. For the case of Mexico, it was at this stage that the variants were developed to the method, starting with available information, beyond the ENIGH. An additional part of the process is the incorporation of imputed type transactions into national accounts (interest on FISIM[7] treatment, distributed investment income), since the way in which these transactions are measured is indirect.

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[4] 2008 SNA, par. 4.158 The household sector consists of all resident households. There are many useful ways in which the households sector may be sub sectored and statistical agencies are advised to give due consideration to the various possibilities.

[5] Canberra Group Handbook on Households Income Statistics, Second Edition 2011, pg. 4

[6] Ibid Pg. 134. In the micro statistics, emphasis is on those receipts that are of direct benefit to individual households as well as the distribution of income across households. In the micro statistics, the total income accruing to households is described in relation to other aggregate components and sector of the entire system of national accounts.

[7] Financial Intermediation Services Indirectly Measured.

Particular case of the transactions imputed are the STiK that households receive from the government and the NPISHs. These represent the non-market services they receive through education and health. These services are allocated as received by households in the use of disposable income account. The way they are assigned is by identifying in the survey the number of people receiving the service, by educational level or level of medical care. A per capita amount is identified based on the administrative data or international comparisons, this amount is allocated per person and is obtained for the total population in the form of macro data.

In the fourth step, households are grouped based on defined types. Three groups were formed on the basis of disposable income: main source of income, quintiles of equivalized disposable income[8] and type of household. The fifth and last stage has the data grouped and it is possible to make indicators on the distribution of income, consumption and saving, it is also possible to analyze the disparity based on the data obtained by quintiles of equivalized disposable income.

Special treatments made for the case Mexico

The identification of the variables that received a special treatment was through a frequency analysis in the household survey (see Graph 4). The sense that this took is that the number of responses received per survey question defines the incidence of households and their impact on expansions based on national accounts data, being an important explanation for the continuity or discontinuity in the number of households. Households and type of transactions, and therefore of the numerical quantities that are achieved.

An additional advantage of frequency analysis is the identification of the characteristics that eventually define the referred incidences. It was observed that in the mixed income, the economic activity of incidence of the producer households is the characteristic that explains the behavior. For remittances, which in Mexico are an important component of household income, the identification characteristic is the federative entity. For example, an average remittance received per household per federative entity, or the amount of mixed income received by producer households that are identified in manufacturing, agricultural activities, commerce or services.

Based on the above, the economic variables that received particular treatments in the exercise series are: employers' actual social contributions, mixed income, property income and remittances.
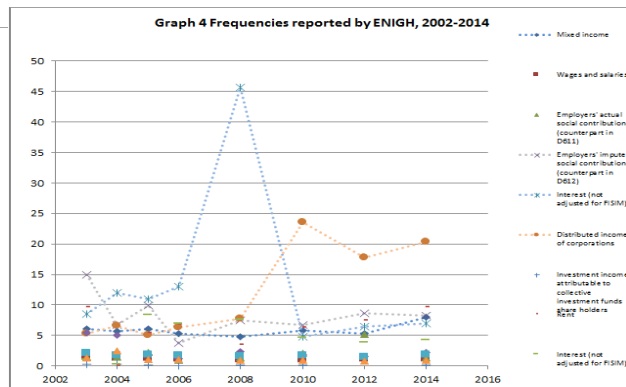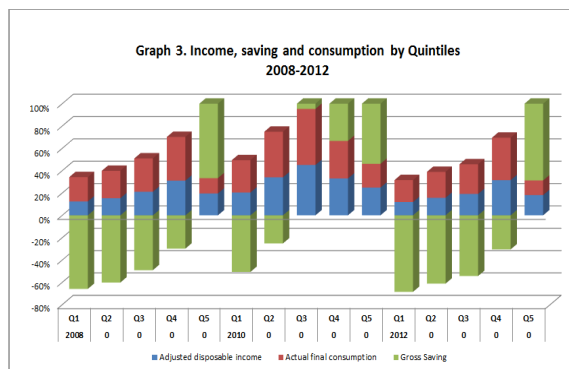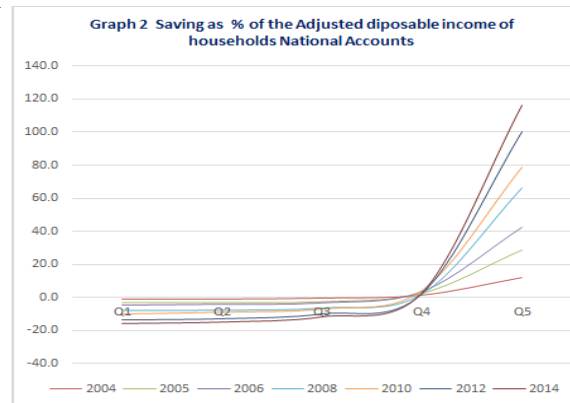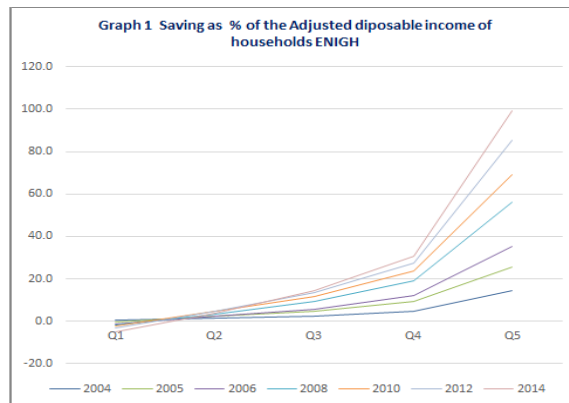
Results achieved

The following graphs show a summary of the data obtained. The first set (Graph 1 and 2) is a comparison of the balance item saving as percentage of the adjusted disposable income, both concepts based on national accounts definitions, for micro and macro data, by quintiles. The difference in the trends is explained by the imputations and expansions using national accounts as benchmark.

As for the behavior of saving, disposable income less final consumption expenditure (see Graph 3), this is an effect of income as it is the one that presents a tendency to increase significantly, while consumption is a variable that does not show an increase in such proportion

5. Conclusions

This exercise should be considered experimental, the method used is basically the one proposed by the OECD Working Group and particular derivations by characteristic variable. Its value lies in combining both sources and achieving a valid reconciliation at a conceptual level by taking the household survey to the accounting scheme of national accounts.

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8 The equivalized disposable income is the result of the disposable income from the households survey data divided by the consumption units. In turn, the consumption units are obtained using an equivalence scale that allows for the fact that two people living together can achieve some economies of scale in consumption, in relation to housing expenditures. This exercise used the Oxford-modified equivalence scale (also known as the OECD modified scale).

Graph 1 Saving as % of the Adjusted disposable income of households ENIGH

Graph 2 Saving as % of the Adjusted disposable income of households National Accounts

Graph 3. Income, saving and consumption by Quintiles 2008-2012

Graph 4 Frequencies reported by ENIGH, 2002-2014

The inclusion of the household survey is what makes it possible to assign macro variables from national accounts to groups of households, according to disposable income. Regarding the undervaluation of the survey, it seems constant for the case of Mexico and is observable through the income coverage ratio, which on average is 2.08 in the series presented.

In the case of Mexico, the study of wealth based on the micro data is not possible, since the household survey does not cover this information. Also, there is a single survey at the micro data level, unlike other countries that may have several.

The use of fiscal records is an important variant to be explored, for which purpose the information available must be validated in advance, making conceptual confrontations between both sources and allocating imputations to the micro data, if necessary.

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