Shedding light on hidden deprivations: time-income poverty and public policies in Latin America

Lessons from the LIMTIP experiences

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Consultant: Sofia Maier

Editor: Mariana Enghel

Designer: Rafael Eduardo Sanabria Duarte

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Introduction

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In this paper I argue why and how the inclusion of time in the analysis and measurement of poverty and inequality can make a substantial contribution to this transition to a multidimensional framework.

A few decades ago, economic growth by itself was expected to bring economic and social prosperity, together with poverty and inequality reduction. Those expectations have been reduced, even as each new crisis highlights the dramatic effects of its absence.[2] The catch phrase "growth is not enough" encapsulates the new questioning of "old truths".[3] Moreover, as the Human Development Index initiative has shown in its annual editions, per capita income may be strongly correlated with other dimensions of human development, such as health and education, but it does not guarantee them (UNDP, 2014). It seems now quite clear that public policies —not of any kind, but a coherent set of them— are the key and non-automatic channel through which growth can be more inclusive (Atkinson, 2015; Zacharias, Antonopoulos and Masterson, 2012).

Income-based measures of poverty and inequality also offer only a vague and incomplete picture of the real deprivations people face in the multiple dimensions of human wellbeing (Sen, 1999; Alkire and Foster, 2007). In this sense, while increasingly more intellectual and material resources are involved in an enthusiastic transition from a single to a multidimensional framework to address and measure poverty and inequality (Aaberge and Brandolini, 2015), income-based measures still dominate official statistics worldwide, guiding social policies and being used by governments as their main accounting tool for achievements in the space of social policies. And this has clear losers: those whose pain remains completely or partially hidden behind these official indicators.

Latin America has experienced a great performance in some indicators which are widely used to evaluate economic achievements and failures during at least one decade, such as GDP growth, unemployment, income poverty, and income inequality. Official poverty rates (based on absolute monetary lines) have declined especially through the expansion of jobs and wages at the bottom of the income distribution and the implementation and/or the reinforcement of progressive cash transfers, which also explains the (more timid) reduction of income inequality (Lustig, López-Calva and Ortiz-Juárez, 2013a and 2013b). Anyone that lives or have had the opportunity to live in a high unequal society knows how do the multiple faces of inequality look like and how fragmented societies can become in many spaces of the everyday life. And many of these realities, strong gaps, and severe deprivations may be completely hidden behind these stories of success built on income-based indicators. In this sense, and even more if those who predict less optimistic winds for the next years are right (OECD, CAF, and ECLAC, 2014), it is key for governments to update and redefine which are their priorities in terms of social outcomes and public budgets, and therefore to update and redefine which are the empirical tools to be used for the design and evaluation of policies.

In this paper[4] I argue why and how the *inclusion of time in the analysis and measurement of poverty and inequality* can make a substantial contribution to this transition to a multidimensional framework. I will focus on the recent LIMTIP (Levy Institute Measure of Time and Income Poverty)[5] experiences carried out for five countries in Latin America, and take it as an excellent opportunity to compare different measures of poverty which have taken into account time deprivations; to discuss the main motivation behind these initiatives as well as their scope as tools for policy design and evaluation, and

to explicitly identify which are the groups of the population that suffer from the omission of time in the analysis and measurement of poverty and inequality.

The paper is organized as follows. In section 1, I discuss the relevance of time as a dimension of wellbeing where important deprivations and inequalities manifest themselves, as well as some possible reasons for its omission from most of the studies of poverty and inequality. In section 2, I present different time poverty measures that have been developed in the last decades, classified in a scheme that allows me to identify some common features and to evaluate their relative contribution. In section 3, I introduce the LIMTIP methodology and some of the results and challenges that emerged with the first LIMTIP experiences in the region (for Argentina, Chile, Colombia, Mexico, and Uruguay). In section 4, I discuss the scope of this new framework to rethink about public policies in several areas, focusing on current challenges for Latin America. Some final remarks and future lines of exploration are introduced in section 5. Annex A1 is connected to section 2, while annex A2 provides more detailed information about the particular adjustments and discussions concerning the estimation of LIMTIP for the countries in the region, in relation to section 3.

1

Time matters

Time matters

One dimension that is usually omitted in the measurement, evaluation, and discussion about wellbeing, poverty, and inequality is time, a space where severe deprivations manifest themselves (Vickery, 1977; Damián, 2003; Burchardt, 2008; Zacharias, 2011). In what follows I provide some good reasons to think about time in this framework, followed by some possible explanations for this longstanding omission.

1.1 Time to do and to be

Robert Goodin[6] identifies three key properties of time which are attractive for welfare comparisons: i) "time is inherently egalitarian" —we all have 24 hours a day, no matter how much we value time— and is therefore a "natural metric for social comparison"; ii) "time is inherently scarce" —no one can have more than 24 hours per day, and although life expectancy varies significantly between countries and groups of people within countries, "still, virtually everyone agrees that more time would be better", which "makes time a resource that is always scarce relative to demand"—, and iii) "time is a necessary input into anything that one cares to do or to become", which makes time an "universal good" (Goodin et al., 2008, pp. 3 and 4).

Anyone can easily imagine or witnessed which could be the consequences of severe and prolonged time restrictions for the human body and mind. The accumulation of little sleep and the lack of time to satisfy some minimum nutrition, hygiene, and exercise can heavily affect human's health and even kill someone prematurely, as the lack of food does it with hunger.[7] But time for basic personal care and survival is just one part of our committed time among the 24 hours a day or 168 hours a week we all have. Care responsibilities towards other members of the household or the family also require time. These activities can be particularly time consuming for adults in charge of dependents: such as children, elderly, chronically ill, addicted, or disabled members (Vickery, 1977; Zacharias, Antonopoulos and Masterson, 2012). These time requirements do not only affect those who provide care, but also the quality of life of those who need it, and therefore if we take for granted this availability we may overshadow several problems. In addition to basic personal and care activities, households also need time for a basic daily "operation": shopping, cooking, cleaning, paying bills, among a well-known long list. These activities are usually called "household production" and are the necessary complement in order to convert money into consumption and the satisfaction of basic needs. But of course this is not enough: households also need to allocate time on paid activities in order to get the income that is required to buy at least the basic goods and services they need and do not produce. For the vast majority this involves selling hours of labour in exchange for a wage.

Time deprivations may not only affect people's current daily life and condition the satisfaction of certain needs, but can also have some permanent scars throughout life. Moreover, time pressures can also adversely affect the expansion of capabilities, and prevent people from acquiring abilities to be able to convert means or resources into real achievements (Sen, 1999).[8] Time availability for adults in charge of children and time use patterns of children themselves are also crucial for the development of children's skills from early ages, something that has been stressed as a key determinant of future opportunities in life by several studies of the Nobel laurate James Heckman (see, for example, Heckman, Pinto and Savelyev, 2013).

Someone could argue that in market economies income can substitute time-consuming activities, and therefore we could somehow

infer from income levels whether households are able to meet these time requirements. This is true, but just to a certain extent. While it is possible to find market substitutes for some of these time-demanding activities, not all of them are substitutable nor their markets always exist or are complete.[9] Therefore income provides a rather incomplete picture of the potential time deprivation problems. This in fact was what motivated the pioneer and seminal work of Clair Vickery back in the 1970s: "if the minimal nonpoor level of consumption requires both money and household production, then the official poverty standards do not correctly measure household needs" (Vickery, 1977, p. 27). And even if we were able to substitute almost all of these household production and care requirements with a smart and reliable robots or by an extensive network of public free or subsidized care centers and services, there is no way to hire someone to sleep, eat or wash for us; nor to love, to make and to enjoy friendship, to read or to think for us (at least not yet).

Although the majority of studies on time poverty follow an objective approach (a brief overview of the literature will be presented in section 2), the importance of time use has also been highlighted by the Nobel laureate Daniel Kahneman[10] from a subjective approach to well-being. He proposes as a measure of subjective wellbeing the proportion of time that people spend in an unpleasant or pleasant state, which, as he notes in a paper prepared with Krueger,[11] has the virtue of not requiring a cardinal conception of individuals' feelings (Kahneman and Krueger, 2006). This is basically the same idea behind the well-known answer that the former president of Uruguay, José Pepe Mujica, gave to the BBC[12] after being labeled as "the poorest president of the world", with simpler words: "I am not poor; poor are those who believe that I am poor. I have few things, yes, the minimum, but just to be rich. I want to have time to spend on the things that motivate me. And if I had a lot of things would have to attend to address them and could not do what I really like. That is true freedom, austerity, consume little. My house is small, time to devote to what I truly enjoy. If not, I have to have an employee and you have an intervener in the house. And if I have many things I then have to devote time to care for them so they would not be taken from me (stolen). No, three little rooms is enough. We sweep up with a broom between the old lady [la vieja] and I, and it's done. Thus we do have time for what really excites us. We are not poor" (José Pepe Mujica, President of Uruguay during the period 2010-2014).

Now think about a transport policy that reduces half of the commuting time for workers using public transport six days a week. For someone who spends 2 hours per working day on a bus or metro, this policy would allow him or her to get 6 additional hours per week, close to 25 hours a month. Or imagine the effect of the expansion in coverage of free public early childhood education and care centers, which, during 4 hours a day, could free up parents who cannot afford private centers and do not have other relatives to support them. This would mean 20 hours a week, close to 90 hours a month. This represents 25 or 90 hours a month, following these examples, to increase leisure, to sleep, to think, to read, or to do whatever people may want to. Because it is not just about what is done with time, but also about how free we are to choose what to do with this precious and limited resource in our limited lives. Anyone could easily realize that these policies can have a huge impact in many people's quality of life;[13] however, none of the current official measures of wellbeing, poverty, and inequality will account for this progress. Nor even in Uruguay, despite the way its former president thinks, and notwithstanding that it is one of the only countries in Latin America which already has two nationally representative time use surveys.

It seems quite clear that some obstacles and sources of resistance may be behind this long lasting exclusion of time from the analysis of wellbeing, and this is what is briefly discussed in what remains of this section.

1.2 The exclusion of time: some possible sources of resistance

In the first place, mainstream economic models both in macro and microeconomics have tended to ignore the working hours and production that take place within households, or at least the ones that do not enter the market system. National accounts and GDP estimates

in particular just take into account the added value which is created through markets. Suppose we have two individuals doing exactly the same activity, working the same amount of hours, one in exchange of a wage for another household which "outsources" this service and the other to satisfy the same need but for her or his own household. The effort and hours of the first one will be captured by the official statistics of production, productivity, and labour markets (such as employment and labour force participation rates), while the same effort and time of the second one will be completely ignored. In labour economics, the key tradeoff is still between working hours and leisure hours, despite at least since the 1960s famous scholars such as Gary Becker stressed that households need not only money but also time for household production in order to meet their basic consumption needs (Becker, 1965). But even when unpaid work is included in the typical utility-maximizing approach of labour supply, the allocation of time between household and wage-warning activities is determined by relative productivities, assuming all these activities are substitutable: a member of the household will devote time to these activities as long as his or her productivity is higher than the wage that he or she would receive at the labour market (Cahuc, Carcillo and Zylberberg, 2014, p. 24).

In addition to this sort of myopia coming from mainstream economic studies and leading statistics on production and labour markets, a second possible explanation for the omission of time use in the analysis of wellbeing could be the lack of data, or the complexity to obtain representative and precise information from households' surveys about time-allocation. This may have been true some decades ago, but it is no longer an excuse nowadays. Time use surveys have been substantially improved and today national statistics institutes and researchers have well known standardized procedures in order to get good quality information. Experiences and knowledge as well as harmonization initiatives have also emerged, with an active involvement of the academia in the developed countries, such as the Centre for Time Use Research of the Department of Sociology of the University of Oxford, and a strong commitment of international organizations such as the Economic Commission for Latin America and the Caribbean (ECLAC) and the United Nations Development Programme (UNDP) in the developing countries.

And it is clear that this effort has paid off, although social sciences and empirical work could benefit even more from this data. From the very first releases in the developed countries, and with its extension to the developing countries mainly since the early twenty-first century, time use surveys have been able to document the importance of unpaid work and household production in total working hours and production in societies, among many other aspects of daily life across different societies and over time. They have also proved to be a unique source of information to shed light on unequal patterns of time distribution within households, inequalities that were until then happening in an "invisible realm" (Aguirre, 2009; Blackden and Wodon, 2006). Not coincidentally, feminist literature has had a leading voice in this topic, and a strong influence in time use studies. In fact, in Latin America the first time use surveys were carried out with the main purpose of making visible —and measurable— the space of production that happens inside households and which is hidden behind official measures of GDP, labour statistics, consumption, poverty, and inequality. An important impulse for time use studies and the generation of statistics came from the Beijing Platform for Action of 1995, where governments were explicitly encouraged to adopt time use statistics (Aguirre and Ferrari, 2013);[14] and since then there has been a leading role of studies on gender inequality making use of the rich information that these surveys provide.

According to Valeria Esquivel, former Research Coordinator on Gender and Development at the United Nations Research Institute for Social Development (UNRISD) and Research Associate at the Levy Economics Institute of Bard College, "Feminist economics has long identified unpaid care work (UCW) as a crucial dimension of well-being for those who benefit from the care received, but also as a cost for those who provide care, mostly women. These material costs, in terms of energy and sometimes health, forgone employment opportunities, income, and entitlements to social security, and the enjoyment of leisure time, are a major driver of gender inequalities, both within

households and beyond them, particularly in the market sphere. Time use surveys (TUS) are the only way of measuring UCW. TUS show how individuals spend their time during the day or week, which provides evidence of the gendered division of labor within households, and the interdependence of women's and men's paid and unpaid work" (Esquivel, 2013, p. 1).

Someone could argue that these surveys are not particularly cheap, and this may be a true obstacle, especially for low income countries. This may explain why, despite the prominent expansion of these surveys in the last two decades, their frequency is still very low. This is not a minor problem because it creates a vicious circle: if surveys are released every ten years —as it is common in many countries—, governments are not able to account for their achievements nor to monitor the effect of their policies on this dimension within the typical 4-5 years of the electoral cycle, which creates clear disincentives to include time in the analysis of wellbeing, and to promote policies aimed to improve people's quality of life in this regard. Once time is excluded, there is no urgent need for time use surveys, and so forth.[15] Another reason behind the still timid empirical work in time use patterns, especially in Latin America, may be the underestimation of the actual scope these surveys have. Jonathan Gershuny[16] states it very clear: since all human states and activities occupy time, these surveys —if appropriately designed— can account for all circumstances and rhythm of daily life, and "as such, time use accounts provide the basis for the systematic integration of various measures of well-being" (Gershuny, 2011, p. 4). Therefore, although gender inequality studies and feminist researchers have been leaders in these topics in Latin America, the analysis based on time use surveys goes much beyond gender roles and differences between men and women. They account for differences between women, and between men, workers in different sectors (formal/informal), age groups, regions, and they also provide with irreplaceable information for the analysis of labour supply, consumers demand, skills acquisition, health care, commuting time, organization of cities, location of public service centers, mobility, and leisure, among many others issues.

A third source of resistance may also come from the idea that to talk about leisure time or "free time" is not so important for the analysis of poverty and inequality, that many other sources of deprivation come first. This may be because leisure time tends to be overestimated when it is seen as the complement of paid working hours (when actually leisure time is the remaining time after paid work, unpaid work —including care activities—, and some minimum time for personal care), and also because poverty has been traditionally associated with joblessness, situation in which time pressures would not be relevant. But there are many people who work long hours (paid and unpaid) and are also income poor (the so-called "working poor"), and their pain is probably even worse than what we could imagine from income based statistics. Another repellent effect that seems to emerge from the consideration of leisure time in the analysis of wellbeing is that people may mistakenly equate it with spurious consumption (consumerism, TV addiction, etc.), laziness, or unproductive time. However, regardless of how people use these hours, leisure hours are actually the only time when people can do whatever they want to do: to meet relatives and friends, to practice sports, to go to the movies or to concerts, to create, to read, to love, to watch TV, to play games. In fact, the lack of free time may mean the complete absence of freedom to decide what to do or to be during our finite lives,[17] and this does not sound luxury.

According to Julio Boltvinik, professor and researcher at El Colegio de México, "Life takes place in time. Good and bad of it happens in time: the bound, heavy, and bland work as well as the games and eroticism. A first reaction from some readers may be to doubt. They may think that in societies where poverty is widespread, where there is even large scale starvation, time poverty seems like a luxury. After a brief reflection, however, they will notice that one of the ten commandments refers to the obligation to rest one day a week, that a central part of workers' struggles in the XIX Century were around the limitation of the workday extension. That for workers brutally repressed and strikes broke out in many countries the fight for some free time was a luxury" (Boltvinik, 2012).

Studies on leisure time have a long tradition in developed countries, and therefore it tends to appear in the famous "lists" of key dimensions of wellbeing researchers consider relevant (Alkire, 2007),[18] but they are almost inexistent in the developing countries.[19] This is a shame, because the study of leisure itself tells us many things about societies (Damián, 2003), regardless of its inclusion or exclusion from the analysis and measurement of poverty. It is also a clear space where public policies can directly improve people's quality of life, by expanding opportunities and skills to enjoy leisure in different ways.[20] Araceli Damián, who with J. Boltvinik carried out some of the (if not the) first poverty studies which take into account time in Latin America, is particularly concerned about this distorted idea or perception about leisure, and she finds a possible explanation on Latin American cultural roots: an underestimation of the individual and social value of leisure influenced by the "prevailing moral in western capitalist societies".

According to Araceli Damián, professor and researcher at El Colegio de México, "Puritan ideology imposed by the capitalist labor discipline helped to 'demonize' the free time of workers (Thompson, 1967, section VI). Under this conception, the work became a divine obligation and 'sinful' habits in which the working class used to spend their spare time (which the ruling class associated with vagrancy, alcoholism and crime) were rejected. A moral conception of good and evil, in which the 'sacrifice' at work would be rewarded with eternal glory (Thompson, 1967: section VI), won. Puritan mercantilist moral was accompanied by propaganda of the 'shortage' of time and the idea that 'time is money', therefore free time is unproductive (Thompson, 1967, p. 90)" (Damián, 2007).

2

Including time deprivations in measures of poverty

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The definition of poverty presupposes a definition of human wellbeing. It requires then to identify the relevant dimensions in which human wellbeing is defined and to agree on comparability criteria between individuals or social groups, exercise which inevitably involves conceptions of social justice (Vigorito, 2005). Thus, if time matters, the next step is to discuss how to account for these deprivations in a measure of poverty.

The increasing availability of time use surveys has opened new roads for interesting methodological and empirical explorations and discussions in this field. Many debates are still open and the literature looks quite disconnected. In this sense, I propose a classification of approaches in table 1, in order to identify the main features and contribution of each group of studies, and to evaluate the relative scope of the LIMTIP methodology in particular, a bidimensional measure of time and income poverty which has been recently estimated in Argentina, Chile, Colombia, Mexico, and Uruguay.

This classification is mainly based on the methodological review and analytical framework Zacharias (2011) developed to address and compare time poverty measures, and the typology of poverty measurement methods developed by Boltvinik (2003).[21] Rows in table one divide studies into three groups: unidimensional (time-poverty), bidimensional (time-income poverty),[22] and multidimensional (time or time-income as one of many dimensions in multivariate indicators). Columns divide studies with reference to the way thresholds are defined for the space of time deprivations: absolute (someone is time poor if her/his situation is more problematic than the threshold which is established regardless of relative positions or the inequality in this dimension) or relative terms (someone is time poor depending on her/his relative disadvantage regarding others). In the determination of absolute thresholds both normative (based on "what ought to be") and non-normative criteria are involved. Moreover, poverty may be defined at individual [I] or household level [H], which is also indicated in table 1.

Within this scheme, LIMTIP is classified in the group of bidimensional measures of time-income poverty, with absolute thresholds for time and income poverty, using both normative and non-normative elements, where time poverty is defined at the individual level [I] and the adjustment of poverty lines is carried out at the household level [H]. In section 3 this methodology is presented in detail and discussed in light of the contribution and limitations of alternative approaches.

