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Jorge A. Tovar
B. Piedad Urdinola

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CEDE. Calle 19A No. 1 – 37 Este, Bloque W.
Bogotá, D. C., Colombia Teléfonos: 3394949- 3394999,
extensiones 2400, 2049, 2467
infocede@uniandes.edu.co
<http://economia.uniandes.edu.co>

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National Transfer Accounts for Colombia[†]

Jorge A. Tovar¹

B. Piedad Urdinola²

Abstract

This paper develops for the first time the National Transfers Accounts for Colombia. It estimates the age profiles for all income and expenses in the economy flowing from the government to households and vice versa, as well as flows within and across households. The methodology allows us to describe each age group's production and consumption levels, their savings capacity, and how the different age groups support each other. This document shows that the lifecycle deficit is influenced by low-income which is driven in large part by the prevalence of informality. This hinders the much-needed increase in savings required to exploit the demographic dividend. It also concludes that most public transfers are devoted to the eldest rather than the youngest, but still the former rely on family support rather than public transfers. In this sense, the paper sheds light on upcoming policy debates necessary to guarantee sustainability and self-sufficiency in an aging economy.

Keywords: National Transfer Accounts, Age profile, consumption, intergenerational transfers.

JEL Codes: J1, D13

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¹ Associate Professor. Department of Economics-Universidad de los Andes (Bogotá). jtovar@uniandes.edu.co. Web Page: <http://economia.uniandes.edu.co/tovar>

² Associate Professor. Department of Statistics-Universidad Nacional de Colombia. bpurdinolac@unal.edu.co

Cuentas Nacionales de Transferencia en Colombia

Resumen

Este trabajo construye por primera vez para Colombia las Cuentas Nacionales de Transferencia. Estima los perfiles de edad para todo ingreso y gasto de la economía que fluye desde el gobierno a los hogares y viceversa, así como los flujos entre y a través de hogares. La metodología permite describir los niveles de producción y consumo, la capacidad de ahorro y el apoyo intergeneracional para cada grupo de edad. Este documento encuentra que el déficit de ciclo de vida está influenciado por aquellos individuos de bajos ingresos, generalmente asociados a niveles significativos de informalidad. Esta situación frena la capacidad de ahorro, necesaria para explotar el dividiendo demográfico. También se concluye que la mayor parte de las transferencias públicas se destinan a individuos mayores aun cuando estos siguen dependiendo del apoyo familiar para sus cuidados. El trabajo sirve de insumo para el debate de política que se avecina en torno a la necesidad de garantizar la sostenibilidad del sistema en una sociedad que se hace mayor.

Palabras Claves: Cuentas Nacionales de Transferencia, Perfil de edad, consumo, transferencias intergeneracionales.

Códigos JEL: J1, D13

1. Introduction

This paper estimates the National Transfers Accounts (NTA) for Colombia. Following the methodology developed by Lee and Mason (2011a, 2011b), and already implemented in 70 countries, we construct the economic flows for different age groups using the System of National Accounts (SNA) and micro-data from a national household survey.

We depict age profiles for all income and expenses in the economy flowing from the government to households and vice versa, as well as flows within households between family members. This strategy allows us to describe each age group's production and consumption levels, their savings capacity, and we can identify how the different age groups support each other.

To estimate Colombia's NTA for 2008, we use data from the SNA and, the representative at the national level, Living Standards National Survey (*Encuesta Nacional de Calidad de Vida-ECV*) carried out by the Colombian Official Bureau of Statistics (*Departamento Administrativo Nacional de Estadísticas- DANE*). All figures are presented in yearly Colombian pesos (COP\$) for year 2008.

Based on a graphic approach, we portray the intergenerational economy in Colombia, quantify the lifecycle deficit and characterize, by age, the receivers and providers of public and private transfers. This, naturally, has significant policy implications on the verge of an aging economy in a developing country such as Colombia.

Colombia's economy, strongly dependent on oil in our sample period. Moreover, has a large informal sector, 52% of employees are informal, and 49% of all small business are not officially registered and therefore do not pay taxes regularly. Considering these figures, we will assume that 50% of households' consumption originates in the formal market and the remaining 50% on the informal market.

