

PRE-INDEPENDENCE SPANISH AMERICANS: POOR, SHORT AND UNEQUAL... OR THE OPPOSITE?*

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In memoriam, GONZALO ANES^b

ABSTRACT

This paper attempts to establish a debate between alternative views of living standards in Spanish America during the viceregal period. Since 2009, a growing literature has shared a «common language» based on a similar, though not identical, methodology. As never before, this «new generation» of studies is built upon long series of quantitative data and international comparisons of nominal wages and prices which, in some cases, cover the

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whole Early Modern Era. Part of this literature also complements the examination of economic welfare using height as an indicator of biological welfare. Inequality is also quantitatively approached in one of the works discussed. In spite of significant similarities, some methodological differences lead to contrasting results. For the sake of simplicity, the relevant literature is divided into two views: «pessimism» and «optimism». It is my contention that the latter is more consistent with the available evidence.

Keywords: living standards, real wages, Latin America, Early Modern Era

JEL Code: N3, N36

RESUMEN

Este artículo intenta establecer un debate entre visiones distintas acerca de los niveles de vida en la América española del período virreinal. Desde 2009, un número creciente de trabajos comparte un “lenguaje común”, basado en una metodología similar, aunque no idéntica. Como nunca antes, esta “nueva generación” de estudios se apoya en series largas de datos cuantitativos y comparaciones internacionales de precios y salarios nominales que, en algunos casos, se extienden a lo largo de toda la Edad Moderna. Algunos de estos trabajos complementan el examen del bienestar económico mediante el uso de estaturas como indicador del bienestar biológico. La desigualdad es estudiada cuantitativamente en uno de los trabajos aquí considerados. A pesar de semejanzas importantes, ciertas diferencias metodológicas se traducen en resultados dispares. Simplificando, la literatura más relevante puede ser dividida en dos visiones: “pesimismo” y “optimismo”. A mi juicio, la segunda es más consistente con los datos disponibles.

Palabras clave: niveles de vida, salarios reales, América Latina, Edad Moderna

1. INTRODUCTION

Living standards in pre-independent Spanish America have recently attracted more scholarly interest than ever before. Since 2009, a growing literature dealing with this topic has been made available in different formats — contributions to seminars and conferences, working papers, journal articles and book chapters — to the international academic community of economic historians (Dobado-González and García-Montero 2009, 2010, 2014; Dobado-González 2010; Dobado and Marrero 2011; Allen *et al.* 2011, 2012;

Arroyo-Abad *et al.* 2011, 2012; Arroyo-Abad 2014; Challú and Gómez-Galvarriato 2014). These studies share some methodological features: a long-run perspective, an approach which is basically quantitative and international comparativeness¹. Sources, which are rather scarce and so far mainly secondary, do not differ substantially. However, at the same time, differences between the methods may not be insignificant. Therefore, not surprisingly, the results obtained and their implications for the assessment of Spanish American economic history over the last five centuries are also dissimilar in some non-trivial respects. In some cases, new alternative explanatory hypotheses for the results are proposed; in others, the authors' aim is essentially empirical, although some speculative inferences are suggested.

Several reasons explain why this «new generation» of work on the material conditions of life prevailing in pre-independent Spanish America has come into existence and, hopefully, will be continued by further and much-needed research. First, the intellectually ambitious and fruitful research conducted by some scholars and research groups has returned real wages to a central place in economic history. In particular, methodological contributions made by Robert C. Allen — consumption baskets and welfare ratios — and Jan Luiten van Zanden — a «second generation» of consumer price indices — have played an important role in the revival of a subject that has had, if discontinuously, a noteworthy presence in economic history since the 19th century. As for Spanish America, recent research has been facilitated by the existence of a previous specialised bibliography² and free access to global data bases on prices and wages³. In the second place, the challenge posed to conventional wisdom by the debate on the timing and causes of the Great Divergence, initiated by Pomeranz (2000), has also favoured the widening of the geographical scope in the study of pre-industrial living standards to include some non-European countries (China, India and Japan)

¹ These basic similarities were not present in the literature published before 2009. The use of a «common language» is then the criterion chosen for taking 2009 as the starting point of this review. However, a tradition of quantitative studies on prices and wages existed long before that year — see the next footnote. In fact, those previous studies have supplied the bulk of the data upon which post-2009 research is based.