TABLE 1

Time poverty and time in the analysis of poverty: classification of approaches[23]

	Absolute	Relative
Unidimensional Who are time poor?	*Working long hours [H-I&N-NN]* Excess of Work Index (EW) —part of Integrated Poverty Measurement Method (IPMM) Boltvinik-Damián [H&N] Time deficits (LIMTIP) [I&N - NN][24]	*Working long hours [I&NN]* - Bardasi and Wodon (2006), Guinea - Lopes Ribeiro and Marinho (2012), Brazil - Lawson (2008), Lesotho - Merino (2010) —just unpaid work—, Mexico - INMUJERES (2012) —just unpaid work—, Uruguay *Working long hours and having no choice [H]* - Goodin et al. (2005 and 2008), Australia (lack of discretionary time) - Bardasi and Wodon (2009), Guinea (working long hours with no choice) - Gammage (2010), Guatemala
Bidimensional Time-income poverty	*Vickery's stile —adjusted poverty lines [H&N-NN]* - Vickery (1977), United States - Harvey and Mukhopadhyay (2007), Canada - Antonopoulos and Memiş (2010) / Kizilirmak and Memiş (2011), South Africa *LIMTIP experiences [HI&N-NN]* - Zacharias, Antonopoulos and Masterson (2012), Argentina, Chile, and Mexico - Maier (2013), Uruguay[25] - DANE (2014), Colombia - Zacharias, Masterson and Kim (2014), Korea - Zacharias, Masterson and Memiş (2014), LIMTCP Turkey *Adjusted PL by EW [H&N]* Work Excess —PL— part of IPMM Boltvinik-Damián	*Bidimensional-adjusted relative poverty lines [H & NN]* - Merz and Rathjen (2009) combinations of working hours and "genuine leisure" —capability approach—, Germany [H&NN] —utility function
	- Burchardt (2008 and 2010): potential pairs of free time-income —capability approach [H&N-NN]—, United Kingdom	
Multidimensional Time as one of many dimensions	*IPMM (EW- PL is the adjusted poverty line) [H&N]* Boltvinik (1992 and 2012) / Damián (2012), Mexico City	- Carbajal (2011), Mexico [I&NN] - Borrás et al. (2014) —based on official methodology of CONEVAL, Uruguay [H-I&NN] - Benvin, Rivera, and Tromben (2016) —time as one of five dimensions in the Multidimensional Poverty Index (MPI)—, Colombia, Ecuador, Mexico, and Uruguay [I&N-NN] - Gammage (2009) —[I&NN] factorial analysis (PCA)—, Guatemala

Source: Prepared by the author.

2.1 Unidimensional measures of time poverty: who is time poor?

Unidimensional measures of time poverty divide the population in two groups: those who are time poor and those who are not, regardless of their situation in other aspects of life. Who is time poor? How intensive are these time restrictions? To answer these questions it is necessary to have a measure in minutes/hours a day, a week, or a month of time deprivations, to account for "time deficits", "excess of work", or "too little leisure". Since time use surveys contain information about time-patterns for each member of the household, these measures can identify who is time poor and who is not one by one. This is a great advantage with respect to income-based measures of poverty and inequality, where all members are equally poor or non-poor depending on total household income (ignoring the actual distribution of resources and the relative power or autonomy members have to decide how to allocate household budget). Not coincidentally most of the unidimensional time poverty studies have been mainly undertaken by the literature on gender inequality, given the well-known disproportionate responsibilities women face with respect to unpaid activities (even for those who also have a remunerated job), which directly affects their availability of time for other activities, and determine their labour supply decisions, wellbeing, and empowerment (Bardasi and Wodon, 2006; Aguirre, 2009; Zacharias, Antonopoulos and Masterson, 2012).

In particular, the study for Guinea of Bardasi and Wodon (2006) set the basis for further explorations in other developing countries, like the study carried out by Lopes Ribeiro and Marinho (2012) for Brazil, Lawson (2008) for Lesotho, Merino (2010) for Mexico, and INMUJERES (2012) for Uruguay. A common feature of these studies —which are classified in the upper corner of the first row to the right in table 1— is that they use relative thresholds: "time poor" are those who work "too many hours" or "have too little leisure" in relation to others in their society (the same as "income poor" in official statistics of poverty in most of the developed countries are those who earn "too little" in comparison with others). In general, these studies conceive time poverty as the excess of working hours, both in paid and unpaid activities. Bardasi and Wodon (2006) use two thresholds: 1.5 and 2 times the median, with a specific lower threshold for children in the age range of 6-14. Although the determination of this value is completely arbitrary (similarly for the studies of Lesotho, Guatemala, Brazil, and Mexico shown in table 1), thresholds end up close to 12 hours a day for working activities. This implies quite low levels of leisure or free time, since the complement of the day (24-12) is barely enough for minimum time for personal care (sleeping, eating, taking a shower, resting). Or not even enough if we would consider at least a "day off" and that people need to sleep at least 6-8 hours a day.

Some of these unidimensional studies focus exclusively on time deprivations coming from the excessive burden of unpaid work, trying to shed light on the limited time availability some members of the household have (especially women) not only for personal care and leisure but also to participate in paid activities in the labour market —see, for example, Merino (2010), Merino and Orozco (2011), and INMUJERES (2012). These studies have a clear gender approach: they try to account for time restrictions women face in order to participate in traditional men's activities, in particular paid work. Earnings and social networks can give women more autonomy and power of negotiation within households, which is believed to foster women empowerment. As a result, time poverty turns out to be an almost exclusive problem for women, since poverty rates are almost negligible for men, regardless of how many hours they allocate to paid work.[26] While it is true that these measures help to visualize the restrictions women face to participate in labour markets, shedding light on a key obstacle behind the still relatively low participation of women in labour markets, the exclusion of paid work as a source of time deprivations is quite controversial. Even huge differences between women are ignored: the wife of a rich man that stays at home managing the domestic workers and taking care of the garden may be considered time poor, while a police woman that works 14 hours a day to make ends meet will not.[27]

Hence, these measures do not account for the particularly strong time restrictions faced by women who participate in both paid and unpaid work (Zacharias, Antonopoulos and Masterson, 2012).

Overall, unidimensional measures of time poverty with relative thresholds have the great advantage of identifying poverty at the individual level and shedding light on the unequal distribution of unpaid activities within households, but also involve clear limitations due to the exclusion of other dimensions, as well as weaknesses or critiques that are usually made to relative income poverty but with some particular features.

With respect to the first limitation, if income, wealth, or other resources of the household are not taken into account together with time deprivations, we may not be able to distinguish between the workaholic who works 12 hours a day and voluntarily sacrifices time for luxuries and career ambitious from the factory worker who works the same amount of hours but just to make ends meet. They will be both time poor. In this sense, in several studies with other colleagues R. Goodin has proposed a measure of time poverty which tries to avoid the "false illusions of time pressure" some people have. He proposes "discretionary time" as a "new measure of freedom", which captures the actual degree of control a person has with respect to the allocation of time, while "free time" is just the outcome of a chosen allocation. Discretionary time is measured as the residual of the necessary time to get to the (income) poverty line, which involves time for personal care, unpaid work and paid work, but just the minimum necessary: "putting in enough paid hours to get your income up to the poverty-level" (Goodin et al., 2005, p. 8).[28] The same motivation is behind the second study carried out by Bardasi and Wodon for Guinea, where they change their unidimensional measure of time poverty for another that takes into account earnings. The idea is also to distinguish those who may not have free time because they are ambitious from those who really face time deprivations with no scape, as their title suggests: "Working Long Hours and Having No Choice: Time Poverty in Guinea" (Bardasi and Wodon, 2009). In these two cases, hourly wages emerge as a key variable for time-poverty evaluations; it is no longer enough to evaluate time poverty by simply observing time use patterns.

With regard to the relative approach, Bardasi and Wodon argue the following: "In the income/consumption poverty literature, we often have clear nutritional-based 'cost of basic needs' approaches to estimating poverty lines. When dealing with time poverty, the correct level for the time poverty line is less clear, at least if one wants to consider an allocation of time for leisure on top of what is strictly needed for rest from a health point of view. In practice, depending on the social context of the country for which the analysis is conducted, we may want to use relative as opposed to absolute time poverty lines together with some tests for the robustness of comparisons of time poverty obtained over time or across households groups to the choice of the time poverty line" (Bardasi and Wodon, 2006, p. 80). However, as Burchardt (2008) suggests —she considers both absolute and relative thresholds in her study for the United Kingdom—, there are some time requirements that are not expected to change too much over time and across societies, and some agreement on absolute minimums is probably even easier to get in this space than in the case of income or consumption.[29] Moreover, another weakness of relative thresholds is that in all these studies thresholds are finally leading to extremely low values for leisure or allowing for excessive hours for time spent at (paid and unpaid) work (Damián, 2003). Moreover, while absolute thresholds may involve normative or arbitrary definitions, relative thresholds are not exempt from arbitrariness or manipulation. Setting the distance to the median a bit closer or further can greatly influence poverty rates. Even without manipulation and if we could manage to set a distance to the median that leads to a threshold which could consider some minimum or reasonable time for personal care and leisure, this value could change over time and if, for example, the society gets "sicker" over time (adults working longer hours, sleeping less, and children, elderly, and disabled members receiving less care), the incidence of time poverty may decrease just because the bottom is

now not so bad in relation to the median; and this could dangerously discourage policies to relief the pain from time pressures for at least those who suffer the most. Thus, the lack of any normative consideration or consensus on an absolute minimum or maximum can also lead to time poverty lines for children in poorer countries, which means to assume that certain hours of paid work for children may be "tolerable" given the relative worse situation of many others in their societies. In this sense, Michael Bittman, who has worked with Robert Goodin in several studies, argues that the definition of thresholds in a relative way may be the main weakness of these studies.[30]

Most of the bidimensional measures of time and income poverty which are introduced below evaluate deprivations in both spaces and their interactions, and in general use absolute thresholds for time poverty and evaluate simultaneously the privations in time and income.

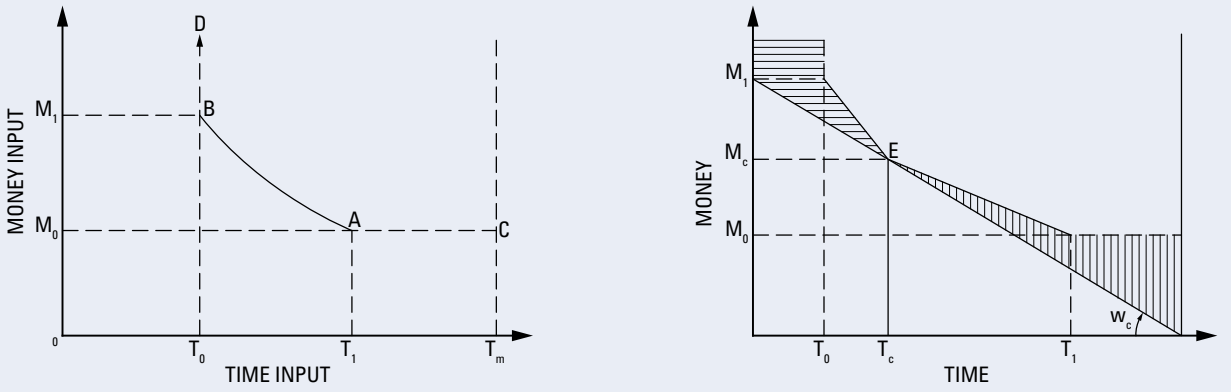
2.2 Bidimensional measures of time-income poverty: the Vickery tradition

The idea behind time-income poverty measures is simple. Using again Vickery's words from her paper "The Time Poor: A New Look at Poverty", "if minimum consumption needed for being non-poor requires both money and household production, therefore, the official poverty standards are not correctly measuring actual households needs" (Vickery, 1977, p. 27). Hence, it is not about time poverty itself anymore, but about adjusting the income-based poverty measures taking into account the time requirements to achieve the implicit consumption and minimum wellbeing of official poverty lines. She starts from simple arithmetic: if humans need at least around 81 hours a week for minimal maintenance (sleeping, resting, eating, dressing, personal hygiene), the remaining 87 hours (Tm: 168 - 81 = 87) represent the maximum time people can allocate into work activities (paid and/or unpaid). Quoting her again, these 87 hours a week represent "the maximum amount of time an adult can work each week over an extended period of time and maintain his or her mental and physical well-being" (Vickery, 1977, p. 5). This means a maximum of around 12 hours a day if taking 7 days, or 14 hours a day for 6 days (1 day off). It is in fact very close to the limit Bardasi and Wodon (2006) established with their relative approach for Guinea. So again here thresholds are quite generous with working time, since it means that someone can be time non-poor with just little or even no time at all for leisure (Damián, 2003, pp. 132 and 133).

Bringing now income to the analysis, Vickery's further reasoning follows in this way: for a level of income which is equal to the poverty line (M0), there is a minimum amount of hours (T1) the household needs to allocate in unpaid activities (cleaning, cooking, taking care of children, among many others) to get to the minimum levels of consumption implicit in this line, which depends of course on the household size and composition (see figure 1 panel A, where the horizontal axis accounts for the amount of time spent in household activities and the vertical axis accounts for the income). Any household with income level equal to M0 will be classified as "non-poor" by official statistics, but these households do not have enough time to allocate in the minimum unpaid activities that are required for that implicit level of consumption (because too many hours are allocated into paid work, which is Tm - T). So she argues that this household should be considered poor, like those households with income level below M0, since none of them are able to satisfy these basic needs. But what if this household has a bit more than M0? Vickery establishes an isoquant of time-income substitution taking into account the market replacement cost of every hour of housework: with enough money some of these hours could be replaced by market substitutes, by hiring a domestic worker, for example.

FIGURE 1

The original Vickery's idea of the adjusted poverty line



A. The adjusted poverty line (DBAC)

B. Voluntary poor and the critical wage

Source: Vickery (1977, figures 1 and 2).

She argues that not all activities in T1 are substitutable: there is a minimum amount of hours of unpaid work that is non-substitutable (T0). Hence, the household will be evaluated with regard to its possibility to replace T1 - T0 with market substitutes, which shifts the poverty line to the isoquant between A and B. This segment —if constant hourly price of substitution— together with D (minimum non-substitutable time) and C (minimum income) defines the "adjusted poverty line" (DBAC). In this sense, households with an income level below the adjusted threshold will be poor. Therefore, those who are above the official line (M0) but below the adjusted line are labeled as "hidden poor". This is the basis of most of the time-income measures of poverty, including the LIMTIP.

Vickery also tries to identify those households who are "involuntarily" poor from those who may be "choosing" to be poor, given the actual allocation of hours in paid activities and the current hourly wage (see figure 1 panel B). "Voluntarily poor" are those who would get their income above the adjusted poverty line by increasing their amount of paid hours of work —for those who are not working full time— and then replacing the time deficit when needed by substitution (from E to the right, shadow area), while those to the left are time poor, but could reduce this deficit of time by giving up income and in this way overcome poverty.[31] The evaluation of household situation with regard to potential combinations of working hours (paid and unpaid) and free time or leisure is also present in the study of Burchardt (2008) for the United Kingdom as well as in the study of Merz and Rathjen (2009) for Germany: they both take into account various scenarios to identify the relative freedom households have to allocate time in order to meet basic needs, and to enjoy some hours of free non-committed time. Merz and Rathjen use income and define the concept of "genuine leisure"[32] as inputs for a CES[33] utility function (whose levels will be determined subjectively —and this is of course innovative in the literature) in order to estimate an interdependent multidimensional time and income poverty line. In both dimensions they use relative thresholds, leading to a line of 186 minutes per day of genuine leisure (around 22 hours a week). Tanya Burchardt carries out a similar analysis for the case of the United

Kingdom: she proposes a "capability set" to account for the different options households have to combine disposable income and free time, taking into account the price of market substitution, considering different prices for care and domestic work and not just an average hourly price (Burchardt, 2008 and 2010). She also explores and provides some insightful arguments to consider both relative and absolute thresholds, and increases in one hour a day the minimum time for personal care for disabled people (which is appropriate although time use surveys do not always have information in this regard).

Despite the enormous contribution of Vickery's measure of poverty, her proposal has at least two important weaknesses. The first one is that people may not be free to choose how many hours to work for the market, and therefore it might be inappropriate or even unfair to consider that someone is "voluntarily poor" when working part-time, since this does not always depend on people's will. The same with workers who have a heavy load of paid work; in many countries workers are not protected by laws, or regulations about maximum working hours and overtime are quite flexible, and therefore working "too much" may not be a decision neither. This was in fact the main contribution of the study for Canada of Harvey and Mukhopadhyay: "This representation of poverty status by the wage rate is contingent upon the household being able to choose the number of hours of labor supply in the market [...]. In view of labor market imperfections, however, we cannot assume that one has the choice of working longer or shorter hours, so we do not adopt Vickery's wage rate configuration of time poverty" (Harvey and Mukhopadhyay, 2007, p. 63). This assumption, which is particularly difficult to sustain when there are structural problems of unemployment and underemployment and a large proportion of workers at the shadows of labour protection laws, is also behind the approach of Bardasi and Wodon (2009) and the idea of "discretionary time" of Robert Goodin. Hence, Harvey and Mukhopadhyay estimate the time deficits, consider the replacement cost, and evaluate household's situation with regard to the adjusted poverty line taking into account the actual —reported— hours of paid work. The LIMTIP will follow this strategy as well.

The second limitation of Vickery's measure of poverty, which is also present in all other bidimensional measures of time-income poverty classified in table 1 (first group of studies in the second row), is that thresholds for time poverty are defined at the household level. Therefore, as it happens with the traditional income-based measures of wellbeing, the intra-household disparities remain hidden. In this sense, LIMTIP follows the Vickery-Harvey and Mukhopadhyay line, but makes one particular contribution, by recognizing that "each individual's time contribution needs to be identified and taken into account in poverty assessments" since, "while a certain minimum amount of time is imperative and must be spent on household production, individuals within households do not supply this required time in a uniform and equally shared manner" (Zacharias, Antonopoulos and Masterson, 2012, p.18).

Another bidimensional measure of time and income poverty that takes into account actual hours of paid work is the Excess of Work Index (EW) developed by Julio Boltvinik and Araceli Damián. This measure has some particular features. It corrects income poverty rates taking into account time deprivations, in a way similar to the adjustment of poverty lines proposed by Vickery, but then the authors include this index with other dimensions, following the approach of the Unsatisfied Basic Needs (UBN), in what Boltvinik (2013) calls the "New Variant" of the Integrated Poverty Measurement Method (NV-IPMM). The key difference with Vickery's approach is that it does not consider any possibility of market substitution. Another particular characteristic of this method is that it is much less generous with time to work, and it assigns much more value to leisure time than any of the other measures commented so far. Moreover, it considers the legal maximum daily or weekly hours of work (including social rights in the analysis), applying this limit also to the unpaid work activities, and therefore explicitly equalizing the importance and status of paid and unpaid work.[34] Since the amount of hours required for unpaid work at the household level depends on household size and composition,

it has the advantage of not requiring periodic time use surveys, given that regular household surveys provide information about hours of paid work. However, this is not costless: time poverty is measured at the household level and therefore the EW is not able to account for severe time deprivations that may be hidden behind these aggregate/average levels. Despite these restrictions, it is important to remark that this measure was the first attempt to include time use patterns in poverty measures in Latin America, and it is still the only one who keeps being periodically estimated.

2.3 Multidimensional poverty: time as one of many dimensions

"Multidimensional" studies which take time into account (see third row in table 1) use these unidimensional and bidimensional measures together with other indicators of human deprivations. Hence, first it is necessary to define how to account for deprivations in the time dimension, and then a second step is how to combine it with the other typical dimensions of wellbeing considered by multidimensional measures of poverty, such as income, housing conditions, health, and education. In this second stage some well-known questions arise (discussions that go beyond the scope and purpose of this paper): do we really need one synthetic indicator to pool all relevant dimensions? Why these dimensions and no others? Which should be the relative importance or weight of each dimension? How can we identify who is poor in this context? Are poor those who suffer in all these dimensions, just in one, or enough in a cardinal measure using scales of deprivation and weights for each dimension? The literature on multidimensional poverty and inequality has been growing at least since the 1970s but it is still far from consolidation (Aaberge and Brandolini, 2015). Atkinson and Bourguignon (1982), for example, already discussed how to involve several dimensions in the traditional dominance analysis of welfare studies more than three decades ago, while in Latin America there is also a long tradition, especially linked with the UBN approach and the development of methods combining the indirect method of monetary poverty with the direct method of UBN (Altimir, 1979; Kaztman, 1989). Recently, a new wave of multidimensional studies has gained strength in this region, mainly by the Oxford Poverty & Human Development Initiative (OPHI)[35] and the UNDP. Interesting old and new debates are again at the forefront —see, for example, Santos (2013) or Lustig (2011) for interesting reviews of different methodologies and points of view in this field, and the recent discussions between Julio Boltvinik and the OPHI with regard to the application of multidimensional measures of poverty in Latin America.[36]

Julio Boltvinik and Araceli Damián have been working for a relatively long time with the NV-IPMM, which includes time deprivations to adjust the indirect power of income, following what they call "the Latin American tradition" in multidimensional poverty measurement in the region (Boltvinik, 2012), with its roots in the first UBN and combined methods such as the one proposed by Kaztman (1989) for the city of Montevideo. Time is not included as one of many dimensions but in an intermediate step: the IPMM first adjusts the income poverty status with the EW and then this income-time combined vector is incorporated to the direct measures of satisfaction of needs. This measure of poverty has been periodically estimated for Mexico, and can be consulted at Boltvinik's personal webpage. Also for the case of Mexico, but with a different approach, Carbajal (2011) explores the inclusion of time-poverty measures with relative thresholds to extend the official multidimensional indicator of poverty used by the National Council for the Evaluation of Social Development Policy (CONEVAL).[37] This exercise has been recently carried out also for the case of Uruguay with its most recent time use survey (2013) by Borrás et al. (2014). This study considers two measures of time poverty: one based on the relative position of individuals with respect to leisure-time, and another one that takes into account time devoted to unpaid work, with relative thresholds —in line with the unidimensional measures discussed before, such as in Merino (2010) and INMUJERES (2012).