Demographically speaking, Colombia is the third largest country in Latin America and can be classified as a young country with about 35% of its population between 15 and 35 years old. The very young are decreasing in numbers, and the elders are increasing. In other words, Colombia is advancing in its demographic transition like other neighboring countries such as Mexico, Brazil, Panama, Costa Rica and the Dominican Republic. Indeed, in 2008 Colombia was at the beginning of the so-called demographic dividend (an excess of the

productive young population relative to the dependent population). This relates to the age profiles presented in this paper: income, consumption, transfers, and asset-based reallocations.

2. Data Sources and Treatment

The NTA methodology requires an extensive collection of data from different sources that are arranged in two main topics: micro and macro data. In the Colombian case, the micro-data used to construct the age profiles is the 2008 Living Standards National Survey (*Encuesta Nacional de Calidad de Vida-ECV*), carried out by DANE. The ECV interviewed 13,600 households and was collected between August 11 and October 10, 2008. It is representative at the national level, as well as rural/urban and for nine Colombian regions (Amazons and Putumayo, Caribbean, Pacific, Central, Eastern, Antioquia, Valle del Cauca, Bogotá, and Orinoquía). The sampling design was probabilistic, stratified by clusters and multi-stage.

We favored the use of this survey over the alternative 2007-08 Income Expenses Survey (*Encuesta de Ingresos y Gastos*) because the latter excludes some departments (states), it has a very high rate of non-responses, and health and educational expenses are per household instead of per individual. In contrast, ECV-2008 covers all the traditional household and socio-demographic characteristics, subjective poverty measures, per individual and household income-expenses, and includes a set of questions with gender perspectives such as the activities carried out by both parents with children under age 5.

The macroeconomic data includes the System of National Accounts (provided by DANE); Government Finance Statistics (GFS) from the International Monetary Fund (IMF); balance of payments, Financial and price data from the Colombian Central Bank (*Banco de la República*); Central government income and expenditure balance, expenses per program and public finances from the Ministry of Finance (*Ministerio de Hacienda*) and the Ministry of Health (*Ministerio de la Protección Social*). We lack detailed information on (1) the cost per student per grade in the public sector; (2) public health expenses per program and, (3) subsidies expenses per program.

a. Data Treatment

ECV-2008 respondents classified as inactive, but receiving payment from any paid activity, were re-classified as occupied. A few outlier households were deleted from the sample. For instance, a two-member household reported abnormally high consumption values. Another household was excluded from the health consumption profile, and two more from paid taxes because of conflicting values between the imputed rent and the taxes paid. “Adult” consumption (tobacco, alcohol, and gambling) was calculated independently using their specific VAT rates. Similarly, when building the consumption of *others*, the VAT rate corresponding to each item was used.

An important issue in Colombia, as in other developing countries, is how to deal with the strong informal sector. Official statistics report that half of the economy is informal (52% of employees and 49% of small business). We rounded the figures and assume that 50% of households’ consumption originates in the formal market and the remaining 50% on the informal market.

The macroeconomic data taken from the sources above use the 2000 SNA methodology implying that the public sector is composed of public non-financial corporations, public financial corporations, and the general government. The public financial corporations include the Central Bank, while the general government consists of the central government, local government, social security funds and family compensation funds. The private sector refers to private non-financial corporations, private financial corporations, households and non-profit institutions serving households (IPSFH). The private financial institutions are divided into other depository corporations, other financial intermediaries, financial aids and insurance companies and pension funds.

3. Methods

The profiles in this paper follow the National Transfer Accounts-NTA methodology described in the NTA-manual V.1 (March 2009), and following Lee and Mason (2011b). In a phrase, the NTA methodology “translates” national accounts systems into household’s income-expenses age profiles.