An alternative methodology which includes time within a multidimensional poverty index

was carried out for Guatemala by Gammage (2009), which proposed a factorial statistical analysis, letting the data "to talk by itself" as these methods do, with the advantage of not requiring arbitrary decisions with regard to weights. However, as it is usual with these methods, they turn to be less transparent or at least more complicated to communicate, and therefore their use for the design and evaluation of policies is more limited.

Recently, an interesting methodological and empirical exercise has been proposed by Benvin, Rivera and Tromben (2016). From a capability approach these authors explore different alternatives to take into account time deprivations within a Multidimensional Poverty Index (MPI)-Alkire-Foster methodology, using two complementary and alternative measures for paid and unpaid work: relative thresholds with regard to observed unpaid work (domestic work and care activities), and —interestingly— normative values for thresholds with regard to paid work (in line with Boltvinik-Damián's proposal). An empirical application is undertaken for the cases of Colombia, Ecuador, Mexico, and Uruguay. Time is one of the fifth dimensions considered (each one with a weight of 1/5), and contains two indicators which are also equally weighted: one which identifies shortcomings in terms of time allocated in unpaid work (the household will be poor in this dimension if at least one member allocates less hours of unpaid work than 50% of the median of women in the population), and the other is the number of paid work hours above the limit according to national laws (57 hours a week for the case of Mexico, for instance), trying to capture the deprivations that arise from excessive time allocated into paid work.

3

LIMTIP experiences: time deficits and the hidden poor

LIMTIP experiences: time deficits and the hidden poor

This section introduces the main objectives of the LIMTIP project, followed by a brief explanation of how time deficits are calculated and (official) poverty lines are adjusted. Then the main results from the LIMTIP experiences are commented, with special reference to the Latin American cases. In annexes A2 and A3 more details on the methodological challenges, particular values, and adjustment used for LIMTIP estimations in the region are presented.

In relation to the overview of the different measures of poverty proposed by prior literature summarized in table 1, LIMTIP tries to conciliate the main contributions of Claire Vickery and Tania Burchardt (with the idea of a minimum non-substitutable and the identification of an amount of substitutable time required to meet basic needs), the idea of actual hours of paid work from Harvey and Mukhopadhyay (2007), while it also establishes an absolute threshold for minimum leisure (in the Boltvinik-Damián spirit) and goes even one step further, by focusing on intra-household disparities and accounting for individual time deprivations —in the spirit of the unidimensional approaches, like Bardasi and Wodon (2006).[38]

3.1 LIMTIP's main objectives and contribution

The LIMTIP provides "an alternative conceptual and analytical framework to official income poverty thresholds" (Zacharias, Antonopoulos and Masterson, 2012, p. 19). By integrating household production time requirements with income requirements, LIMTIP offers a four-way classification of households and individuals according to their income and time poverty status: i) time poor income non-poor; ii) income poor time non-poor; iii) income and time poor, and iv) income non-poor and time non-poor. It also accounts for the phenomenon of "hidden poverty", situation of those households that are not considered "poor" by official statistics but just because at least one member is facing severe time deprivations. Moreover, it does not only offer *headcount ratios* but also measures of poverty *gaps*, since time deficits are monetized. One of its main objectives and contribution with respect to the literature is that the LIMTIP pays special attention to the intra-household distribution of unpaid work, accounting for "the differentiated hardships time poverty imposes (especially when coupled with or translated to income poverty) on individuals within households. Adults are liable to experience poverty differently, along gender and other socioeconomic and demographic characteristics such as age, location, headship of household, worker status, marital status, etc. [and therefore] the *feminization of poverty*, for instance, is greatly informed by this perspective" (Zacharias, Antonopoulos and Masterson, 2012, p. 19).

In addition, the LIMTIP also proposes a microsimulation exercise that is useful for evaluating the potential impact of policy interventions or market-based changes on households' and individuals' ability to transition out of poverty. Some interesting insights coming from these exercises will be presented in section 4, where the main results from the estimation of this measure in developing countries are commented. The main assumptions, methodological challenges, and some potential improvements to this measure are discussed in annexes A2 and A3.

3.2 Estimation of deficits and adjustment of the poverty line

The estimation of time deficits at the household level, which is the basis for the adjustment of the poverty line following the "Vickery

style", starts from a basic accounting identity of time allocation at the individual level [1]. We all have got 168 hours per week, time which is usually allocated in four big groups of activities: paid work (Li), unpaid work (Ui), personal care (Ci), and some "free time" (Vi).

Accounting identity of time allocation

$$[1] \qquad 168 \equiv Li + Ui + Ci + Vi$$

Li, time spent on income-generation; Ui, time spent on household production; Ci, time spent on personal care; Vi, time available as "free time".

If we would agree on a minimum time necessary for personal care and leisure that people need to stay alive with some dignity, the remaining time would be the maximum time available to participate in unpaid and paid work activities. The methodology described in the original project for Argentina, Chile, and Mexico in Zacharias, Antonopoulos and Masterson (2012) captures in M the very basic personal committed time for a minimum of personal care and leisure, and also a small component of unpaid work which is not substitutable and does not depend on the size and composition of the household. M is then equally set for all individuals who are aged 18 years old or more, which is the population for which time deficits are estimated in the original LIMTIP project (this, of course, could be extended to the entire working age population, which usually starts at 14 or 16 years old, although the same normative considerations with regard to time-allocation for teenagers and adults may create some noise, as it will be later discussed).

The complement (168 - M) is therefore the maximum weekly hours individuals have to allocate to paid and unpaid work. How much time do households need in terms of unpaid activities for basic operation and satisfaction of "minimum needs"?[39] LIMTIP estimates different values for these activities (Rj) for 12 types of households.[40] Their magnitude is taken from the observed/reported values for a reference group: households with an income close to the poverty line and with at least one non-employed in charge of unpaid activities.[41] The specific threshold for each member of the household (Rij) comes from the actual share of her or his participation in total unpaid work (αij) multiplied by the amount of hours of the threshold set for the household where she or he belongs depending on its size and composition (Rj). Note that if she or he is in charge of all these activities or is the only adult in the household, the value of αij will be 1, whereas if she or he does not spend time on these activities this value will be 0, which are the boundaries of this coefficient.

Available time for paid work

$$[2] \qquad A_{ij} = 168 - M - \alpha_{ij} R_j$$

M, minimum time for personal care (sleeping, eating, hygiene, dressing, rest) and non-substitutable unpaid work; Rj, minimum required time for household production (depends on the type of household: size and composition); αij, observed shares of participation in total household production and care activities (individual i in household j).

The new residual (once M and Rij are subtracted from the original endowment of 168 hours a week) is the available time to work in paid activities (Aij), as shown in [2]. The subscripts from each component are informative: while M does not have subscript because is equally set for all individuals (adults), the available time for paid work (Aij) depends on the household (j) —in particular on the classification of the household, which provides the magnitude of Rj— and the individual (i) —due to the relative importance of his or her contribution in total unpaid activities. It follows that time deficit or surplus (Xij) for individual i in household j is then the difference between the available time for paid work (Aij) and the actual working hours (Li), which are the actual reported hours for individual i (following the main contribution of Harvey and Mukhopadhyay (2007), introduced in section 1). The result can be positive (in which case the individual has a "time surplus") or negative ("time deficit"). Hence, "time poor" will be those individuals with time deficit. It is possible then to obtain a simple headcount of time poverty before taking into account household income by simply obtaining the share of time poor among the adult population (aged 18 or more).

Time deficit of individual i in household j

$$[3]\ X_{ij} = A_{ij} - L_i = 168 - M - \alpha_{ij} R_j - L_i$$

Once we have estimated time deficits/surplus at the individual level, time deficits at the household level are constructed with the assumption of no compensation: someone's deficit is not compensated with someone else's surplus within the same household (see equation 4). Therefore, a household will be considered time poor if there is at least one member who is time poor, regardless of the deficit or surplus of the other members.

Time deficit (household level: j)

$$[4] \qquad X_j = \sum_{i=1}^{n} min\ (0, X_{ij})$$

In sum, this methodology combines different criteria for the determination of the absolute thresholds involved in the estimation of time deficits and in the identification of time poverty: normative levels for leisure time (a minimum of 14 hours a week) and for non-substitutable unpaid work (7 hours a week), taking the observed values (average) for personal care, with the identification of different groups of population (like rural and urban) if the size of the sample allows for it, and the average time allocated in unpaid household production and care activities by type of household at the reference group, with regard to size and composition.

Once we have estimated time deficits at the household level it is possible to correct the official poverty line, since these lines are based on total household income. Given that Rj contains substitutable activities (cleaning, cooking, etc.), a key assumption of this methodology is that it is possible to "buy out these time deficits" by acquiring market substitutes (such as hiring a domestic worker or paying for a day care center). This will of course depend on the price of these market substitutes, as originally suggested by Vickery (1977). The inclusion of an average hourly replacement cost (p) can be done in different ways, and it does not have to be constant with quantity nor across the type of services that are "outsourced" by households. The LIMTIP proposes a very simple way to approximate these costs, by taking the average hourly wage of domestic workers, ideally from the same household survey from which the other information with regard to participation in paid and unpaid activities is carried out, but which could also come from other sources for the same population and period of analysis, like national accounts or other household surveys.

Time deficit (household level: j)

$$[5] \qquad y_j^0 = \bar{y} - \min\left(0, X_j\right)p$$

$\bar{y}$, official income poverty line; p, hourly replacement cost for substitutable activities (Rj).

With this replacement cost (p) it is now possible to adjust the poverty line (y_j^0), as it is shown in [5]. The value of the adjusted poverty line will be higher for those households with a time deficit (Xj<0), and the distance between this line and the official one ($\bar{y}$)[42] will be determined by two elements: the number of hours of time deficit, and the hourly replacement cost (p). For households with no time deficits, this adjusted poverty line will coincide with the official poverty line. Once we have the adjusted LIMTIP poverty line, the identification of an income poor household is done in the usual way: if household income is lower than this new income poverty line, the household is income poor and all its members will be considered income poor as well. Moreover, a household is time poor if it has a time deficit, regardless its situation with income (remember that it is enough to have one member with a time deficit in order to have a time deficit at the household level). Individuals are time poor if they face personal time deficits. It is clear from here that incidence of time poverty at the household level will tend to exceed the incidence of time poverty at the individual level.

$$y < y_j^0 \rightarrow \text{income poor household}; Xj < 0 \rightarrow \text{time poor household}$$

$$y_{ij} \equiv y_j < y_j^0 \rightarrow \text{income poor individual};\ X_{ij} < 0 \rightarrow \text{time poor individual}$$

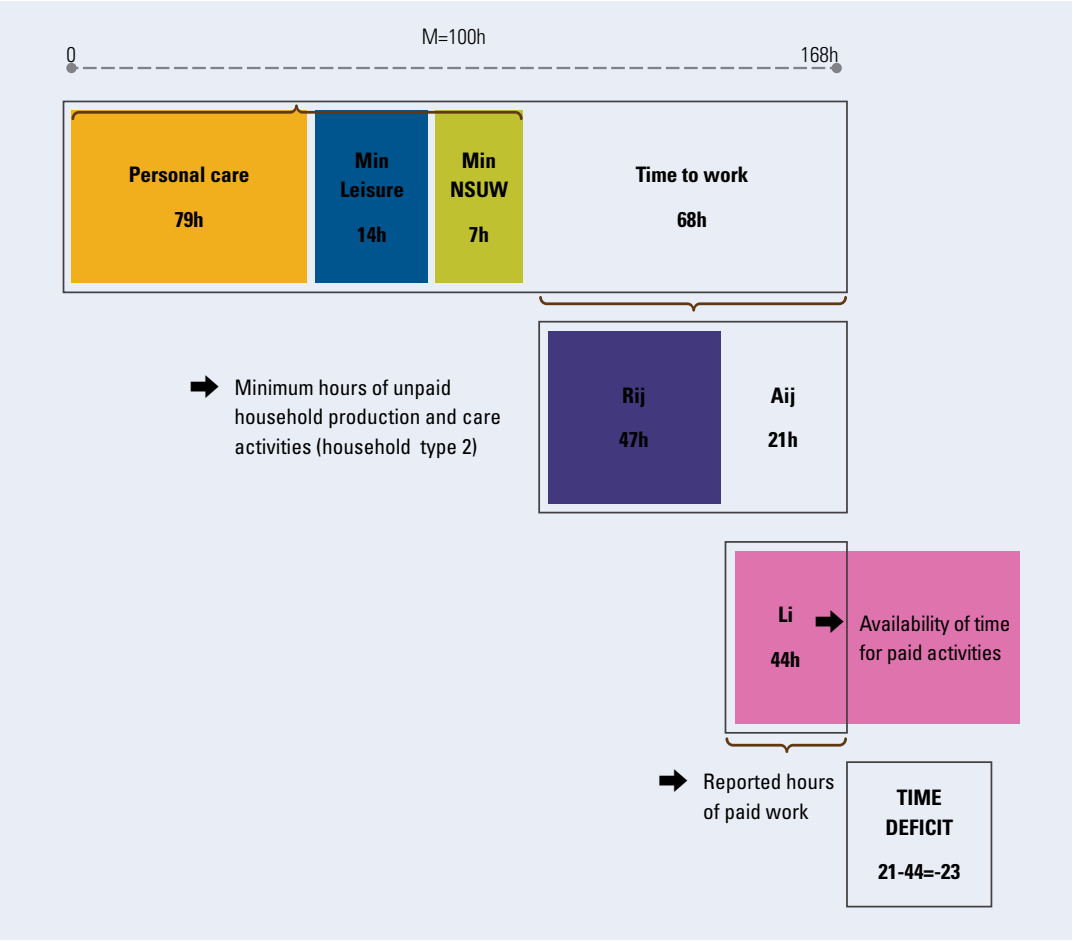
From time and income poverty status LIMTIP classifies households and individuals in four groups: i) those who are time and income poor; ii) those who are time poor but income non-poor; iii) those who are income poor but time non-poor, and iv) those who are income and time non-poor. In addition, there is one group of particular interest which is integrated by those households who are non-poor for official statistics (because they have an income level which is equal or above the official poverty line) but have a time deficit which, if they would eliminate by market substitutes (for example, by hiring a domestic worker for that exact amount of time), their remaining level of income would fall below the official poverty line. These are the households with a level of income above the poverty line ($\bar{y}$) and below the LIMTIP line (y_j^0), and LIMTIP classifies them as "hidden poor". These are households that are likely to be ignored by policies targeted to the poor, although they are actually poor in the sense that they are not able to meet the minimum consumption implied in the official poverty line.

3.2.1 An example: how are time deficits calculated?

Diagram 1 illustrates the estimation of time deficits step by step with a simple example for a household with one adult and one child (household type 2)[43] and using the thresholds defined for the case of Chile, where M is 100 hours a week for each individual.[44]

DIAGRAM 1

How is time deficit calculated? An example of one adult with one child in Chile



Source: Prepared by the author.
Note: NSUW refers to non-substitutable unpaid work.

The adult of this household has therefore a maximum of 68 hours a week (around ten hours per day) to allocate in unpaid or paid work (including commuting), without incurring a time deficit. This means 9-10 hours a day. How much time will this adult need to allocate in unpaid household production and care activities? The value of Rj for households type 2 —following with the example taken from Chile— is 47 hours a week: meaning that this household would need a minimum of around 6 hours and 40 minutes a day for buying food, paying bills, cleaning, cooking, taking care of the child, taking him or her to school, and doing laundry, among other activities. For this case, where there is just one adult, the adult will be in charge of all these activities, and therefore the share is equal to one ($\alpha ij=1$) and Rij=Rj. This leads to a residual of 21 hours a week of available time to do paid work for this adult (Aij=68-46). If she or he works full time, under a regime of 40 hours a week with 4 hours of commuting (a scenario which is quite generous, in particular in large and traffic-clogged cities) then she or he will face a time deficit of 23 hours (Xij=Aij-Li=21-44). This means that this household would need 23 hours extra a week to meet minimum levels of consumption implicit in the poverty line. If the adult is not sacrificing some of the components of M (sleeping below the minimum not to get ill or sacrificing her o his little time for leisure) this situation could be reflecting several deprivations at the level of household production (bad quality of meals, dirty clothes, lack of hygiene in the house) and time for care (no time to take the child to the doctor, nor to any center to practice sports or arts, or to assist him or her with homework, or to play, for example).

LIMTIP would classify this household as time poor. More than 20 hours a week of deficit can lead to severe restrictions with potential large adverse effects on the quality of life and opportunities for development for both, the adult and the child. But so far we have not mentioned income. Is this household income poor as well? Of course this will depend on the income level, and LIMTIP also takes into account the hourly price of substitution. An approach that does not take into account the price of substitution and just considers the payment the adult gets from labour market —such as the one of Goodin et al. (2008) or Bardasi and Wodon (2009)— would classify this household as income poor if the hourly wage is not enough to allow the adult to reduce the work load from 44 to 21 hours and still achieve an income level above or equal to the poverty line (the amount of hours that guaranties that the household meets the minimum needed hours of unpaid work). As it was discussed in section 2, LIMTIP methodology does not assume that workers can freely choose how many hours to allocate in paid work, and does not evaluate their situation in these hypothetical scenarios with different time allocation between paid and unpaid work. In order to take into account whether this household has time deficits with no other choice, the LIMTIP evaluates if the household could potentially buy out its deficit with market substitutes. Hence, there are then three possible situations for this particular household: i) the household is officially income poor (income below the official poverty line), and therefore there is no way to escape from the time deficit without becoming poorer in the dimension of income; ii) the household has an income level above the official poverty line, and it is high enough to allow it to substitute the 23 hours of time deficit by hiring a domestic worker without falling below the poverty line after the expenses are made, and iii) the household is officially non-poor, but its level of income does not allow to compensate the time deficits with money without falling below the official poverty line. In this sense, while all these households are time poor (because they have a time deficit of 23 hours, as shown through the example illustrated in diagram 1), the first household would be poor in income and time, the second one would be just time poor (income non-poor), while the third one would be also income poor, but not captured by official statistics (what LIMTIP calls "hidden" poor).

3.2.2 Additional adjustments

Time use surveys contain additional information which can be taken into account to increase the precision of these estimations. For example, in the case of Mexico, information about hired housework (and the amount of

hours hired) was available, which allowed the team in charge of the Mexican case to control for this help (which may reduce the observed unpaid work for households which hire domestic workers, but at the same time their income levels also should be corrected). Taking into account hired domestic work, it is important to distinguish which part is helping to make ends meet and which may be "extra", and therefore not considered in the adjustment.

$$[6] \quad R_J^* \begin{cases} 0 \text{ if } R_j^0 \geq \overline{R}_j \text{ or } R_j^h = 0 \\ \min\left(\overline{R}_j - R_j^0, R_j^h\right) \text{ otherwise} \end{cases}$$

Where R_j^h accounts for the hired hours of domestic help, and R_j^0 as the "own hours of household production", R_j^* is then the contribution to take into account in order to discount the amount spent on this outsourcing of housework from total household income (using the hourly wage of domestic workers). Moreover, in order to account for public child care services in Korea, an adjustment to the equation for the time deficit was also made.[45]

3.3 LIMTIP estimations: results

The LIMTIP was estimated for Argentina (Buenos Aires), Chile (Santiago), and Mexico, and summarized in the first research project for the region (Zacharias, Antonopoulos and Masterson, 2012). The exercise for the case of Uruguay was carried out by the Ministry of Social Development (MIDES)[46] and the UNDP Uruguay (Maier, 2013), and the case of Colombia was undertaken by the National Administrative Department of Statistics (DANE, 2014). The estimations for South Korea were in charge of the Levy team and the Korea Employment Information Service, while for the case of Turkey the Levy team worked with the UNDP Turkey. More recently, the LIMTIP team has been working on the first estimates for African countries with the cases of Ghana and Tanzania, although the results have not been published yet.

It is important to keep in mind that any comparison between results obtained by these studies has to be done with the greatest caution: "the main objective of our study is to ascertain the effects of incorporating time deficits on the picture of poverty within each country rather than to provide directly comparable international estimates" (Zacharias, Antonopoulos and Masterson, 2012, p. 41). Official poverty lines differ between countries, time use surveys are also different, and the LIMTIP methodology in particular has also been adapted with slight modifications for each case. Even the comparison of two different points in time for one country is not straightforward, since time use surveys can also change in their design and implementation, and therefore thresholds may change not due to patterns in time allocation but in the way people report their activities. In the case of Uruguay, the MIDES and the UNDP Uruguay have been trying to obtain the first two LIMTIP estimates for one country at different points in time, but so far many methodological challenges emerged and there are still open discussions in this regard.

3.3.1 Time deficits and hidden poor in South Korea and Turkey

Estimations for South Korea (based on its time use survey from 2008) show that the LIMTIP poverty rate was almost three times higher than the official one (7.9% versus 2.6%). Overall, the hidden poor in South Korea are roughly 2,000,000 individuals, situation that is particularly affecting the group of "non-employed male head with employed spouse", "single female-headed" and "dual-earner" households (Zacharias, Masterson and Kim, 2014). In 1992, South Korea introduced public child-care provisioning through a voucher system, benefiting low income families, and this system became universal in 2013. While income-based measures of poverty may not account for the potential impact of this program, at least not in the short run, the LIMTIP measure allowed the authors to analyze the effect of this program on households' situations regarding income and time poverty. Zacharias, Masterson and Kim (2014) suggest that the outsourcing of child-care services reduced the LIMTIP rate from 7.9% to 7.5%, and the number of "hidden poor" individuals from 2,000,000 to 1,800,000. For employed

households that outsource childcare, the effect seems more pronounced: LIMTIP poverty rates fell from 5.95% to 3.1% and time poverty rates for employed individuals with young children that outsource childcare were substantially reduced: from 54% to 29%. While these results show that the problem of time poverty in South Korea extends beyond childcare needs, the impact of public provisioning through the voucher program clearly has had a positive impact on families with children. In this sense, these exercises as well as ex ante simulation exercises could make a substantial contribution to the ongoing debates that are taking place in Latin America with regard to the expansion of free public provision of care services.

For the case of Turkey, Levy's results for 2006 showed that the LIMTCP poverty (the "C" accounts for consumption instead of income) rate of individuals is 10 percentage points higher than the official rate (40% versus 30%). These estimations indicate that close to 8,000,000 people were living in hidden poverty due to the omission of time deficits. Through microsimulations, Memiş and Bahçe (2011) estimated which would be the effect of a crisis with a strong decline in labour demand in the income-time poverty situation of families in Turkey. Although unpaid work is carried out outside the market, it is not necessarily isolated from the impacts of an economic crisis, and this is what motivates this study. The results show that a sudden increase in unemployment rates could reinforce the pre-existing gender disparities, and in this way they are able to account for these "hidden" impacts of a crisis, which is something that also remains at the shadows of official statistics. Given the more pessimistic economic prospects for the future years in Latin America, this exercise may also provide interesting inputs to think about the design of safety nets and policies that could been applied in response to scenarios like these.

3.3.2 LIMTIP findings in the region[47]

Although LIMTIP estimations are not aimed to provide cross-sectional comparisons, there are some evident common patterns that immediately emerge from the LIMTIP experiences in the region. This also suggests that there are common policy challenges and therefore plenty of room to increase the cooperation between government and academic actors in the region, from which potential strong synergies and common platforms for action could arise. In particular, an interesting first step would be to increase the coordination and feedback between national statistical offices and researchers involved in the design and implementation of time use surveys and studies in order to share and improve the experiences in the generation and dissemination of these surveys (ideally with potential harmonization initiatives), and to raise awareness of the importance of their frequency.

As it is shown in table 2, studies were undertaken with the first and in some cases only time use surveys countries have, and therefore years are different. Moreover, the methodology behind these surveys widely varies from one to the other. Some of them are conducted independently, while others are included as additional modules within other regular household surveys (as it is in the case of Uruguay). Some are performed as diary of activities (Argentina, Chile), and others through questionnaires with predetermined questions in order to capture the allocation of time in some a priori classified activities.[48]

TABLE 2

Surveys, teams involved, and a short description of matching/imputation needed

	Income Survey	Time Use Survey	Particular features / Adjustments / Matchings	Team and people involved
Argentina	Encuesta Anual de Hogares (EAH) [Annual Household Survey] 2005	Encuesta de Uso del Tiempo de la Ciudad de Buenos Aires (T) [Buenos Aires Time Use Survey] 2005	- 15-74 years old - One respondent, diary of activities - Multiple imputation of time use patterns for other members + matching with EAH	Levy team + V. Esquivel
Chile	Encuesta de Caracterización Socioeconómica Nacional (CASEN) [National Socioeconomic Survey], 2006	Encuesta Experimental sobre Uso del Tiempo en el Gran Santiago (EUT) [Experimental Survey on Time Use in Greater Santiago], 2007	- 12-98 years old - Information about all members, diary of activities - Matching samples: yes / Imputation of time use patterns: no	Levy team + M. Valenzuela + S. Gammage + International Labour Organization (ILO)
Mexico	Encuesta Nacional de Ingresos y Gastos de los Hogares (ENIGH) [National Household Income and Expenditure Survey], 2008	Encuesta Nacional sobre Uso del Tiempo (ENUT) [National Time Use Survey], 2009	- 12 or more years old - Matching between surveys + replacement cost from national accounts	Levy team + M. Orozco + A. Sánchez
Uruguay	Encuesta Continua de Hogares (ECH) [Continuous Household Survey], 2007 Módulo de Uso del Tiempo (MUT) [Time Use Module], 2007		- 14 or more years old - No need for matching, time use survey part of the ECH (one respondent for all, short list of activities, information about working days and non-working days)	UNDP Uruguay + Ministry of Social Development (MIDES) + S. Maier
Colombia	Encuesta Nacional de Uso del Tiempo (ENUT) [National Time Use Survey], 2012		- 10 or more years old - Last day reference - Income information in the time use survey (last week)	National Administrative Department of Statistics (DANE) + V. Esquivel

Source: Prepared by the author.

Which are the main results that can be highlighted from these LIMTIP experiences in Latin America? First, contrary to some common wisdom, professional and better-paid individuals are not those who neither work longer nor face the most severe time deficits. The so-called "working poor" (with low earnings, typically in informal activities or at the shadows of labour protection systems) are usually in a worse situation: they work long hours for wretched hourly wages, and face time deprivations which are reinforced in presence of children given the relative high demand of long hours of household production and care activities. Second, women and men both suffer from poverty-inducing time deficits, but due to different reasons. Low-earner men usually have to work very long hours at the labour market, while women combine long hours both in paid (although on average less than men) and unpaid activities. Moreover, in big cities, where commuting time can be suffocating, time deprivations can be even deeper, especially in cities with spatial segmentation and inefficient public transport systems. For women the panorama is particularly afflicted when they combine both, long hours of paid (although doing less hours than their counterpart men) and unpaid work (household production and care activities). Third, estimates show that women and especially children are those most affected by hidden poverty rates: beyond the well-known vulnerability of children to income poverty, children are also overrepresented in households which are time poor with no choice: those who face time constrains and cannot use their money to substitute these time deprivations (by hiring some hours of

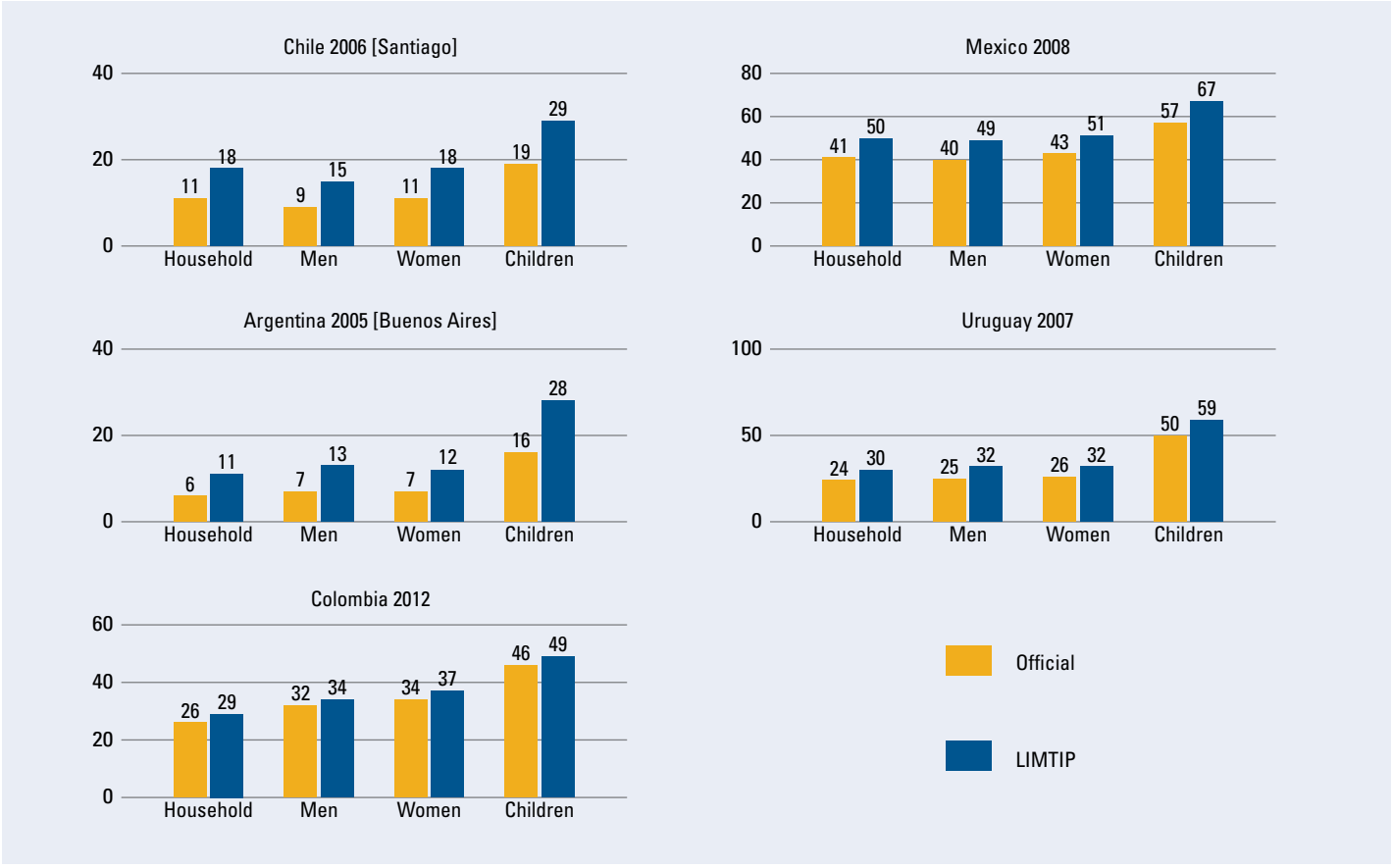
domestic help work, for example) without falling below the official poverty lines (Zacharias, Antonopoulos and Masterson, 2012). This means that an important number of children in Latin America are "non-poor" for the official statistics, but they are actually living in households which cannot manage to combine time and income to get to the minimum consumption levels implied in these official poverty lines.

3.3.2.1 Time and hidden poverty at the individual level

In figure 2 official and LIMTIP poverty rates at the individual level are shown, where the difference in the length of the bars shows the incidence of hidden poverty. Children's hidden poverty rates —which result from the difference between official poverty rates and LIMTIP poverty rates— are a bit higher than 10% in Argentina, around 10% in Chile and Mexico, 9% in Uruguay, and 3% in Colombia.[49] All these rates exceed those obtained for adult men, women, and the total population. This means that many children, and their parents, have been growing up —living— with severe time deprivations at the shadows of our statistics on poverty and inequality. Governments could make a huge investment in infrastructure in education, sport, art centers, and hospitals in order to improve children's quality of life and equalize opportunities since early childhood, but this well intentioned policy will not be easily translated into better achievements in these dimensions for children (nor for any or other dependent members) if parents or adults in charge of the household basic operations do not have time to take them to these places, to monitor their treatment, and to support their performance.

FIGURE 2

Official vs. LIMTIP poverty rates for household, men, women, and children in Latin America, various years



Source: Prepared by the author based on data from Zacharias, Antonopoulos and Masterson (2012), Maier (2013), and DANE (2014).

Time poverty, in particular (regardless of income), is also higher for women than for men, with just few exceptions: the income poor adults in Chile and Argentina (in which group time poverty is slightly higher for men than for women), and in general in rural areas in Uruguay, where men also seem to face higher time deficits than their female counterparts.

Time deprivations also show important disparities across working status and age groups, in all countries. In the case of Uruguay, for example, people in their third and fourth decade are those who suffer more from time deficits, especially those parents with young children who are typically combining long working hours of paid and unpaid work. In the case of Uruguay, while 40% of women and 33% of men are time poor (taking the population with at least 18 years old), these incidences rise up to 67% and 50% for those aged 30-40, respectively (see table 3).

TABLE 3

Time poverty by age (percentages) in Uruguay, 2007

	14-17 years old	18 years of age or older	30-40 years old	65 years of age or older
Women	0.8	39.6	67.2	4.0
Men	0.5	32.6	50.1	5.1
Official poor	0.6	35.1	49.4	0.4
Official non-poor	1.0	36.8	63.9	2.4
Total	**0.8**	**36.4**	**59.1**	**1.7**

Source: Prepared by the author based on data from Maier (2013).

Although time restrictions coming from long hours of unpaid work have been extensively documented by many studies in the region (Aguirre, 2009; Batthyány, 2015), time deficits estimated by LIMTIP methodology also show that working long hours at the market (paid work) also imposes severe time restrictions, and not only for women. For the case of Uruguay, workers who spend more than 48 hours a week working for a wage (the limit by law varies between 44 and 48 for special cases) have lower official poverty rates than the rest of the adults (22% versus 27%). However, when using LIMTIP, the picture changes: this group with very long hours of paid work has an incidence of LIMTIP poverty of 34%, slightly higher than the rest of adults (31%). Moreover, more than half of the women that have a paid job are time poor (55%) while time poverty for their male counterparts is lower, but not insignificant (37%).

It is important to take into account that LIMTIP estimations do not consider time use patterns or potential time deficits for a group that is part of the working age population but which is ignored by LIMTIP calculation for time deficits —or in fact, considered as children— because they are younger than 18 years old: typically those teenagers aged 14-17. However, in some households the contribution to paid and unpaid work activities of this group is not negligible, even more in large-size households with presence of children. The oldest members among the young members, and especially girls, are usually in charge of care responsibilities with their siblings, and they also contribute with household production tasks, like cleaning, cooking, etc. For the case of Uruguay, although this group was not included in the estimation of time deficits, a small exploration on their time use patterns was carried out. While girls in the age group of 14-17 tend to contribute with about 10% of unpaid work in households, her male counterparts do less than 1% (Maier, 2013).[50]

3.3.2.2 Time and hidden poverty for households

Time deficits affect about one half of households in these countries, ranging from 52% in Argentina to 65% in Mexico. In between, 52%, 57%, and 61% are the poverty rates for Colombia, Uruguay, and Chile, respectively. Most of them are time poor and income non-poor, and among them it is possible to find the hidden poor.

TABLE 4

The hidden poor (percentages) in Latin America, various years[a]

Country and year	Poor (official poverty line)	Poor (LIMTIP)	Hidden poor	Time poor and officially non-poor	Hidden poor among the time poor and officially non-poor
Argentina (Buenos Aires), 2005	6	11	5	49	10
Chile (Santiago), 2006	11	18	7	55	13
Mexico 2008	41	50	9	40	22
Uruguay 2007	24	30	6	27	20
Colombia 2012	26	29	3	…	…

Source: Prepared by the author based on data from Maier (2013).
[a] Household level.

Hidden poverty rates (table 4, fourth column) range between 3% (Colombia)[51] and 9% (Mexico). These are time poor households that are officially non-poor (such as those mentioned in table 4, column 5) but that do not have enough money to compensate their time deficits without falling below the official poverty line. In this sense, while 40% of households in Mexico are time poor and officially non-poor (because they have an income above the official poverty line), approximately one out of five of this group (22%) are actually hidden poor.

It is key here to compare these levels with regard to the magnitude of each respective official poverty rate, since, for example, in Argentina the hidden poverty rate may seem low (5%), but it is very close to the official poverty rate, which means that the LIMTIP poverty rate turns out to double the official poverty rate.

Some additional aggregates are useful to describe households' situation with regard to time and income restrictions, and they provide a deeper picture of potential different realities. For example, it is possible to account for the group that is time poor and non-officially income poor (fourth column, table 4). In this group, there are some households that are "hidden poor" but there are others, usually a big majority, who are not. While hidden poverty could be associated with the situation that Bardasi and Wodon describe as being time poor —"having no choice"— the second group may be considered "voluntarily" time poor, or a group with "false" illusions of lack of time, following the idea of discretionary time of Goodin (Goodin et al., 2008), as commented in section 2. In which sense some of these households could be considered "voluntarily time poor"? In the sense that they have the possibility to substitute their time deficits with money and still dispose an income level that is enough to be non-income poor. However, this is not an expression used by the Levy team; they just divide this group of time poor and income non-poor in those who are hidden poor and those who are not. Of course this distinction helps to drop from the analysis the "false" time pressures of the workaholic manager of a firm. However, for the case of developing countries and in

particular for Latin America, there may be some particular difficulties to substitute time deficits.[52] Finally, intra-household disparities with regard to time deprivations are also related to unequal autonomy and decision power within households. Think about a household with one adult suffering from time deficits but with lower earnings (due to the higher participation in unpaid work) than her/his spouse, who does not face time deprivations but has a higher income and, therefore, influences the household budget allocation. It is clear that in this case it would be quite unfair to consider this person and household as voluntarily time poor, since there is someone suffering these deprivations with no real chance to change the situation.

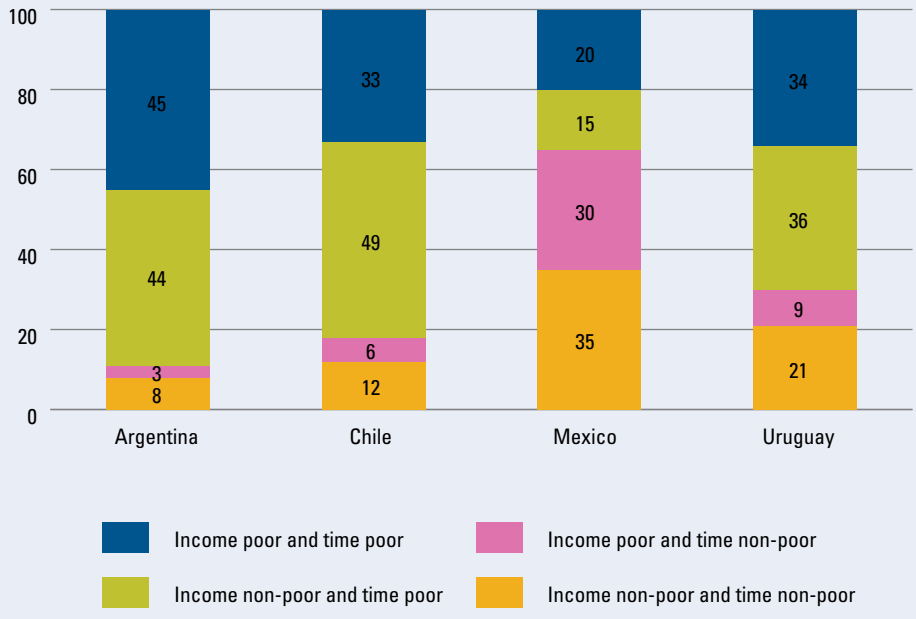
The size of this group (time poor, income non-poor, and non-hidden poor) can be obtained from table 4, by taking the entire group that is time poor and officially income non-poor and subtracting the hidden poor (the latter are those who are time poor "with no choice"). As can be seen, while in Mexico half of the households that are time poor and officially non-poor are actually hidden poor, in Argentina the hidden poor are just one out of five households with time pressures but with income above the official poverty line.

3.3.2.3 Four classification groups

By identifying the household and individual status with regard to time and income, it is possible to classify the whole population, or groups of it, in four categories. The estimations commented here are presented at a household level (see figure 3), but the analysis is also possible at the individual level, as shown by Zacharias, Antonopoulos and Masterson (2012), Maier (2013), and DANE (2014).

FIGURE 3

LIMTIP classification of households by income and time poverty status (percentages) in Latin America, various years



Source: Prepared by the author based on data from Zacharias, Antonopoulos and Masterson (2012) and Maier (2013).

As can be seen in figure 3, among the income poor the majority are also time poor, with the extreme case of Mexico which has more than one third of households constrained both in terms of time and income. For the case of Uruguay, for example, among the income poor households a large majority faces time deficits (about 21% of the households are both time and income poor).