The NTA quantify the economic flows for members of each age group, x , based on the following flow identity which holds for both aggregate and per capita values:

$$C(x) - Y'(x) = \tau^+(x) - \tau^-(x) + Y^A(x) - S(x)$$

where the excess of consumption, $C(x)$, over labor income, $Y'(x)$, represents the lifecycle deficit at each age. The lifecycle deficit equals reallocations at each age into net transfers and asset based reallocations. Net transfers are equal to transfer inflows, $\tau^+(x)$, minus transfer outflows, $\tau^-(x)$. Asset-based reallocations are equal to asset income, $Y^A(x)$, minus savings, $S(x)$.

Transfer inflows refer to those received by the household while outflows are those given away. For instance, a typical private transfer occurs when a household pays for the food consumption of another household. For the former this is an outflow, for the latter, it is an inflow.

Private transfers are further classified as inter-household or intra-household. Inter-household transfers are direct donations between households or mediated by private organizations or the rest of the world. In this case, only direct donations can be measured directly from the survey. Note that a household can be a receiver and a giver of different kind of transfers.³

Intra-household transfers are indirectly estimated as they balance out disposable income and consumption among all household members. The household head centralizes surplus, which becomes savings, or the deficit, which is covered by de-saving, from other household members. In its construction, we use labor income, current consumption, consumption of durables, public cash transfer inflows, taxes paid and savings.

Finally, public transfer inflows include public health and education transfers, cash transfers and unfunded pensions. Outflows are tax payments including VAT. Overall, the NTA's flow identity requires that total age profile inflows (positive) and outflows (negative) must cancel each other.

³ In our case, gifts reported in the ECV-08, whether received or given away include consumption of food and water, clothing, cleaning products, personal hygiene products, cash transfers including helping for someone else's alimony, credit card payments, payment of public services and utilities, payment of taxes, payment of insurances, payment of other services (i.e. cable T.V., internet, and the like), medicines, batteries, candles and bulbs, recreation, payment of domestic workers, books, CDs, videos or DVDs, maintenance and reparations of the home, motor vehicles, appliances, electronics or other durables, transportation, furniture, art and jewels, and animals.

Asset-based reallocations, also divided into public and private, include for the latter the return to capital, dividends, interest, rent and the imputed return from owner-occupied housing. Public asset incomes comprise income earned from publicly owned assets and interest paid on public debt.

Each age profile follows the age distribution captured in the survey, and it is expanded, or “macro-adjusted” in NTA’s jargon, such that the area under the curve adds up to the levels of the national account system. It gives relevance to the study of inter-generational transfers, as the fiscal impact of aging may be even higher for developing countries with small saving rates.

4. Results

Labor income categories distinguish between employees (earnings) and independent workers plus self-employees income (self-employed). Figure 1 shows that the former is more significant at all ages. Earnings, related to formal employees, peaks at age 42, while self-employees income peaks a bit later, at 46. The gap between employees and self-employed, valid at all ages, depicts a more profitable career for formal workers.

Note: The horizontal line stands for the yearly minimum wage in 2008: COP\$5'538.000
Source: Own calculations based on DANE, ECV-08 & SNA

Labor income splits between consumption and savings. In turn, consumption differentiates between public and private goods. The former is composed of health, education and other consumption. Private consumption includes the same categories plus housing and consumption of durables. In the private consumption profiles, other consumption is the most significant component at all ages, because it consists of all current consumption such as food and clothing. Other public consumption, the residual of health and education, is equally distributed across all ages.

Public and private health and education consumption are portrayed in Figures 2 and 3 respectively. Health consumption has a very similar age pattern for both public and private profiles. Relatively high for newly born, it then decreases until around age 10 when it rises monotonically with age. Public health consumption departs from private health at age 65, leading to a significant gap for the elderly. This pattern resembles very much the morbidity age pattern in Colombia, which reflects the age pattern for health consumption and provision when the elder use relatively more intensive the public sector.

Figure 2. Health Consumption Colombia, 2008

Source: Own calculations based on DANE, ECV-08 & SNA

Education, depicted in Figure 3, reveals an unsurprising age profile. Both private and public consumption grow after age 5, and consumption shrinks sharply by age 25. There are two features worth highlighting. First, public education consumption nearly doubles private education consumption, peaking at age 11 when the level of consumption reaches COP\$1,863,947. In contrast, private education consumption peaks at age 13 with COP\$702,727. Second, private consumption of education persists almost until age 30. Considering that the secondary cycle ends at around age 18, that undergraduate programs take 4 to 5 years; this suggests that private consumers mostly do investment in advanced levels of education. Public consumption is focused on primary and secondary levels.