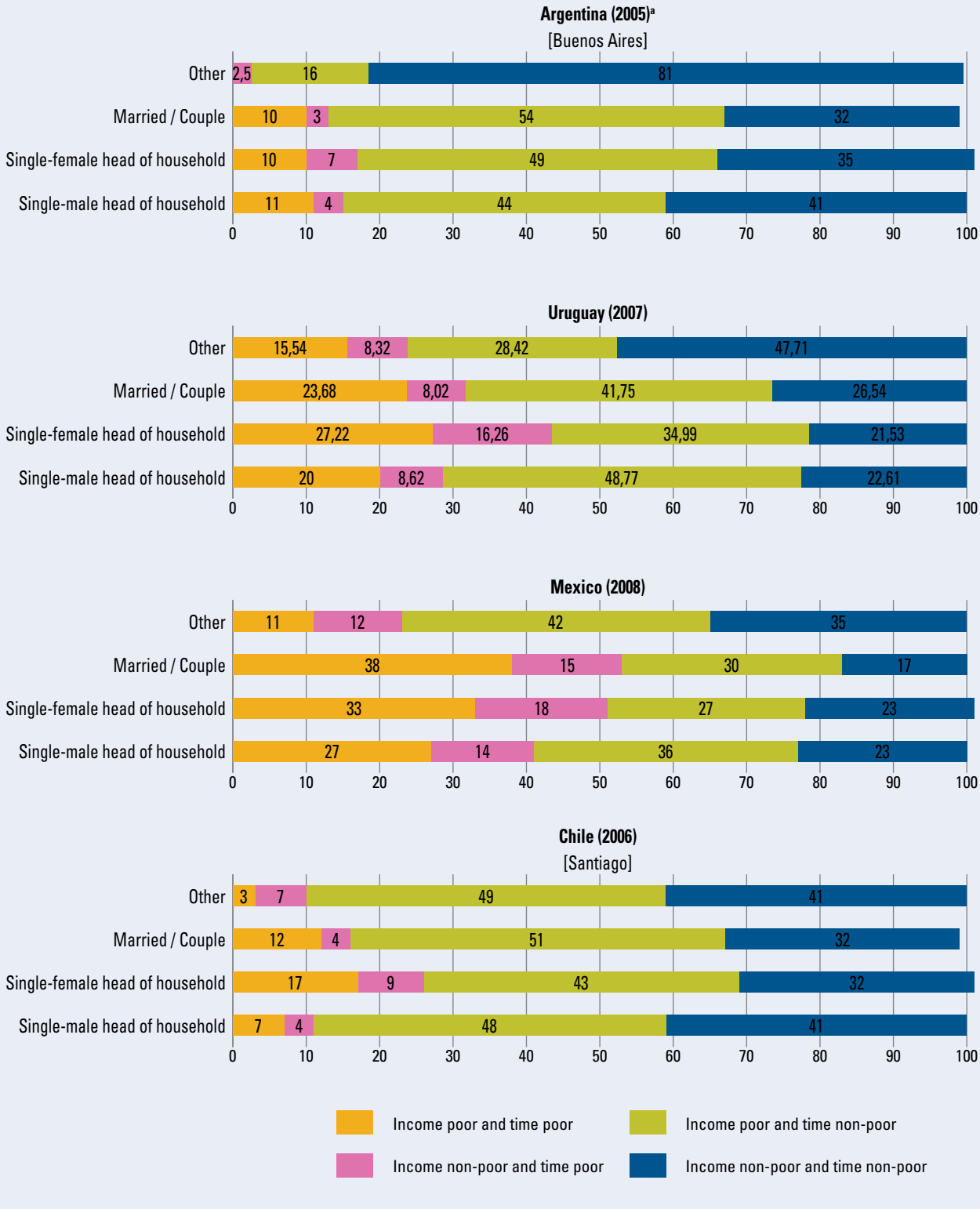
This means that, contrary to the linkage that sometimes is made between poverty and a state of leisure or laziness, and the faith in employment as the panacea for poverty reduction, an increase in the workload of this group may not guarantee any individual or social achievement, but on the contrary it can even make things worse, at least if no other policies are complemented in order to alleviate time deficits that are already present in these households and which could increase even more in a scenario of higher labour demand. There is, however, a smaller group that is income poor and time non-poor, suggesting some kind of potential "reserve" of available working hours that the market may be able to use, although it is necessary to evaluate how many hours adults in these households actually have.[53] The other extremes are also illustrative: while for the case of Mexico just one out of five households seems not to suffer from time or income deprivations, almost half of households in Argentina face this relatively privileged situation.

It is quite interesting to explore how these four categories are affected by other variables, and significantly change for different groups. And this can also be estimated at the individual level. With regard to the household composition, single-female households are, for example, particularly affected for both deprivations (simultaneously), situation that reaches 17% in Chile, 27% in Uruguay, 33% in Mexico, and 10% in Argentina. In general, these rates are between 5 and 10 points higher than the incidence of simultaneous time and income poverty faced by single-male households in Chile, Mexico, and Uruguay, while Argentina is the exception in this case, since incidences are almost the same, and even slightly higher for men.

Moreover, it is possible to go even deeper, as long as the size of the sample allows for it. In this sense, behind averages shown in figure 4, differences are huge with respect to the presence of children. In particular, time poverty rates are quite higher for married couples with children than for married couples with no children. The difference was particularly large in Argentina where married couples as a whole had a time poverty rate of 65%, while it was 82% for the subgroup with children (Zacharias, Antonopoulos and Masterson, 2012).

FIGURE 4

LIMTIP classification of households by income and time poverty status (percentages) in Latin America, various years



Source: Prepared by the author based on data from Zacharias, Antonopoulos and Masterson (2012) and Maier (2013).
[a] The percentage of income poor and time poor corresponding to other type of households is 0.5.

4

LIMTIP to think about policies

LIMTIP to think about policies

Some recent studies for Latin America suggest that the expansion of jobs, the decrease in wage inequality, and the increase of public cash transfers focalized at the bottom of the income distribution are the main drivers behind the reduction of income poverty and inequality in recent years (Lustig, López-Calva and Ortiz-Juárez, 2013; Gasparini and Lustig, 2011). People are familiar with income-based measures of economic performance, since opinion-makers, economists, unions, the media, and governments tend to talk about stories of "success" or "failure" in these terms: per capita levels of GDP, wages and employment rates, monetary poverty, and (income) inequality. However, these indicators can improve while hiding complex realities in terms of access and quality of health and education, regional segmentation, working conditions and quality of jobs, social cohesion, empowerment, and many other key aspects of social wellbeing. This opacity of unidimensional indicators is probably at the heart of the numerous governmental and academic initiatives that have been taking place in the last years, looking for alternative measures of economic prosperity and wellbeing (see, for instance, the important contribution of Stiglitz, Sen and Fitoussi, 2009).[54] If measures do not account for significant sources of people's pain, the scope of analysis is also reduced as a result, and so are the scale, the scope, and the results of public policies designed to tackle these realities.

4.1 The powerful combination time-income

Time as a source of deprivation can be approached within different frameworks. It can be seen as a resource to satisfy needs, and as a way to expand capabilities, which is what allows humans to convert means into real achievements. But leisure time or the freedom to allocate time in what one has reasons to value has also a value in itself, regardless of its use as a "resource". The time-money approach of bidimensional measures has as main objective to correct some limitations that income has as an indirect measure for the satisfaction of needs, considering time, therefore, as a resource. Think about a basic need, like eating. Money cannot be eaten, and if it could be eaten it would not feed us. And having enough available time to buy food, cook, eat, and clean does not guarantee any meal if there is no food or capital goods to cook (for which money is needed). Time and income are then key inputs for the satisfaction of this need, as well as for many others. They give us information about the potential satisfaction of the need and not about the actual satisfaction of it, since someone could have money to buy food and time to prepare a meal but decide to spend these two resources playing casino games. The key aspect of this vector of two dimensions is up to what extent there is substitution between them. A higher income may reduce the time needed to buy, cook, eat, and clean, but if a higher income comes from longer hours of work, there is a limit, since it is not possible (at least not yet) to hire someone to eat for us or to meet this basic need "immediately", and sometimes substitutes are not available.[55] Hamermesh (2007) shows how this substitution has evolved together with the increase in earnings inequality in the United States in the two decades between the American Time Use Survey (ATUS) of 1985 and the one of 2002-2003. He says that there has been a trend of making consumption of food (eating) increasingly good-intensive on average, with lower income households being able to catch their richer counterparts due to the relative lower price of their time (opportunity cost). Based on these estimations, he argues that the demand for food is not expected to grow as the general projections based on income suggest. The omission of time tends

to overestimate this evolution, and therefore market analysis based on demand and supply may also be biased.[56] Hence, the omission of time use does not only affect our understanding of household's consumption opportunities, poverty, and inequality, but it can also lead to wrong perceptions of the dynamic of markets (labour and good/services) at the aggregate level.

The LIMTIP, such as other bidimensional measures of time and income poverty which follow the pioneer work of Vickery (1977) reviewed in section 2, does not pretend to be a comprehensive multidimensional measure of poverty, since it does not try to account for all the relevant spaces of wellbeing, like the traditional UBN direct method of poverty, the integrated method of Boltvinik-Damián (IPMM), or the different MPI initiatives. Instead, it has a simpler powerful objective: it takes the official measures of poverty, which are based on the monetary approach and are still the dominant measures of poverty worldwide, and attacks one of their main weaknesses: the assumption of instantaneous consumption. Time is crucial to convert money into consumption and it is a necessary resource to satisfy any need. An important part of market production and household consumption relies on several hours of unpaid work that take place outside the market, and this has been recognized at least since the 1960s (Mincer, 1962; Becker, 1965). When these activities are carried out for a wage (such as domestic workers), this value is considered by GDP estimates and labour market indicators (employment and unemployment rates, etc.), but when they are carried out by members of the household they are ignored by official statistics as they would happen just in an invisible realm (Vickery, 1977; Blackden and Wodon, 2006; Stiglitz, Sen and Fitoussi, 2009).

Days give us 24 hours. However, time availability to do and to be, and our temporal autonomy, significantly varies between households and within them, something that has come to light with time use surveys. In addition to the adjustment of official poverty lines, LIMTIP also provides a measure of time poverty at the individual level (and thus it is able to account for intra-household inequalities with regard to time deprivations, while the other bidimensional measures of time and income poverty are not), as well as a four group classification of individuals and households with regard to their status of income and time poverty. This measure widens the diagnosis on poverty, sheds new light on the linkages between economic growth, labour markets and consumption, and broadens the scope of the design and evaluation of public policies.

While official poverty estimates only react to changes in disposable income from those at the bottom (mainly through wages or changes in taxes and transfers), LIMTIP poverty rates are also affected by changes in time deficits —influenced, among others, by the extension of the workday, commuting hours, and time requirements for care responsibilities— and the price of their market substitutes. Hence, this new framework also allows for interesting explorations and microsimulations in order to evaluate the ex ante effect of some policies or hypothetical scenarios. In particular, given the still low frequency of time use surveys (which is probably a reflection of the underestimation of their impact in poverty analysis and policy design by governments) microsimulations offer an alternative to evaluate the potential effects of some phenomena over time.

Think about the implementation of a more efficient public transport system reducing half of the daily commuting time for people living in big cities, freeing up around 10 hours a week for frequent users. The Gini coefficient of income distribution and the official poverty headcount ratios based on income will not be affected by these enormous changes in people's lives, at least not in the short run (most of the MPI and UBN alternatives neither). And this may generate perverse disincentives for policymakers: if there are no tools to measure, monitor, evaluate, and account for achievements in terms of the impact of these policies, it will be extremely difficult to encourage governments to embrace them, even more during times of more pessimistic economic forecasts and lower public budgets.[57] It is difficult to advocate for something that is not measured. The very existence of things that are not measured tends to be overlooked. By the time this paper is written, the new government of Uruguay (2015-2019) —the third period of the left coalition "Frente Amplio"— is immerse in a heated debate with regard to the reallocation of public budget,

which implies a reduction of public funds to the National Care System. Uruguay is already facing the challenges of aging societies (earlier demographic transition than other Latin American countries) with the natural pressures it brings to social security systems. Most of the children are born in lower income households, and as shown by LIMTIP estimates, adults, and especially women in these households, are particularly time-restricted due to long hours of paid and unpaid work as a result of the burden of care responsibilities (Batthyány, 2015). The implicit care system is then privatized, familiarized, and feminized (MIDES, 2014). In this sense, and as LIMTIP estimates suggest, a potential reduction of the budget allocated to this system will have clear victims in Uruguay: time deprived adults, especially women, as well as children, elderly, and disabled who suffer from the consequences of time restrictions in adults and the perpetuated omission from the state.

There are some specific examples that can help to illustrate how income-based measures can hide important problems behind some apparently successful stories, problems which are also usually not captured by other multidimensional indicators, suggesting the key role of time use surveys and the incorporation of time use patterns in our analysis of wellbeing. Think about the expansion of "guard-labour"[58] in a highly unequal economy which is growing. In Uruguay there is a clear example of this phenomenon during the last years: the so-called "222 services", through which companies and other private entities hire off-duty police officers as security guards, after their regular hours of work. The expansion of these services during the last years has increased the amount of working hours of many police officers, but with very low hourly wages, a usual combination in the Uruguayan labour market (Espino, Salvador and Azar, 2014). An officially poor police-officer may overcome the poverty status by increasing total working hours and therefore total earnings. Poverty rates may decrease, but the cost behind some of these "successful stories" may be too high for their protagonists as well as for those who require their time, usually children, old, and disabled members of the household. If there are no public services to substitute some of the hours these adults used to allocate in household production and care activities,[59] and if these additional earnings do not allow police officers to pay for some substitution (such as hiring a domestic worker or affording private institutions of care services), the consequences of these persistent routines may be devastating. LIMTIP can identify these cases, "the hidden poor": those who are not part of the official "files" of poverty but only because at least one member of the household is facing severe time deprivations in order to be just above the line. Although the size of the sample of time use surveys usually does not allow us to perform an analysis of poverty for particular groups within the workforce (it would be really interesting to do such with workers employed in security services and other sectors like transport, where people tend to work long hours), previous studies have documented that time deprivations tend to affect some professions or occupations more than others (Gerschuny, 2011), while the concern in Uruguay with regard to the relatively high rate of suicides among police officers may be also reflecting, at least to some extent, the huge increase in working hours, although of course more research on this would be needed.[60]

4.2 The scope of market substitution

One of the ways in which a household can alleviate its time restrictions is by outsourcing part of the time needed for household production and care activities. This is particularly relevant in countries or groups of population who tend to work long hours for a wage, having no choice to reduce their workload or to have some degree of flexibility to work from home or part-time, or to adapt shifts to household's needs. These rigidities combined with high levels of informality are common in developing countries, and that is why LIMTIP, following the original contribution of Harvey and Mukhopadhyay (2007), takes the actual hours of paid labour to evaluate people's situation and does not evaluate their situation in terms of potential combinations of time-income for different levels of working hours and given hourly wages (Zacharias, 2011). Market substitution can therefore play an important role in poverty situations induced by large time deficits, but

it is also limited by the supply side: it depends on the very existence of the market first, on the imperfections that may affect it, and on the real availability of time to increase the extensive and intensive margin of workers offering these services.

First, there is no infinite market substitution for household production and care activities: the replacement of time deficits with hired hours of domestic workers will depend on the intensive margin of those who are already working in this sector, or on the extensive margin coming from the unemployed lines, people who are not in the labour force (like students or unpaid domestic workers) or new entries from abroad (immigration of working-age adults). As LIMTIP estimates show for the region, more than half of income poor households have time deficits, so it is not true that there is enough available time in the "poverty lines" to use in the market whenever it needs it, or at least not without severe consequences for the new "providers". Moreover, a considerable part of adult women face important time deficits even when working less than 20-30 hours in paid work. Hence, in some cases it may be difficult to enlarge not only the extensive but also the intensive margin (hours), especially when official statistics of "underemployment" are quite high —at least ceteris paribus, without public policies trying to alleviate the potentially heavy time restrictions generated by these changes in labour markets and the demand of longer hours from the private sector. Hence, encouraging substitution as a way to generate a higher supply of working hours, more production, higher earning, taxes, etc. (which sounds like a virtuous circle) relies on the assumption that someone, somehow, will be able to carry out this job.

In some developed countries, where it is clear that there is not much more space to enlarge the workforce files, migration has played an important role. Immigration, especially if it is low-skilled and explained by economic reasons, can increase the supply of low skill workers, decreasing its relative price or enlarging the informal files, which may be traduced in a cheaper way of substitution for some (richer) households. A study for Italy, a developed country but with still quite high inequality levels and a weaker welfare system than its counterparts in the north, shows how migration has allowed Italian higher skilled women to work longer hours at the market, impacting on the intensive but not the extensive margin of female labour force participation (Barone and Mocetti, 2011). In this sense, "immigration arises as a substitute to publicly provided welfare services" and this "phenomenon raises concerns regarding the fairness and sustainability of this private and informal welfare model" (Barone and Mocetti, 2011, p. 1).

In this sense, there are also considerations of social justice that can impose some boundaries to market substitution by one-to-one replacements as the basis of economic expansion, increasing earnings and labour force participation. An increase in minimum wages leading to a reduction of wage inequality between workers could make substitution harder. However, this also improves income levels at the bottom, and therefore the overall result in terms of LIMTIP poverty rates cannot be determined a priori, although it is clear that there is a limit on substitution —one to one, by hiring domestic workers— when societies become more equal. It is much more difficult to hire people in Europe with strong welfare states than in the unregulated and unequal labour markets of Latin America, and this is something to take into account when analysing the scope of poverty alleviation and increasing labour force participation via substitution (ILO, 2013). Perhaps we should be thinking about a situation where it is not just unaffordable, but also unnecessary; where adults may be able to work less than 40 hours a week, with enough flexibility in case of being responsible for other members in the household; where commuting times were low due to efficient public transport systems, maternal and parental licenses were generous, and free or subsidized public care centres were available in every neighbourhood, and so on. Moreover, Latin American labour markets are characterized by a large size of informal sectors and unprotected labour (which can even be around 70%, like in the case of Colombia). These two problems (inequality and informality) make substitution one-to-one particularly easy, much easier than in the developed countries where the workday and the minimum wages are regulated and enforced for a much larger proportion of jobs.

Income transfers may be a way to allow some households with particularly high time requirements (presence of dependent members) and low wages to find some paid help in the market, in order to make substitution one-to-one possible and to give these households the same opportunities richer households have, in terms of their scope to substitute committed time on unpaid activities. However, missing or imperfect markets can also compromise the effectiveness of an anti-poverty strategy that relies solely on income transfers. As suggested by Zacharias (2011), these problems may be particularly important for some groups and situations, like the rural developing world or situations characterized by social exclusion. "Direct public provisioning or publicly-financed community provisioning of the wants currently met via self-provisioning would be a far more effective anti-poverty strategy in these contexts" (Zacharias, 2011, p. 16).

4.3 Attacking the core of the disease: reducing time deficits

Given these limits for market substitution based on working hours one-to-one (goods can also substitute time, like a washing machine, but even in the most technological house with the latest technology in terms of robots there are some activities that require some hours of human labour), the other way to alleviate people's pain in terms of time restrictions is by designing policies aimed to directly reduce time deficits. If labour rights are extended (and enforced), and informal activities are reduced, some people who usually suffer from time restrictions due to long hours of paid work —at least those who do it with no choice— may be better off. It would be really interesting for the case of Latin America, in particular, to explore the effect of a scenario of full-formalization, by combining a maximum for paid hours (for example, 40 hours a week) and the replacement of informal wages by minimum (legal) hourly wages. The situation would probably improve many people's lives. In case it does not, this may also give us important information such as that minimum wages are too low and that informal workers are not only in the bottom part of the distribution.[61] But there are many other ways to alleviate people's pain with regard to time deprivations: improving public transport system (more efficient buses, a metro, cycle-paths, etc.); decentralizing public services and urban centres and nodes to reduce commuting time; expanding public care and health centres for elderly, disabled, and young children, as well as full-time schools for children in compulsory age (taking into account territorial decentralization and the spatial segmentation in order to also minimize commuting time for unpaid activities); reducing time allocated to administration procedures (information technologies), among many others.

Given the sustained increase in urban population it is crucial to consider the vector space-time and the real set of opportunities and potential access to the services and goods offered by the private and public sector, and demanded by households to satisfy basic needs. In this sense, interesting insights come from the study of Hernández and Rossel (UNDP, 2013b), coordinated by the UNDP Uruguay. With a qualitative approach, this study explores how people and households in a relatively big city like Montevideo organize their time and trajectories around the city to face different needs (like getting the ID for children or visiting the doctor during pregnancy), traditional paperwork, and time requirements for parents or adults in charge of children. The spatial segmentation is key to understanding some important sources of inequality; again, in this dimension, low income households and adults with children are those who need to face larger routes (UNDP, 2013b). Moreover, it is not just about transport and localization. Hernández and Rossel also suggest that the time structure and organization of health services, for example, may particularly discourage the participation of households that may need it the most, again: low income households with children (UNDP, 2013b). This could be applied to any other service and the evaluation of its potential effect on any dimension of human wellbeing: the investment in infrastructure and services may be there, but if it does not contemplate time-space restrictions of its potential users, it may discourage the real demand from groups, which are usually those who come from poorer and time-restricted households.

4.4 The limits of labour force participation and the reproduction of gender inequalities

It is common to hear economists and politicians discussing about the future limits and engines for economic growth. In aging societies, where new-born rates decrease and people tend to live longer, one of the concerns comes from the potential workforce shortages. Of course, with the Great Recession these fears have temporarily disappeared in some countries, especially in those with unemployment rates which are still above 20%, such as most of the Mediterranean economies. In Latin America, although the "demographic bonus" has not vanished yet (OECD, IDB and World Bank, 2014), the recent period of economic growth and the importance of labour-intensive sectors have also brought this concern to the policy debates and agendas. Some common responses are "more and better education" and "larger and more efficient infrastructure", in order to increase productivity from a higher skilled supply of labour and better digital network connections, logistics, roads, ports, etc. Another strategy to boost production by easing supply constraints is to encourage more groups of the population to participate in the labour force. This may sound politically correct (and even attractive) when it is about women (because it seems to be in line with some social demands, from a gender-inequality perspective), a bit more controversial when it brings the topic of immigration, and rude or quite impolite —even more for those who have the equality of opportunities as main flag— when it comes from high-school drop-outs, early leavers from the education system usually from low socio-economic background.

It seems quite clear that we need a set of indicators to understand the dynamics and consequences of some changes in labour market indicators and policies. LIMTIP estimates suggest, in particular, that there is a supply-side (time) constraint for increasing labour force participation. This has non-trivial implications in terms of policies and may help to explain why unemployment rates for women are higher than for men even though women have higher educational levels. In this sense, a policy maker worried about gender inequalities may propose to subsidize firms for every female member they have in their staff, to encourage demand. This policy may not generate any effect or a much lower effect than the expected if the problem comes basically from the supply side, from the time restrictions women face by being in charge of production that is invisible to official statistics. Policies promoting mechanisms for family-work conciliation or any policy oriented to alleviate time deficits may be much more efficient in these cases. Budgets are particularly limited in the region (tax collection is much lower than in developed countries due to the high levels of informality) and there are long queues of people waiting for the visible hand of the state to alleviate at least some source of pains that markets do not, so Latin American governments should not afford these kind of wrong-conceived policies and waste of resources.

Moreover, when old tensions are solved by outsourcing domestic work, especially when it is provided by particularly vulnerable women (hired as domestic workers), an important source of gender inequalities may remain behind these successful stories in terms of official indicators in labour markets (Esquivel, 2011). These myopic approaches which do not take into account the sphere of unpaid work and time restrictions may even perpetuate some problems. This is the case of some conditional cash transfers (CCT) in the region, which tended to reinforce the protagonist role of women in unpaid work and in particular with regard to care responsibilities: "The evidence to date for the evaluation of CCT programs is that they have reduced income poverty and promoted investment in human capital securing improvements in education, health and nutrition. The evaluations, however, focus only on income poverty and human capital indicators of wellbeing and not on time poverty. Since both time and income are required to ensure household wellbeing it would behove evaluators to also include a time dimension in their analysis. This may be particularly important in the implementation of CCT programs that have the potential to increase time burdens for some members of the household. Adding the dimension of time to the evaluation can help with the redesign of programs to ensure

income poverty reduction without increasing time poverty. Moreover, focusing on both time and income poverty may shed light on complementary interventions to reduce time poverty that can better able women to work outside the household" (Gammage, 2011, p. 14).

4.5 Are time use studies also relevant when unemployment rates are high?

Someone could suggest that time deprivations may not be a topic of concern during economic downturns, when many people are desperately looking for a job and where there might be a lot of (involuntarily) "free time". Of course some time-restrictions may disappear during crisis with high unemployment rates, alleviating time deficits for those who lose the job; and this can even have a positive effect on some other outcomes which require time, like schooling and health, especially in high-income economies (Ruhm, 2000; Ferreira and Schady, 2009). However, the sudden decrease in a time deficit or an increase in the time surplus of one member of the household does not necessarily mean that the other adults will be benefited from it. In fact, LIMTIP estimations for Latin America show that there are many adults living together, "under the same roof", facing completely different situations with regard to time deprivations. And therefore, it would be naïve to think that these cultural arrangements could change too much during these episodes. It can be actually the opposite when job losses create an added-worker effect on those members who were not participating in the labour market but were responsible for the unpaid work, and who after entering into the labour market do not face significantly lower responsibilities at home. In this sense, crises can even lead to an increase in time poverty and intra-household inequalities with regard to the distribution of time, as suggested by Memiş and Bahçe (2011). Taking advantage of the scope of LIMTIP methodology, these authors simulated the potential effect of a crisis in Turkey in terms of income and time poverty, accounting in this way for some of the "hidden" impacts of the crisis, which are also at the shadows of official statistics.

Consequences can be even worse if these sudden changes in time use arrangements due to an aggregate shock lead to an increase in young people's contribution to unpaid work, to compensate the work done by the added-worker. Skoufias and Parker (2006), for example, show how the added-worker effect of women during the peso crisis in Mexico tended to affect more young girls than boys in some particular households, where the increasing demand for unpaid work reduced their time to study and increased their unpaid work responsibilities in order to compensate the work left behind by the adult woman who was now at the market trying to alleviate the loss in household income. The investment in boys' education remained almost untouched. Hence, a crisis can reinforce inequalities between women and men, even at the earliest stages in life. Moreover, this also shows how cautious we should be when interpreting the situation of the famous NEET group (young people not in employment, education, or training). This group, which is usually enlarged in periods of high youth unemployment, is commonly associated with unmotivated and/or lazy youngsters, and/or criminals. The analysis of time use patterns within households show that many or at least some of these individuals may be actually not in employment nor in education or training but undertaking unpaid work, another group in the shadows of official statistics based on markets and income.

4.6 Jobs, themselves, are not the panacea for poverty reduction: LIMTIP simulations

Some simulation exercises carried out by the LIMTIP team show how it is necessary to go beyond the traditional indicators of income and labour market participation to understand what it is really going on with real opportunities of consumption and satisfaction of needs within households. In fact, one of the main goals of the LIMTIP original project was to provide "a useful methodology and a tool, the (im)-mobility Transition Matrix, for simulating the potential of potential poverty reduction initiatives on households' ability to transition out of poverty" (Antonopoulos, 2011, p. 5). The original project for Argentina, Chile, and

Mexico published in Zacharias, Antonopoulos and Masterson (2012) conducted a micro-simulation exercise to explore the following question: how strong would be the reduction of poverty under a hypothetic scenario of full time work, if all employable individuals were, effectively, working 40 hours a week extra-domestically. The idea was to see whether job creation could be a panacea for poverty reduction, as it is usually argued. Simulated scenarios carried out by the Levy team assigned each non-employed but employable adult a job that best fitted (in a statistical sense) their characteristics (such as age and educational attainment). Under the prevailing patterns of pay and hours of employment, the general findings suggest that a substantial number of individuals would escape income poverty as a result of non-employed persons receiving employment, but at the same time many of them would not —Zacharias, Antonopoulos and Masterson (2012) for Argentina, Chile, and Mexico; Zacharias, Masterson and Kim (2014) for Korea. These results found for all countries clearly show that employment is not the panacea for poverty reduction. Even within this scenario, people cannot overcome poverty, and there are even some others who arrive to a worse situation in comparison with their actual one (Esquivel, 2014).

5

Final remarks and further roads

Final remarks and further roads

Time and income are indispensable resources for the satisfaction of needs in modern market based societies, and although they do not guarantee any final outcome their indirect power is enormous. But the money-time vector is not only crucial for basic needs but also for everything we want to do or to be. If they were perfect substitutes, we could reduce the analysis to one of them; but there are many restrictions to turn one into the other. On the one hand, many people sell their time (workforce) for money (wages, earnings) but there are physical —every day has just 24 hours for everybody, everywhere— and health limits for it —working uninterruptedly can kill any human in a few days— as well as market and legal boundaries —labour regulations, labour demand, etc. On the other hand, money can buy time, but not even Bill Gates can get more than 24 hours a day.[62] Of course money can help households to buy some goods (like a washing machine) and pay for services (a baby sitter) which can free up many hours a week to be used in other activities. However, there is no way to pay someone to sleep, to eat and to go to the toilet for us, nor to satisfy other non-material human needs or sources of happiness that require time, like affection, thinking, learning, teaching, playing music and sports, reading, and watching movies, among a long list.

Latin America has experienced a decade of strong economic growth leaded by a great export performance responding to an increase in the demand of commodities, and this has been translated into an increase in labour demand (more jobs), which combined with a decrease in wage inequality and the expansion of more focalized cash transfers explains the important reduction of monetary poverty and the timid decline in income inequality (Gasparini and Lustig, 2011; Lustig, López-Calva and Ortiz-Juárez, 2013). Monetary poverty is particularly sensitive to the increase in jobs and wages at the bottom, which, combined with more generous transfers, has allowed many households in the region to get to the poverty line or above it. However, the tax-benefit system is still too weak[63] to reduce the persistently high levels of income inequality in this region, even without taking into account that we know little about the real distribution of income and its evolution, since income from capital is not well captured in national household surveys.

Moreover, researchers, governments, and citizens in general seem increasingly aware that these successful stories in terms of income-based indicators are hiding important (and perhaps increasing) deprivations in other key spaces of everyday people's quality of life. In this sense, LIMTIP estimates (a bidimensional measure of time and income poverty) show how some strong inequalities remain between and within the group of poor and non-poor (in official statistics), between women and men, between children and adults, between adults facing care responsibilities (usually with regard to children, elderly, or disabled) and those who do not, between informal workers and formal workers, etc. Now that economic forecasts for the upcoming years seem less optimistic and public budgets are tighter, the definition of priorities in terms of public policies becomes a field of battle. In this sense, there are several initiatives, from research institutes, international organizations, and governments to go beyond income-based measures of economic performance, wellbeing, and inequalities in order to expand the scope of the analysis to enlarge the set of policies. Although any consensus on which may be the best strategy or the "best indicator" still seems quite distant, some governments have recently included new multidimensional indicators of poverty in their official statistics (Mexico and Colombia, for example), providing clearer signs of commitment in this transition from a single to a multidimensional framework of poverty analysis.

In this transition some conceptual and methodological discussions may sound quite sophisticated and abstract for those who do not work in this field. However, the importance of time as a resource, as well as its intrinsic value in terms of autonomy and discretionary power to choose what to do or to be, is something that anyone can understand, since it is constantly shaping our routines, and consequences of time deprivation are easy to imagine if not experienced or witnessed (Damián, 2003; Gershuny, 2011). The LIMTIP, as well as the other measures that have tried to account for time restrictions that have been reviewed in this paper, sheds light not only on the incidence and magnitude of time deprivations but also on the non-linear connections between economic growth, household consumption, paid and unpaid work, and the role of labour policies, social security, and public services on wellbeing. One of the main contributions of the LIMTIP is that it adjusts income measures of poverty —which are still the most widespread measures of poverty around the world— in their main weakness: the assumption that money is converted into consumption instantaneously. By taking into account the different time restrictions that adults face in different households, with regard to their size and composition as well as their location, it is possible to find important sources of between-household inequalities, even for those with equal per capita level of income. Moreover, since time deprivations are estimated and analyzed at the individual level, another key contribution of LIMTIP estimates is that it is able to account for another space of inequalities: the still unequal distribution of unpaid work within households.

This new framework, that follows the Vickery line of time-income poverty, is not just an analytical or empirical exercise; the main contribution of the LIMTIP measure and the high value of time use surveys come from their meaningful policy implications. It is quite difficult to improve people's living conditions if significant problems faced by people and households are not considered because they occur in an "invisible realm" (Blackden and Wodon, 2006), while governments and politicians also need measures to account for the impact of their programs and policies, and also to justify public budget allocation. In fact, it has become increasingly popular to set objectives with numeric goals to guide policies. At the international level, the Millennium Development Goals or the Europe 2020 for a "smart, inclusive and sustainable growth" are examples of the previous. At the national level, governments also tend to establish goals in macroeconomic variables, such as inflation and fiscal deficit, as well as on per capita growth, unemployment rates, and poverty headcount ratios. While this could help in guiding policies and generating incentives for governments to prioritize these issues and to be more transparent on their objectives, tools, and results, it can also generate some perverse incentives, since governments may be strongly tempted to follow policies which are known to have a direct impact on these indicators, and to disregard other initiatives regardless of their potential impact if they do not affect the indicators of reference. In other words, if a government sets a goal in terms of income poverty rates, then any policy involving public transport and commuting time may not be as attractive as other policies directly affecting income levels.

These omissions do not only bias our understanding of the complex arrangements that happen inside households and which largely determine the decisions of demand and consumption of goods and services (including health and education) and labour supply, but they also do not allow governments to improve the quality of life of those who are particularly affected by time deprivations. Any policy which could reduce committed time for care activities, commuting hours, or the excessive amount of hours in paid jobs by more strict labour regulations in terms of working hours could potentially have a great impact in people's every day quality of life but it would not generate a strong impact in the official estimates of employment and unemployment nor in the income-based measures of poverty, at least not in the short run. Nor other multidimensional indicators proposed for the region will, at least not those that have not figured out how to include time use patters. Hence, it is important to keep in mind that LIMTIP and many other measures of time poverty discussed in this paper are not just about getting alternative indicators, nor about doing little corrections to official statistics. In fact, LIMTIP poverty headcount ratios

will be always higher than official poverty rates when there are time deficits, by construction. The point is that those who are "hidden poor" in the official statistics are not a random sample of households with an income level close to the poverty line. Time deprivations that are hidden behind the official statistics affect some groups in particular: low-earner parents with children, women facing long hours of paid and unpaid work, children who are growing up in time-constrained households, elderly people whose care requires time that is not available. These are the groups ignored when time is not taken into account by poverty analysts and policy makers.

Of course that many challenges arise when including time in the framework and measurement of wellbeing in general, and of poverty and inequality in particular. First, we need higher frequency of surveys and harmonization initiatives to be able to monitor evaluations over time with time use surveys. Just a few countries have shown a strong commitment in this regard.[64] Aguirre and Ferrari (2013) summarize the main achievements and challenges with respect to the development of time use surveys in the region, and more detailed technical discussions can also be found in Esquivel (2013), as well as at the library of the Centre for Time Use Research (Department of Sociology, University of Oxford), which also presents a systematization of the time use surveys carried out in the world.[65] It is important to keep in mind that for the cases of Argentina and Chile LIMTIP analysis had to be reduced to the main capital areas, which evidently limits the diagnosis and its use for national public policies, given the huge regional disparities these countries have.

In the second place, these initiatives require higher coordination in order to take advantage of some synergies, for those involved to share experiences and discuss some methodological decisions and limitations coming from the data.[66] Latin America faces some common challenges for the future in terms of public policies, and even more if the region decides to embrace some serious economic integration processes. But the literature seems disconnected, and similar studies are carried out and repeated without consideration of some previous explorations —a waste of resources that poor countries cannot or should not afford. Moreover, more coordination between universities, research institutes, and governments, at national and regional levels, could also be used to generate high quality feedback and new inputs for the redesign and implementation of the next time use surveys. This is not what is happening, as the last time use survey in Argentina shows — which clearly has deficiencies that heavily limit the analysis of time use and poverty. Uruguay is the first case with two nationally representative time use surveys. The first statistical and comparative explorations have brought many discussions and questioning with regard to the missing information, and to some mistakes that could have been avoided in terms of the design of the survey. A lot could be improved and avoided if other countries followed and learned from the Argentinian and Uruguayan success and failures, as well as from the limitations that some other time use surveys have shown to account for exact measures of time allocation.

In the third place, there are interesting further explorations to be done, based on some experiences in other developing countries and also some specific explorations that are of particular interest for the case of Latin-American countries. The expansion of coverage is also important. In particular, it would be quite interesting to explore whether the general patterns found for Argentina, Chile, Mexico, Uruguay, and Colombia hold for poorer countries in the region. In addition, it would be interesting to perform additional microsimulations for the ex ante evaluation of policies, and also to anticipate which may be the effect of some shocks on time use patterns, as the interesting study for the case of Turkey has done. Given the current low unemployment rates, simulations with regard to formalization and minimum wages would be perhaps even more interesting than the scenario of full-time work proposed by the original project (Zacharias, Antonopoulos and Masterson, 2012).[67] Moreover, estimations like those carried out for South Korea may allow governments to account for their relative achievements with regard to the provision of free or subsidized care services, something that is not possible to do with the current official statistics on poverty. In addition, further explorations on time use patterns of young people may allow governments to tackle important

sources of gender inequalities that have their origin in these early stages of life, and also to study the real opportunities these groups have with regard to their time use patterns and involvement in formal education or training.

Overall, despite the immense methodological challenges and the persisting sources of resistance that arise when trying to include time deprivations in the analysis of wellbeing, poverty, and inequality, the LIMTIP experiences in the region as well as other measures of time poverty converge at least in one simple but powerful contribution. The omission of time use patterns in the analysis of poverty and inequality, as well as in the design and the evaluation of public policies, has clear victims, because time deprivations are not randomly distributed. Households with young children, women, informal workers, workers in some particular sectors,[68] public transport users, and those who require many hours for care, such as children, elderly, and disabled, are those whose pain remains partially or totally hidden by official statistics.

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Notes

Notes

[1] The findings, interpretations, conclusions, errors and omissions outlined here are entirely the author's own responsibility and may not represent those of the United Nations Development Programme (UNDP).

[2] "Growth" is rarely used alone now when talking about economic policies; it comes accompanied by —among others— the adjective "inclusive", "smart", "sustainable" (United Nations Development Programme (UNDP), Economic Commission for Latin America and the Caribbean (ECLAC), Organisation for Economic Cooperation and Development (OECD), European Commission), what it is also behind the expression "shared prosperity" (World Bank).

[3] Economic growth was expected to decrease income inequality after a period of increasing inequalities (Kuznets inverted-U curve), and it was expected to be "good for the poor" (Dollar and Kraay, 2001). More recent empirical estimations suggest that economic growth does not necessarily lead to a more equal distribution of income (Piketty, 2014), and that those at the bottom are not always benefited from it (Foster and Székely, 2008). In addition, there are also researchers who have provided good reasons to believe that inequality may also affect growth, with the causality in the other way round (Stiglitz, 2012).

[4] This is the final draft of a Policy Research Paper in the area 5 (Policy bundle (2)), background paper for the Regional Human Development Report for Latin America and the Caribbean 2016.

[5] Institutional information about the project as well as the publications and policy briefs about these experiences are available at: http://www.levyinstitute.org/research/the-levy-institute-measure-of-time-and-income-poverty.

[6] R. E. Goodin developed the concept of "discretionary time" as a measure of real freedom, distinguishing it from the common idea of "time pressures" or what people usually mean by lack of "free time" (see, for example, Goodin et al., 2008).

[7] "Sleep disturbance (considered as either fewer than seven or greater than eight hours of sleep) is associated with increased risks of mortality or morbidity in a majority of studies that investigate this (Simpson et al., 2009). Short sleep is associated with elevated body mass index and self-related poor health. Both shorter and longer sleep is associated with hypertension and diabetes" (Gershuny, 2011, p. 25).

[8] In this sense, and from the capability approach of Amartya Sen, time deprivations should be considered in the "array of functioning relevant to individual and collective wellbeing" (Gammage, 2011).

[9] Households may be able to substitute at least part of the amount of time required to meet basic needs through substitutes such as a time-saving goods (a washing machine) or by outsourcing hours of household production and care (hiring a domestic worker or paying for care centers). However, this market of substitutes may be limited or even inexistent in some cases. Among others, it depends on the availability, efficiency, and price of house amenities (and some complementarities: for the washing machine a proper access to water is needed, as well as electricity for an electric stove which could reduce time for gathering firewood), while similar restrictions could be found for the outsource of care services. The substitution of these activities with "domestic workers" also relies on the level of income inequality and the relative price of labour. Richer households within countries with relatively high levels of wage inequality tend to rely more in this kind of services than their counterparts in developed countries, which also explains why there has been a particularly strong increase in the demand of domestic workers in Latin America in the last period of economic growth (ILO, 2013).

[10] Psychologist awarded the 2002 Nobel Memorial Prize in Economic Sciences, shared with V. L. Smith.

[11] Ex-Chairman of the Council of Economic Advisers of the United States' president Barack Obama, and renowned researcher who has recently kept a big deal of attention with the famous Great Gatsby curve (the positive correlation between income inequality and intergenerational transmission of income).

[12] BBC News, "Jose Mujica: The World's 'Poorest' President", November 15, 2012. Available at: http://www.bbc.com/news/magazine-20243493.

[13] Perhaps paradoxically although not really surprising, some studies for developed countries have identified positive effects of economic recessions on health and education, due to the increase in unemployment and so in the availability of time (Ruhm, 2000; Dellas and Sakellaris, 2003).

[14] Countries agreed on diagnosis and actions, over the base that, among others, "Women's empowerment and their full participation on the basis of equality in all spheres of society, including participation in the decision-making process and access to power, are fundamental for the achievement of equality, development

and peace" (Beijing Declaration, art. 13. Available at: http://www.un.org/womenwatch/daw/beijing/pdf/BDPfA%20E.pdf).

[15] In this regard, I think it is important to remark that although the availability of data crucially determines the scope of analysis (it is nearly impossible to persuade any government to incorporate time use in their poverty analysis and design of policies if time use surveys are released with gaps of 5 to 10 years), this availability is not exogenous to the commitment of societies and politicians: if there are enough convincing reasons and convinced people about the importance to include time into the assessment of social wellbeing and as a tool for policy design and evaluation, statistics will be produced in response, so these excuses may have place just for the short-term but cannot hold for a long time.

[16] Professor of Sociology at the University of Oxford, and Director of the Centre for Time Use Research.