Figure 3.

Source: Own calculations based on DANE, ECV-08 & SNA

As explained earlier, all income minus all consumption portrays savings, referred to as “lifecycle deficit” when estimated for a person’s lifetime. It is a theoretical idea that proposed that in modern societies, when very young and very old, individuals cannot produce, but they still need to consume. Thus, they compensate with an excess of production during the working years, to guarantee enough consumption for extreme ages.

The NTA project, however, has found empirical evidence that such balance is not necessarily the case, mostly because consumption is much larger than income, driven in most cases by a non-decreasing consumption level at older ages (CEPAL, 2008; Lee and Mason, 2011; Temple et al., 2017; d’Albis, 2017). Moreover, as population ages, the nonproductive phase is stretching in most societies. This, as shown in Figure 4, is also the case of Colombia.

Consumption in Colombia slightly rises until at age 10 and it levels for the rest of the lifecycle. Figure 4 also shows that households save, i.e., income is larger than consumption, between ages 23 to 62. If one considers that life expectancy in 2008 reaches age 76, the saving period can be regarded as small.

Our results support earlier on the non-declining consumption patterns, even though Colombia is a relatively young country implying that the aging process will eventually impact both public and private consumption in large proportions. On the one hand, public health consumption will tend to widen the reported gap depicted in Figure 2, given that health is the most abundant component of public consumption, and Colombia about two decades will begin its aging process. On the other hand, considering that other consumption (excluding health and education) represents most of the private consumption at all stages in life (Figure 5), the economy needs to increase savings during the productive years to become stronger and to reduce the burden on public health consumption.

The consumption pattern will also affect the pension system which is far from universal (only 25% of workers have access to it). It follows that Colombia has to prompt an increase in savings by both promoting higher saving rates and by expanding coverage in the pension system. More importantly, investment in education has to surge as it correlates with formal jobs which in turn imply higher income levels, access to the social security system and higher saving rates.

Figure 5.

Source: Own calculations based on DANE, ECV-08 & SNA.

The methodology implies that all income is consumed, saved or transferred to maintain the accounting balance. Thus, the transfers profile allow us to determine intergenerational collaboration. They are comparable because we estimate public transfers and private transfers inter vivos, that is excluding bequest.

Figure 6 depicts the inflows, outflows, and net public transfers. Inflows include what individuals receive from and outflows what they give to the public system. Unsurprisingly, as income increase with age so does outflows. It is worth pointing out that outflows rise continuously until retirement age when it levels up to age 72 when it falls. Inflows, expectedly, are more abundant when young and when old. The results are driven by education

when young and by health when elder. As a result, net transfers are disproportionately large towards individuals older than 55 years old, as they are thrice the size of transfers to the youngest (below age 20).

Similar to other Latin American countries that share comparable demographic structures, even when they have a different social security system as is the case of Brazil; most public transfers are devoted to the eldest rather than the youngest (Turra and Queiroz, 2005). This will most likely have significant implications not only for current public spending, but it may also have long-term consequences if individuals at working age remain in the informal sector. Given the budget constraint, a debate on whether transfers should be directed towards the youngest or the eldest is pending. A switch of transfers from the most elderly to the youngest may help reduce poverty levels and inequality in the future, a critical result considering that the Gini inequality index in Colombia is one of the highest in the world. However, in the short-term, it is difficult to neglect aid to the elder in need.

Figure 6.

Source: Own calculations based on DANE, ECV-08 & SNA.