[17] Damián (2012) confronts this idea of leisure as spurious unproductive time imposed by part of the western moral to the idea of alienation of K. Marx (which is directly related to time deprivations and how this affects workers in their attitudes and believes), or to the idea maintained by the ancient Greek philosophers who outlined the importance of leisure for freedom and knowledge. As José Enrique Rodó —renowned Uruguayan politician and writer— says in his famous Ariel, in reference to "thinking", "dreaming" and "admiring" (the "subtle visitors" of his "cell"): "The Ancients classified them within their noble intelligence of leisure, which they held to be the most exalted employment of a truly rational existence; identifying it with the freedom of thought untethered of any ignoble yoke" (Rodó, 1900, p. 24; translation by Carmen González Raga).

[18] Leisure is, for example, one domain of quality of life in the "Comparative Scandinavian Welfare Study" by Allardt (1993); one of the axiological categories Max-Neef (1989), and it is also part of the list of terminal values of the study of Rokeach (1973) (Alkire, 2007).

[19] Already in the 1970s, Linder (1975) was writing about the "harried leisure class", where he tries to explain why people do feel time pressures in the developed countries notwithstanding such large increases in productivity and the smaller time that is needed to produce the same output. More recent studies for the recent years of crisis in the developed world show that time spent on leisure may lead to lower satisfaction when people are unemployed (Krueger and Mueller, 2012). Knabe et al. (2010), using the Day Reconstruction Method, suggest that although unemployed feel sadder than employed when performing the same tasks, the larger availability of time to do things that people enjoy more than compensates this effect, leading to larger satisfaction (the title is quite evocative of this idea: "Dissatisfied with Life but Having a Good Day").

[20] People may have "free time", but if there are no parks or indoor/outdoor public spaces for gathering, having a walk, playing some games, or attending concerts or cultural exhibitions, these precious hours may not be as enjoyable as they could potentially be. And the same occurs if no skills in sports and arts, nor cultural activities, are promoted. The way cities are organized and the opportunities for (inclusive) mobility are also an important determinant of an inclusive and social idea of leisure.

[21] See table 1 in Boltvinik (2003, p. 455).

[22] It is important to remark that bidimensional measures are not just time and another variable, but always the couple time-income, due to the powerful indirect combination of time-money in market economies, and given the fact that the first bidimensional measures were inspired in the correction of income-based measures of poverty.

[23] All poverty measures shown in this table are objective; they do not involve opinions or self-reported measures of happiness. H refers to household (household-based measures of poverty), I refers to individual (individual-based measures of poverty), N refers to normative, and NN refers to non-normative (regarding the criteria used to define thresholds for time poverty, the first one guided by moral or ideas of fairness, and the other following observed behaviors). Finally, N-NN and H-I indicate that both criteria are considered in the definition of the line and the classification of poverty.

[24] Intermediate steps of other methodologies can also be used to identify time poverty, as with the Excess of Work Index (EW) [H - N] (Boltvinik, 2013; Damián, 2012). There was an application of this Index (EW) for the case of Uruguay carried out by Brunet (2014) —Uruguay. Also the LIMTIP, although it is in essence a bidimensional measure of poverty, uses time deficits —one dimension— to classify who is and who is not time poor (Zacharias, 2011; Zacharias, Antonopoulos and Masterson, 2012).

[25] Uruguay has already two time use surveys with national coverage (2007 and 2013), and both have been included as modules in the Annual Household Survey [Encuesta Continua de Hogares], that is the main source for official statistics on labour market, poverty, and inequality. The Ministry of Social Development (MIDES) has been recently working on LIMTIP estimations for the new survey, and a first exercise was published in Batthyány (2015). It should be noticed, however, that it was a preliminary exercise and that there are still some methodological issues to solve regarding the estimations of unpaid work and the construction of the thresholds at the household level.

[26] Merino's estimations for Mexico based on the Time Use Survey of 2009 show that women tend to work 48 hours a week in unpaid activities, while men just allocate 16 hours a week in this type of work. Time allocated to paid work then is quite limited for women, and even more for married women, indigenous women, women with low educational levels, women in low income households, and women with children; whereas men's availability of time to work and enjoy leisure does not significantly change across these different circumstances or characteristics (Merino, 2010). With this methodology, consisting on relative thresholds in the space of unpaid work, time poverty rates are substantially higher for women (63%) with respect to men (7%), for the age-group 16-64. Similarly, for the case of Uruguay with the Time Use Survey of

2007, INMUJERES (2012) estimates a time poverty rate of 53% for women and 11% for men (population aged 14-64).

[27] In fact, given the features of Latin American labour markets, where many people work at the shadows of social security systems, long hours and for starving wages, it is difficult to see employment as a source of liberation, increasing empowerment, or freedom. Moreover, there is not a linear relation between female labour force participation and development, at least not from a cross-country perspective, as suggested by Goldin (1995). Rich and developed countries have higher female participation rates than Latin American countries, but also African women tend to participate more than their Latin American counterparts. In addition, the strong increase in labour force participation of women since the 1980s and 1990s reduced some sources of gender inequalities with regard to opportunities in terms of time allocation, but since countries do not provide a social response to the work historically carried out by women, women now face the double bind of paid and unpaid work.

[28] If someone works 10 hours a day, but given its hourly wage he or she could work only 6 hours to get to the minimum standard of living implied in the poverty line, the person will report few hours of free time, but Goodin et al. (2005) will consider that 4 hours a day at work are discretionary (more than "necessary", and therefore the sacrifice of leisure could be taken as a decision).

[29] Contrary to the argument of Bardasi and Wodon (2006), we could also argue that time is limited, and this makes absolute thresholds less controversial. We all have 24 hours a day and a limited life, and so far this has been true in human history and everywhere in our planet. Hence, an absolute number of hours within a closed interval [0, 24] if a day is considered (or [0, 168] in case of a week) may be less arbitrary than a threshold in the space [0, +∞]. Even more for some components of time thresholds, like personal care. It could be easier to agree that people need at least around 6-8 hours to sleep every 24 hours (day), and around 2 hours to take a shower and have some meals, than to agree on the minimum amount of money a household needs to be able to acquire a minimum basket of goods and services in order not to be poor, or even on the minimum food people need to get the necessary calories the human body requires to avoid starving. Of course minimums in terms of care activities and leisure time can be subject to more controversy.

[30] "While I am enthusiastic about the idea of discretionary time as a new measure of freedom, I am less persuaded by the detail of how necessary time in the broad activity groupings of paid work, unpaid work and personal care is to be determined" (Bittman, 2011).

[31] The key variable for this analysis is the wage and substitution cost of the hours of time deficit. It is possible then to establish a minimum wage (it is called "critical wage") for each type of household, given the market replacement cost (she considers both, constant and increasing costs for the substitution of time deficits), that allows each household to get to the poverty line. Therefore, by comparing actual wages with these critical values, an evaluation of time-income poverty accounting for potential combinations of working hours in labour market and income can be made.

[32] "In our study, we do not focus on total leisure time (L) as the total counterpart to individual working hours, but focus on genuine leisure time. When working hour commitments by nonmarket, household work and further responsibilities are extracted from total leisure, then genuine leisure time could be seen as a final personal resort which remains after all market and nonmarket responsibilities for very personal activities and genuine social participation [...]. When even this final resort of personal freedom is limited or not given anymore, then in our study somebody will be called time poor according to the (genuine) leisure time dimension" (Merz and Rathjen, 2009, p. 7).

[33] Constant elasticity of substitution.

[34] The reasoning is simple and fair: if X (let's say 40) hours is what societies consider the maximum number of hours to work, the same limit (X) should apply for domestic workers and non-domestic workers, regardless if they do this in exchange for a wage or not.

[35] The OPHI is an economic research centre within the Oxford Department of International Development at the University of Oxford. Established in 2007, the centre is led by Sabina Alkire.

[36] See the article available at: http://www.ophi.org.uk/wp-content/uploads/Respuesta-a-Julio-Boltvinik.pdf.

[37] The CONEVAL decided to separate two spaces, economic wellbeing and social rights, given their different theoretical and conceptual nature, and therefore measures poverty in the intersection of these two dimensions, with four possible outcomes. Poor are just those who suffer from everything. The others are "vulnerable" by one of these spaces, or non-poor.

[38] Of course, in order to do this, some new assumptions and empirical challenges arise, and they will be discussed later (in particular, annex A2 shows step by step some calculations, adjustments, and the implications of some assumptions in the LIMTIP estimations carried out for five Latin American countries).

[39] Think about the typical activities of household production (going to the supermarket, paying bills, cooking meals, doing dishes, cleaning, laundering) and care responsibilities towards other members of the household, such as children, elderly and disabled.

[40] This classification depends on the number of adults and children: type 1 is a household with one adult and no children; type 2, one adult and one child; type 3, one adult and two children; type 4, one adult and three or more children; type 5, two adults and no children, and so on up to type 12 (three or more adults and three or more children).

[41] Rj is estimated taking into account the actual hours spent by household type j on unpaid work. This includes, among others: cleaning, shopping, cooking, and taking care of dependent members. In order to avoid underestimation of these values —the "circularity" problem (Burchardt, 2008)— the sample to obtain these thresholds is reduced to those households with an income level close to the poverty line, and with the presence of at least one adult which is fully committed with unpaid work (Zacharias, Antonopoulos and

Masterson, 2012). Richer households may have many hours (personal or hired) of housework to maintain their big houses, cars, and high-budget way of living (overestimation), while lower-income households with adults working long hours to get minimum wages may not be a representative sample of what on average is needed to be done in terms of unpaid work (leading to underestimation). Please find in annexes A2 and A3 more information about the estimation strategies and the final thresholds used for Latin America (for M and Rj), as well as some additional observations with regard to the limitations and scope of some assumptions, and further roads of exploration.

[42] Official income poverty lines usually depend on some characteristics of the household, such as composition and location, in which case this value could also vary between households, something that a priori does not represent any methodological challenge. However, when official thresholds are defined differently by areas because, for example, of differences in the "cost of living" (like, for example, the case of Uruguay), we could also think about LIMTIP adjusted lines taking into account different average hourly replacement costs across these same regions.

[43] It is important to remember here that time deficits will be calculated for the adult and not for the other member of the household who is below the age of 18. However, it is clear that two type 2 households can substantially differ: think about a mother with a baby (household A) and a household with two brothers, one of 20 and the other of 17 years old (household B). And this is why alternative classifications of households' types by considering also family structure may improve this measure, as it will be discussed later.

[44] M includes 79 hours of personal care (around 11 hours and 20 minutes per day to sleep, rest, eat, take a shower, etc.) plus 14 hours of minimum leisure and 7 hours for non-substitutable unpaid work.

[45] During the workshop and conference organized by the National Administrative Department of Statistics (DANE) in Colombia in November 2014, this was one of the points where interesting debates emerged. If child-care policies —such as transfers or provision of free child care centers— are focused on low-income households, we should be able to account for these services; otherwise Rj may be underestimated. Of course, this is something that is not always easy to identify, but these discussions with regard to the importance of counting with some information and its impact on the scope of the analysis of time poverty are always key inputs for the upcoming time use designs and releases (ideally, since of course institutional and coordination problems and sometimes lack of interest hampers the large potential gains of this reciprocal feedback between data generation and analysis).

[46] Ministry of Social Development of Uruguay.

[47] The project for Argentina, Chile, and Mexico was supported by UNDP- RSCLAC, in particular thanks to the support of Carmen de la Cruz, ex Gender Practice Leader of the Regional Service Centre for Latin America and the Caribbean. For the case of Chile, the International Labour Organization (ILO) also supported the initiative, carried out by María Elena Valenzuela and Sarah Gammage. In charge of the Argentinean case was Valeria Esquivel (Institute of Sciences, National University at General Sarmiento by that time, now United Nations Research Institute for Social Development (UNRISD) Research Coordinator) in coordination with the LIMTIP team; while for Mexico Monica E. Orozco Corona (National Women's Institute (INMUJERES), Government of Mexico) and Armando Sanchez Vargas (National Autonomous University of Mexico) were the local responsible team. The LIMTIP team that coordinated this first project for the region was formed by Ajit Zacharias and Rania Antonopoulos (co-directors of the project), Thomas Masterson (primarily responsible for the development of the synthetic data files and microsimulations used in the study), and Kijong Kim (who provided support in earlier stages of the write- up of their report). The study for Uruguay was promoted by the MIDES —in particular by Maira Colacce, who is currently working at the ECLAC—, the National Women's Institute (INMUJERES), and the UNDP Uruguay —coordinated by Virginia Varela—, and I was the consultant in charge of the LIMTIP estimations and diffusion. The estimations for Colombia were performed by the DANE, with Diana Novas and Jose Trujillo in charge of this initiative.

[48] While diaries ensure that activities will sum up 24 hours in a day, in the second survey method it is difficult to build the entire day since some activities are driven simultaneously and therefore the sum of the reported hours for each activity usually tends to exceed the 24 hours, and also because it is reported by heart, in which case people may make normal mistakes and also underestimate/overestimate the time they spent in certain activities. In both cases, there is an additional challenge that comes when we try to build the "weekly equivalents" for the reported daily activities, given that there is not always enough information to know if the day is a typical working day or not, and certain assumptions about the number of days-off are sometimes required. In any case, a thorough statistical work to build a single file with the information needed for LIMTIP calculations is required. The file should contain information on time use for all members (ideally which sums 24 hours a day or 168 hours a week) as well as other individual characteristics (such as sex, age, and working status) together with household information, such as size and composition, region and income, variables which are typically used to determine their official poverty status. When there is not one single dataset meeting all these requirements, or when information is provided for just one member of the household, imputation and matching techniques are needed. More information about these methodological decisions and techniques for the case of Argentina, Mexico, and Chile can be found in Masterson (2011).

[49] The estimations for Colombia show significantly lower levels of time allocated to household production and care activities (unpaid work) than in the other countries, which may explain why hidden poverty in general, and for all groups, is much lower than in the other countries. Also gender gaps are not so important (they even find that time poverty affects more men than women, given the higher participation rate in paid labour, not compensated with the relatively low levels of household production, especially in those households with children). In annex A2 the exact values used for

the 12 type of households (Rj) are shown for all countries, and it is clear that Colombia has the lowest values. Another possible reason of lower time deficits for adults is the exclusion of individuals younger than 18, whose contribution may alleviate the work made by adults at home. Moreover, when deficits are monetized, the replacement costs are also relatively low, given the problems of high levels of informality and inequality of this country.

[50] How do young people allocate their time, and in particular which are the opportunities they have to study, to play, to be involved in community activities, may give us some important information about their current and future opportunities and wellbeing; and therefore, it would be interesting to make some specific estimations of time poverty with this group, taking into account special thresholds. Moreover, as the statistics show, there are important gender inequalities (based on historical and cultural gender roles) which are already visible at these early ages. This may provide governments with useful information for policy design and efficient interventions in these early stages of life.

[51] Interestingly, although hidden poverty rates in Colombia are quite lower than in the rest of the countries, time poverty rates at the household level are close to the other cases of study. This is probably indicating that the replacement cost is much lower than in the other countries and/or that time deficits are smaller (in terms of intensity, and not in terms of population incidence or headcount ratios). The smaller values for Rj (see table A2.2 in annex A2) support this last argument, although if it is due to lower levels of unpaid work reported in general for all households or if there is any particular missing adjustment in the construction of Rj which may be leading to some bias downwards. Explanations for the relatively lower replacement cost could come from the higher levels of inequality and informality in labour earnings, although this is a hypothesis that would need further explorations.

[52] Market substitutes may be not easy to find, and the real average price (hourly wages of domestic workers) faced by households may be quite different from the average, depending on location and also on the particular needs of time substitution. Another particular reality of Latin American and, in general, developing countries that may not encourage us to talk about "false" time pressures or situations of "voluntary poverty" when analyzing this group is that poverty lines usually express very low levels of consumption in developing countries (quite lower than the consumption levels implied by relative thresholds in developed economies), and therefore for those who have income levels above but very close to this threshold it may be very difficult to give up this money to substitute their time deficits even if their remaining income is above the line. We could also think that although the replacement cost is set equally, every outsourced hour may be "more expensive" for poorer households if the utility derived from this marginal value is decreasing. Hence, it is not the same situation that the one considered by Goodin with relative poverty lines for Australia, where minimum consumption levels are quite higher than any official poverty line of the underdeveloped South.

[53] This methodology does not only provide us with headcount ratios and poverty rates but it also allows us to explore gaps, taking into account the size of time deficits and the real amounts of money that do not allow households to reach the adjusted poverty line. Moreover, as it will be briefly commented in the next section, microsimulations can be carried out in order to conduct ex ante evaluations on the impact of policies or sudden changes in labour markets.

[54] This report was the result of work done by the Commission on the Measurement of Economic Performance and Social Progress (referred to as the Stiglitz-Sen-Fitoussi Commission), which was created in 2008 by French President Nicolas Sarkozy and chaired by the economist and professor at Columbia University Joseph E. Stiglitz, winner of the Nobel Prize.

[55] Analogously, there is no substitution for time to be with friends or to love.

[56] Hamermesh (2007) also takes into account effects coming from changes in the distribution of income. His results suggest that if earnings inequality decreases, higher income households will find it more difficult to substitute time with workforce offered by lower-income household and this may reinforce this slowdown for food consumption.

[57] It is not easy for governments and national statistics institutes to publish two alternative indicators of poverty, since it can naturally create confusion with regard to the meaning and reliability of these indicators. However, governments can offer a set of complementary indicators to evaluate poverty, consistently connected, and with clear transparency on the sources and methodologies behind; and not present them as alternative measures of official poverty. Some Latin American countries, like Colombia and Mexico, already have multidimensional indicators of poverty within the official files. In any case, these explorations still ignore time, despite the enthusiasm in the region in looking for "missing dimensions", using the expression of Alkire (2007). Of course the selection of the dimensions is heavily limited by the availability of data, quality and frequency of surveys, etc. This highlights the relevance of periodically releases of time use surveys, which are usually conducted by national statistic institutes.

[58] The expression comes from Jayadev and Bowles (2006), who suggested that inequality leads to higher proportion of the workforce employed in security services in order to reinforce protection on private property.

[59] Think about the long list: buying food, cleaning, paying bills, cooking, taking and picking up children from school, taking grandparents to hospitals, looking after ill or disabled members, among others.

[60] Some years ago there was such a sad story on the news that motivated a special note and the title of an album of a local musician, called A World without Glory, in reference to Gloria, a Uruguayan police officer, mother of three children, who could not deal with these pressures anymore by the early age of 38, in 2006. Given her

long and exhausting hours of paid work, she was probably non-poor for Uruguayan official statistics, and probably even time non-poor for the unidimensional measures of time poverty that just consider unpaid work, like the study for Mexico by Merino (2010) and the application for Uruguay by INMUJERES (2012).

[61] These explorations examine just partial effects. Behind the implicit ceteris paribus there may be many reactions which would palliate the positive effects on poverty and inequality (for example, a decrease in labour demand due to the increase in minimum wages), and other which may actually reinforce the positive effects (like an increase in tax revenues and social contributions due to higher formalization levels, which may lead to the expansion of cash transfers).

[62] Although rich people tend to live longer, as reflected by life expectancy differences between and within countries.

[63] Some studies suggest, in fact, that many Latin American countries have similar levels of income inequality than in Europe at the market/gross income level, and that the huge gaps are explained just by the incidence of taxes and transfers (in disposable/net income), and that in particular public cash transfers explain three quarters of overall income redistribution in developed economies, while despite the increase in the last years they just move some small decimal points in the developing countries (OECD, 2012).

[64] In Colombia, for example, time use surveys are going to be carried out at least every three years, and this has been imposed by law (Law 1413, article 5, paragraph 2). But this is clearly an exception.

[65] See the database available at: http://timeuse-2009.nsms.ox.ac.uk/information/studies/.

[66] These first LIMTIP estimates for Latin America are based on quite different type of time use surveys (diaries, short questionnaires, long questionnaires, independent surveys/modules of household surveys), and some workshops and meetings between those professionals in charge of national estimations were extremely helpful to improve the results and to expand the scope of analysis coming from the estimations. And there is an important learning process which could also ideally be used as feedback to the design of time use surveys. Some LIMTP estimates have information on income and other personal/household variables (like the case of Uruguay), while some others need to be complemented with other sources in order to get these data, and so on. Some of them are diaries (Argentina), which allows to account for all activities during the day and to disentangle those activities that are performed simultaneously, while the others have to construct the daily and weekly components, having to deal with cases that close below and above 24 and 168 hours, respectively. Moreover, some surveys have national coverage (like the ones carried out in Mexico, Colombia, and Uruguay) while for the case of Argentina and Chile the study was carried out for just the Great Buenos Aires and the Great Santiago. Given the size of the sample and the well-known regional disparities, the studies for Mexico and Colombia estimated different thresholds for urban and rural areas. Moreover, in some of these surveys the respondent is just one and then multiple matching is necessary to complete the information of the household, whereas in others one person responds for all the members of the household (the comparison could be made to see how different are the results by just taking the declaration of one person or by imputing answers). Argentina recently released a time use survey with national coverage, as a module of the Urban Households Annual Survey [Encuesta Anual de Hogares Urbanos], with a really short questionnaire. It is a pity, since this database could provide with the first estimations of time deficits and hidden poverty for the whole country, and could be useful to explore the potential regional disparities.

[67] Of course some of these exercises may need further assumptions with regard to the dynamics of these variables and some general equilibrium considerations, since through time use surveys we just see the supply side of labour markets and the demand side of final goods and services market.

[68] There are also some professional workers that tend to work more hours than their peers, although professional workers that are at the top of the earning distribution tend to enjoy more of cultural activities and leisure. A recent study for the United States shows, for example, that there is an extraordinary under-representation of medical and educational occupations in cultural activities due to their long hours of work (Gershuny, 2011).

[69] For the case of Colombia, they used four more categories, identifying three adults and then four or more. Therefore, the thresholds shown in table A2.2 are those estimated just for three adults, and partially explain why the values are so low (in general, all levels are lower than in the other countries, and that is why also the estimates for hidden poverty are so low).

[70] Poverty line.

[71] In the case of Uruguay, for example, there are 6% of adults who face this situation, 10% of men adults and 3% of women adults. Their time deficits are huge: around 32 hours a week, with an average of 80 hours a week in paid work (which includes commuting), 20 observed hours of housework (average age of 42 years old) and a higher presence of children or members younger than 18 (own estimations over the Time Use Module [Módulo de Uso del Tiempo, MUT] 2007). They could actually substitute some of their deficit but not all. So an interesting exercise would be to do a kind of Vickery-analysis to evaluate whether the household where these adults live would get income above the poverty line if this adult reduces some of the hours devoted to labour market. This of course has the limitation suggested by Harvey and Mukhopadhyay (2007), since workers usually do not have the choice to decide how many hours to allocate in paid work (Zacharias, 2011).

[72] Moreover, this information sometimes comes from the same household or complementary sources, and the monthly estimates of monetizing deficit used a factor of 4 in the case of Argentina, Mexico, and Chile, while for Uruguay 4.3 was always used to convert weekly measures into monthly estimates.

Annex

Remember equation [1]

Identity of time allocation [1Z] $168 \equiv Li + Ui + Ci + Vi$

Li, time spent on income-generation; Ui, time spent on household production; Ci, time spent on personal care; Vi, time available as "free time".

The available time for paid work (A) can be defined in this way:

Time deficit: [2Z] $A = 168 - \bar{C} - \bar{D} - \bar{R}$ [3Z] $X = A - L$

Adjusted poverty line (Vickery style: allowing for substitution of X hours of deficit with p hourly replacement cost)

[4Z] $y_0 = \tilde{y} - \min(0, X)p$

Starting from this point, following Zacharias (2011), it is possible to resume the proposal of some studies to measure time poverty.

i) Vickery's model: hypothetical scenario of full time work

Full time work (ftw)	$L = L^f$	[5Z]
Time deficit/surplus with ftw	$X = X^f = A - L^f$	[6Z]
Income (ftw)	$y = y^f = wL^f$	[7Z]
Poor household-identification	$y^f < y^0$ (income poor) or $X^f < 0$ (time poor)	[8Z]

ii) H-M model: actual hours of paid work

Actual paid work time	$L = L^a$	[9Z]
Time deficit/surplus	$X = X^a = A - L^a$	[10Z]
Actual income	$y = y^a$	[11Z]
Poor household-identification	$y^a < y^o$ (income poor) or $X^a < 0$ (time poor)	[12Z]

iii) Goodin's model: discretionary time as a positive notion of freedom

Minimum necessary paid work time	$L = L' = \tilde{y}/w$	[13Z]
Time deficit/surplus	$X = X' = A - L'$	[14Z]
Income in poverty line	$y = \tilde{y}$	[15Z]
Poor household-identification	$X' < 0$ (time poor)	[16Z]

iv) Bardasi and Wodon: time poor with no choice (potential income)

Paid work time	$L = L'' \begin{cases} = A, & \text{if } X^a < 0 \\ = L^a, & \text{if } X^a \geq 0 \end{cases}$	[17Z]
Actual and potential income	$y = y'' = wL''$	[18Z]
Poor household-identification	$y'' < y$ (income poor) and $X^a < 0$ (time poor)	[19Z]

v) Free time and market substitutes: Burchardt's proposal

Free time	$S = X + B = A - L + B$	[20Z]
Replaced time by market substitutes	$B \begin{cases} = \min\left(R, \frac{y-\tilde{y}}{p}\right) \text{ si } y \geq \tilde{y} \\ = 0 \text{ si } y < \tilde{y} \end{cases}$	[21Z]
Disposable income	$y' = y - pB$	[22Z]
Poor household-identification	$y' < \tilde{y}$ ó $S \leq 0$	[23Z]
Capability Index	$TI = f(y', S)$	[24Z]

vi) Zacharias's model (basis of LIMTIP)

Disposable time	$Ai = 168 - \bar{C} - \alpha i\bar{D} - \gamma i\bar{R}$	[25Z]
Time deficit individual i	$Xi = Ai - Li$	[26Z]
Time deficit household j	$X\acute{} = \sum_{i=1}^{n} \min(Xi, O)$	[27Z]
Vickery's adjusted line	$y' = \tilde{y} - X\acute{}\, p$	[28Z]
Poor household-identification	$y < y'$ ó $X < 0$	[29Z]
Poor individual-identification	$y < y'$ (income poor) $X_i' > 0$ (time poor)	[30Z]

In order to understand how LIMTIP poverty rates are obtained, it is important to recall equations [3] and [5] from section 3.

Time deficit [3] $X_{ij} = A_{ij} - L_i = 168 - M - \alpha_{ij} R_j - L_i$

Adjusted poverty line (LIMTIP) [5] $y_j^0 = \bar{y} - \min(0, X_j)p$

First, we need to obtain the time deficit/surplus (Xij), for which we need to define M for all individuals (see the section entitled "Defining M"); Rj for types of households (see the section entitled "Defining R"), and then take the observed values for αij and Li for each individual, and adjust the poverty line taking into account time deficits at the household level (Xj) and p, the hourly replacement cost (see the section entitled "Adjusting the poverty lines").

Defining M

The component M of equation [3] is defined with normative and non-normative components. For personal maintenance (sleeping, eating, hygiene, and rest), the average of the observed values for all adults in the sample is considered (reported values). The other two components of M (leisure and non-substitutable unpaid work) are normatively established: 14 hours a week for the first, 7 hours a week for the second.

Note that M does not have a subscript, since it does not depend on the particular individual (i) or the household (j). However, when the size of the sample allows for it, averages for personal care can be taken from different groups (like rural and urban for the cases of Mexico and Colombia). Moreover, different values for this threshold could also be used for some groups which usually need more time for personal maintenance, like disabled members, but surveys do not always account for the first one. Burchardt (2008) had this information for the United Kingdom, and so she could add one more hour a day for this group.

TABLE A2.1

Definition of values for M (for all individuals)

	Mexico		Chile	Argentina	Uruguay	Colombia	
	Urban	Rural				Urban	Rural
Personal maintenance	86	92	93	87	93	90	94
Sleep	56	62	62	57			
Eating and drinking	8	8	10	11			
Hygiene and dressing	6	6	3	4			
Rest	1	2	4	1			
Necessary minimum leisure	14	14	14	14	14	14	14
Non-substitutable unpaid work	7	7	7	7	7	7	7
Total (M)	**93**	**99**	**100**	**94**	**100**	**97**	**101**

Source: Prepared by the author based on data from Zacharias, Antonopoulos and Masterson (2012), Maier (2013), and DANE (2014).

As can be seen in table A2.1, time for personal care (without taking into account leisure and household activities) does not vary too much: from 73 hours a week in the "city of fury" (Buenos Aires) to 80 hours in the rural Colombia, which means a threshold of between 10:24 and 11:24 a day for all individuals to sleep, eat, take a shower, dress, and have some rest. In Vickery's study for the United States in 1977 she used a value of 10:10 a day, while Burchardt for the United Kingdom used 10 (11 for the case of disabled persons). Similar thresholds are considered by Boltvinik-Damián for personal care.

Of course that time for personal care can change not only from country to country but also from year to year within the same country, with for example the different phases of the economic cycle. In moments of high levels of unemployment, like the recent years in many European countries, we may expect these values to increase with respect to moments of full employment or very little unemployment. In this sense, some studies suggest to take the average values of the employed population (Antonopoulos and Memiş, 2010).

Defining R

In order to estimate time deficits, the second big step is to construct thresholds for the minimum necessary unpaid work (household production and care activities), which is represented by Rj in equation [3]. The thresholds are defined at the household level, and they are aimed to represent the average amount of time spent on substitutable unpaid work required to subsist on an income close to the poverty line. The reference group in constructing the thresholds consists of households with at least one non-employed adult and an income around the official income poverty line. The motivation behind is to estimate the amount of household production implicit in the official poverty line. The inclusion of low income households in which all adults are employed may underestimate these requirements, while the inclusion of high income households may overestimate them, since for example larger houses may imply more time for cleaning.

TABLE A2.2

Estimated values for Rj by type of household

Type of household (j)	Composition	Chile (Santiago)	Argentina (Buenos Aires)	Uruguay	Mexico		Colombia	
					Urban	Rural	Urban	Rural
1	1 adult + no child	26	18	27	33	41	23	28
2	1 adult + 1 child	47	45	51	48	48	38	48
3	1 adult + 2 children	67	64	65	58	64	58	59
4	1 adult + 3 or more children	74	76	68	82	88	60	91
5	2 adults + no child	36	40	47	54	60	39	46
6	2 adults + 1 child	56	63	70	79	86	56	59
7	2 adults + 2 children	76	83	82	90	93	61	67
8	2 adults + 3 or more children	84	94	85	101	109	72	75
9	3 or more adults + no child	67	95	65	85	87	48	56
10	3 or more adults + 1 child	87	118	90	103	118	66	71
11	3 or more adults + 2 children	98	137	115	116	134	73	83
12	3 or more adults + 3 or more children[69]	105	148	118	157	166	80	98

Source: Prepared by the author based on data from Zacharias, Antonopoulos and Masterson (2012), Maier (2013), and DANE (2014).

In order to have some coherent values for these thresholds some adjustments are needed, and the criteria has not been homogeneous across these experiences, because the circumstances and data were also different. While all these decisions have not been documented yet, some adjustments made for the case of Uruguay may result illustrative. For example, in the case of Uruguay, when the thresholds are compared with the observed values (mean of unpaid work and care activities by type of households) the discrepancies are not enormous but: i) it increases the values for all cases (the only two cases with almost no correction were households types 5 and 9, where there are many adults but no child), and ii) households with children are those that suffer the higher correction (especially the case of one adult with one children, that passes from 39 to 51 hours —almost one third more). Moreover, since there is no way to know how many hours of domestic help (free and paid)

households get, but it is possible to know if they have (or not) received some of these supports, households that get domestic help were removed for the sample to estimate Rj to avoid underestimation of the real requirements. Moreover, when reducing the sample of households to those that have at least one adult who is not employed, the sample decreases; and this is reinforced when taking into account only those households with an income similar to the poverty line. For example, just six households were still classified as type 4 (one adult and three or more children) when imposing the condition of a non-employed adult and a poverty band of 80% (household income in between 0.6 PL[70] and 1.4 PL).

Adjusting the poverty lines

Once time deficits are estimated, the procedure to adjust poverty lines is quite simple. Perhaps the most controversial decision is how to determine the hourly replacement cost. LIMTIP decided to go for the most transparent and simplest way, but it does not mean that it cannot be improved. The hourly replacement cost is the average hourly wage of domestic workers in that period of reference. It is a value that can be obtained in different ways, and it usually is estimated from household surveys, through the actual wages reported by domestic workers who participate in these surveys. For some countries, wage information coming from national accounts was used to estimate this hourly replacement cost. Further explorations with regard to the different type of services and prices, as well as on the regional heterogeneities that may exist, would be quite interesting.

About M: an absolute threshold for all of us

The definition of M does not generate much empathy. One of the most recurrent critics it is normal to hear when LIMTIP estimates are commented at a meeting, workshop, or conference, especially coming from specialists in gender inequality, is that the minimum time for non-substitutable household activities (7 hours a week) is too low. They also suggest that it is unrealistic to assume the same value for all adults, when adults in certain households, and in some age-ranges (women in particular), face higher responsibilities in the out-of-market sphere of responsibilities, those substitutable and non-substitutable. However, the idea behind this small amount of hours included in M is much simpler; it tries to account for the minimum time any member of any household needs to spend with each other, to be part of it. This comes from the original work of Vickery who included 14 hours for this component; in her words, this time is the minimum necessary to "managing the household and interacting with its members if the household is to function as a unit" (Vickery, 1977, p. 46). Also Burchardt (2008) considers a minimal amount of parental time for children that cannot be substituted.

Hence, what can be arguable is that there are other activities related to household production and care which may not be substitutable and that the inclusion of activities of "managing the household" in the estimation of Rj might be double-counting (if these activities are expected to be captured by M). It could be removed from the estimations of the thresholds for household production and care (Rj) and from the estimation of shares, but although this is recognized by Zacharias, Antonopoulos and Masterson (2012) they argue that in practice this is a relatively small amount of time and, therefore, any of these small adjustments would have appreciable effect on the substantive findings.

At the same time, Boltvinik and Damián would probably argue that 14 hours of leisure time is also too low. This means that a worker that takes the entire Sunday for leisure and just a couple of hours of Saturday —with no minute of leisure from Monday to Friday— will be below the threshold, being no time poor. In fact, this amount of hours for leisure is far below the mean and median observed for the Latin-American studies of the first project and therefore we could say that time deficits are not overestimated (Zacharias, Antonopoulos and Masterson, 2012, p. 29). Moreover, many hours of "leisure" are overlapped with household responsibilities. Taking care of children during weekend can imply hours of "care responsibilities" but it could be at the same time something enjoyable for parents.

Of course any absolute value to fit all of us, in our infinite diverse humanity, will always be controversial. However, the definition of absolute thresholds in a range between 0 and 24 (the hours of a day) should not be seen as problematic as when trying to establish minimums in variables within much larger ranges.

The definition of R: some problems and adjustments

The estimation of R brings many points of discussion. One is that the non-substitutable part which is included in M is never taken from the estimations based on unpaid work. Another comes from the *definition of the 12 groups of households* based on the number of adults (18 years old or more) and children (17 years old or less). A household with a single parent and a little kid is not comparable with a household with two brothers who are 21 and 17 years old. It is not the same a household with three adults (a couple and the mother of one of them) than a household with one parent and two children who are between 19 and 21 years old. However, they are part of the same groups in LIMTIP classification. An alternative could be to classify households by composition, let's say: married couple with one, two or more children; single parent with one or two children; composite household; etc.

Moreover, the *reference group* is not unproblematic. First, the poverty band (the percentage below and above the poverty line that will determine which households are in the reference group) is arbitrary. The lowest the band, the higher the precision to get thresholds of time related to the reference group of income poverty; but at the same time, the lowest the band, the fewer the observations, decreasing its representativeness. In the second place, the reference group considers households with at least one adult not employed at the market. This makes sense for many households, but it dramatically decreases the sample for those groups with just on adult, since just in very few and deprived cases an adult can be in charge of one, two, or more children without working for a wage (even more in countries where cash transfers are relatively low, like in Latin America). In the third place, we should be able to analyze if there are any current public policies focalized in this segment that may lead to underestimations of these thresholds, and we should take this into account when establishing thresholds.

As general criterion, "The required hours would show a positive gradient with respect to adults and a positive gradient with respect to children. That is, the required hours of household production for the household as a whole should increase when there are more adults in the household, and when there are more children in the household" (Zacharias, Antonopoulos

and Masterson, 2012, p. 32). This has required some adjustments for the cases of Argentina, Chile, Uruguay, and Colombia (Zacharias, Antonopoulos and Masterson, 2012; Maier, 2013; DANE, 2014).

Who will be classified as time poor or time non-poor?

The definition of the *population of interest* is not neutral. It substantially affects the headcount ratios and the poverty gaps. For example, the unidimensional measures of time poverty based on the population which is 65 years old or younger will probably decrease if they are extended to older groups. Moreover, gender gaps will also probably decrease, given the well-known fact that women live longer and have a significantly larger share in this population group. For the case of LIMTIP estimates, time deficits are estimated for those who are 18 years old or more. This means that all individuals in this group are equally treated: youngsters of 20 years old, adults of 35, and elderly of 95. Naturally, given the lower employment rates of the extreme cases, time deficits are less important. However, is it reasonable to establish the same threshold for minimum leisure and personal care for all these age groups? Moreover, time deficits are not considered for teenagers, although these members, in some households, are important contributors to household production and care activities. In particular, in poorer economies, and poorer households within middle or high income countries, children and teenagers tend to have higher participation rates in unpaid and paid work than their counterparts. Hence, we may have a partial picture of households' time arrangements if these hours are not taken into account for the definition of time poverty ratios. In fact, we can even lose important information about sources of gender inequality, since there are some studies that suggest that gender inequalities are also present in these early ages, which then have long-term effects over the life cycle. At the same time, including a population in age of compulsory education into the analysis of time poverty brings new challenges (which may also be extended to those who are just a bit more than 18 years old). Think about teenagers working 40 hours a week: a part-time job of 20 hours for which they receive a wage and 20 hours of unpaid work that consists of taking care of younger siblings. Probably, they will not have time deficits; however, they will not have time to study neither. If we would consider special normative thresholds for these groups, we would need to deal with what we consider "ought to be" the distribution of time for young people.

The assumption of no compensation

Although time poverty is measured at an individual level, LIMTIP needs to go to the household level in order to adjust income poverty lines. In this transition, the crucial assumption is the one of *no compensation*: a household composed by an adult with a surplus of 20 hours and another adult with a deficit of 15 hours has a deficit of 15 hours, while someone could argue that, in fact, if the first one could help the other the household would have a surplus of 5 hours. Of course it is not an abstract assumption; it tries to keep reality like it is: if one adult has time deficits and the other one does not, it is because there is no solidarity going on there, and therefore the 5-hours surplus could be possible, but it is not capturing reality. However, it would be interesting, why not, to estimate how much of time deficits, hidden poverty, and LIMTIP estimates in general could change without making this assumption, since it is telling us indirectly which of these deprivations would disappear by making changes in cultural patterns that lead to this unbalanced situations at the intra-household level, and how much would remain, when there is no other option than public policies in the shape of external interventions.

The replacement cost and the monetization of household's time deficit

In addition, *the monetization of household total deficit* (Xj) also involves some critics. First, it assumes that all these missing hours are reflected in R (people devote less hours to housework, which could be substitutable with money). But it can be possible that Xij is greater than Rij, and therefore we are actually monetizing hours which by definition cannot be "bought" with money. For these cases, which of course are few and extreme, the only chance to stop being time poor requires not only substituting part of the deficit —offering this household public care services, or more money to buy market substitutes—, but also reducing the extension of hours of paid work, since any cash transfer or public policy cannot replace the hours of their sleeping.[71] Second, it needs a price per hour, which of course is just *an approximate of the real costs households face to substitute*

time with money: the distance between the LIMTIP and the official poverty line for each case depends on the household level of time deficit (in weekly hours) and on the replacement cost. If the substitution cost increases, LIMTIP poverty (headcounts and gaps) will probably increase for those who are not domestic workers, although interestingly this may mean an increase in wages of workers whose levels of earnings are close to the poverty line. The original project adopted the "standard assumption of setting the unit replacement cost equal to the average hourly wage of domestic workers" (Zacharias, Antonopoulos and Masterson, 2012, p. 35). Of course more precise values of this substitution of hours at the market would lead to more accurate measures of hidden poverty. It would be interesting, if the sample allows for it, to contemplate different type of prices regarding the type of work (dividing care and household production, for example), regions, and other sources of market segmentation if we suspect that these prices can significantly vary from one group of households to the other. Moreover, reported wages are usually net of taxes and contributions, and if these values are taken as replacement cost, this may be underestimating the real magnitude of the cost faced by households demanding these services. It is true, of course, that with the high levels of informality in labor markets in the region, and being this a sector with particularly high levels of informality, the differences between gross and net wages are not substantial, but this may change (and indeed in cases like the Uruguayan one it has been changing) and we should be aware of this and account for these sources of potential underestimation.[72]

In September 2015, the 193 Member States of the United Nations took a historic step with the approval of the 2030 Agenda for Sustainable Development. At the heart of this agenda lies a simple but radical imperative: the elimination of poverty in all its forms, while caring for and protecting the planet.

This universal and holistic agenda will have a specific application in each country, in line with the priorities established in national plans and policies. As a multidimensional agenda par excellence, the Regional Human Development Report for Latin America and the Caribbean 2016 can contribute to helping adapt this agenda to the specific circumstances of individual countries.

The Report describes three steps to avoid the fragmentation of the 2030 Agenda, which contains 17 goals and 169 targets. The first involves using a multidimensional approach to develop the connections between indicators of well-being and the drivers of economic, social and environmental transformation. Secondly, constellations of Sustainable Development Goals (SDGs) must be built around the strategic objectives established by the authorities in each country to avoid piling global agendas on top of national ones. Thirdly, based on the examples in the Report, it is possible to conduct a microsimulation of the impacts of closing intersectoral and inter-territorial gaps for a set of targets, breaking the impact of these measures down by programme or population group.

United Nations Development Programme
One United Nations Plaza
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