Figure 7 shows the private transfers age profile. Similar to public transfers, outflows and inflows tend to rise, at least until individuals are in their mid-forties. However, private inflows keep the ascending pattern, similar to what is observed for public outflows, but the private outflows follow an inverted U-shape. This finding points out the importance of the

traditional family support system in an economy with a weak social security system. Private outflows slightly surpass private inflows at age 18, but the span during which net transfers are negative is smaller than its public counterpart. Outflows peak at age 49 and intersect inflows at age 53. In contrast, public outflows peak at 64, but the increment is less steep. Public inflows nevertheless, cross outflows at around the same age, 54 as for private outflows. Lastly, starting at age 15, private inflows continuously increase, strongly suggesting that workers from older generations rely on their families for support in their senior years.

Figure 7.

Source: Own calculations based on DANE, ECV-08 & SNA.

Recall now that private transfers are composed of interhousehold plus intrahousehold transfers. That is, total private transfers account for both transfers among different households (inter) and within the household (intra). These two components are portrayed in Figure 8 which shows different age patterns for each other. Note first that intrahousehold transfers account for nearly all private transfers. Interhousehold transfers are just a small fraction of such transfers.

Intrahousehold transfers reveal significant outflows from young adult household members and inflows among the elderly. This pattern suggests transfers from the younger generation towards the elder. Indeed, outflows exceed inflows between ages 18 and 53. The

pattern for interhousehold transfers shows that outflows prevail during part of the working years (ages 41 to 62), but inflows prevail for the elderly, age 63 onwards. The relevance of inflow transfers in the senior years is highly correlated to health transfers. Education inflows for the younger mostly explain the positive net transfer at early ages.

Figure 8.

Intrahousehold and Interhousehold Transfers Colombia 2008

Source: Own calculations based on DANE, ECV-08 & SNA.

Lastly, asset-based reallocations are also disaggregated between public and private. Figure 9 depicts the age profile for public asset-based reallocations where public asset income is an inflow for taxpayers, and public savings is an outflow for taxpayers (Lee and Mason, 2011b). The two asset-based reallocations components increase with age peaking at age 66. Asset income is positive for all ages, and larger than savings because *Ecopetrol*, the state-owned oil company is accounted for when estimating asset income and it is by far the largest firm in the country. Still, the amounts are not particularly significant, as both the public savings and public asset income profiles hardly reach one million COP\$.

Figure 9.

Figure 10 portrays the private-asset based reallocation age profile. Asset income includes the return to capital held by corporations and households, interest, dividends, and rent. If individuals acquire debt or dispose of existing assets, they will generate inflows. The contrary will generate outflows. Asset income and savings follow an increasing parallel trend until age 50 when savings pick up until age 70. It is also remarkable that the amounts of private savings and private asset income are 15 to 18 times larger than the public profiles reported in Figure 9. It suggests that households in Colombia save primarily by assets accumulation.

Figure 10.

Private Asset-Based Reallocations
Colombia 2008

Source: Own calculations based on DANE, ECV-08 & SNA.

5. Conclusion

This paper develops the first version of the national transfer accounts for Colombia. Consumption patterns show that the highest levels are reached at middle-age, for longer than expected periods, driven mostly by “other consumption” and “health consumption.”

A striking result, though not entirely surprising, is that labor income from the formal sector more than doubles that of the informal sector, a gap that is maximum at middle-age. Beyond the obvious, that current income is larger for formal workers, it also implies that saving ratios and the possibilities to accumulate capital are more plausible for employees. Moreover, it is of great concern the implications on the social security system and its sustainability in years to come.

Transfers, private and public, are currently concentrated in the post-retirement years. The public transfer system reveals the importance of the social security system and how significant the health component is in Colombia. The pattern is easily understood if one considers that only a minority of the preceding generations rely on a formal pension system. Consequently, families tend to support their elderly and the public health system has a larger burden at older than at younger ages. However, if this intergenerational inequality pattern persists, it will perpetuate a vicious circle will. The low investments in education for children

and young adults result in low-quality jobs, low potential income and little or no access to the social security system. When old, they will have to rely on the family for support.

We also find that private asset-based reallocations portrait positive savings after middle-age, and asset income accumulation is only positive in Colombia until very advanced ages, for which urges policies that promote savings during the demographic advantage that Colombia is experiencing, to prepare for the incoming aging process.

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