² Albeit not very large, it provides useful information and insights on prices and wages: von Humboldt (1822/1990), Borah and Cook (1958), Carmagnani (1963), Gibson (1967), Pardo (1972), van Young (1981, 1992), de Ramón and Larraín (1982), Stern (1982), Brading (1978, 1983), Tandeter and Wachtel (1992), Bakewell (1989), Florescano (1986), Velasco (1989), Johnson (1990, 1992, 1997), Brown (1992), Johnson and Tandeter (1992), Ladd (1992), Macera (1992), Tandeter (1992), Garner (1993), Espinosa (1995), García-Montero Acosta (1995), Barba (1999), Monteiro (2006), Calderón (2009), Challú (2009, 2010), Quiroz (2005, 2009) and Challú and Gómez-Galvarriato (2014). Probably other authors also deserve unreceived credit.

³ In this respect, the International Institute of Social History (<http://www.iisg.nl/hpw/>) and the Global Price and Income History Group (<http://gpih.ucdavis.edu/>) deserve special recognition. Rafael Dobado-González and Héctor García-Montero are particularly grateful to Robert Allen and Leticia Arroyo-Abad for their intellectual generosity making their data bases on international wages and prices accessible.

(Allen *et al.* 2005; Bassino and Ma 2006; Broadberry and Gupta 2006; Allen *et al.* 2011a; Bassino *et al.* 2011).

Curiously enough, until 2009 Spanish America was absent from the expanding picture that this new scholarship was drawing. This was extremely surprising and especially so in the light of the considerable influence exerted on economists and economic historians by the «neo-institutional school» as it takes Spanish America as its main case study of their hypotheses and propositions (Engerman and Sokoloff 1994, 2002, 2005, 2012; Acemoglu *et al.* 2002). From an international comparative approach, living standards of the commoners may be the appropriate test of the allegedly «extractive» and «unequal» character of the institutions that would epitomise the Spanish colonial legacy in America. In fact, inequality, despite some reduction in the last years (Lustig *et al.* 2013), is one of the main characteristics of contemporary Spanish American societies. Inequality has been defined in terms of the real wages of unskilled workers (the «Williamson Index») and studied, for the post-independence period, by Williamson (1999, 2002) and Prados de la Escosura (2007). The «reversal of fortune» (Acemoglu *et al.* 2002) might also be tested through the comparison between pre-Columbian and post-Columbian living standards.

Since 2009, the sharing of a «common language» among scholars from different cultural backgrounds and fields of expertise has made possible a potentially fruitful scholarly dialogue between alternative views. This dialogue, not without some simplification, may be described through the dichotomy «optimism»-«pessimism», a long-established one in our profession. The «optimistic» view of the living conditions of Spanish Americans before independence finds that they were comparable to those prevailing in Europe — including north-western Europe — and higher than in Asia. In contrast, the «pessimists» claim that living conditions were much poorer, particularly if compared with British North America and north-western Europe. «Optimism» is at odds with neo-institutionalism, as relatively good living conditions do not fit the notions of «extractive» institutions (Acemoglu *et al.* 2002) and extreme inequality (Engerman and Sokoloff 2005). On the contrary, «pessimism» is fully consistent with neo-institutionalism. Both «pessimistic» and «optimistic» views of living standards during the Early Modern Era will be discussed herein. My view, shared with Héctor García-Montero, is the pioneer among post-2009 «optimists».

Spanish America was a leading character in the process of globalisation of the Early Modern Era. Some peculiar institutions (*encomienda*, *mita* and *repartimiento*) of mixed origin (aboriginal and Spanish) were initially influential at allocating coerced labour (which was, more often than not, also paid labour) for the production of some of the goods that started to circulate all over the world (i.e. silver). Slavery was not unknown in pre-Columbian America. However, after 1492 it reached unprecedented importance in some territories of the Caribbean Basin that were increasingly integrated in the

emerging global economy through the supply of «new goods» such as sugar. However, the «plantation model» established in some British and French colonies in America never reached a similar omnipresence in the territories of the Hispanic Monarchy (see Klein 2007). Slavery always coexisted with other productive forms of using labour (small- and middle-sized farms, free workers of different types, etc.) (see Johnson 1997; Monteiro 2006). In any case, regarding labour, it has generally been overlooked that the main institutional innovation in Spanish America was the early creation of a previously non-existent free market for this factor of production: an institution «of private property» in the terminology of Acemoglu *et al.* (2002). Extractive institutions have attracted most scholarly attention and have often been mistakenly considered the ultimate Spanish «colonial legacy». However, free labour spread across Spanish America soon after the conquest (Sánchez Alborno 2006). Therefore, contrary to conventional wisdom, it should probably be considered the main institutional Spanish legacy. Free labour became increasingly important in fields, towns and mines and was probably dominant in the whole economy by 1800 as a result of the substitution of bondage by wages. Studying wages and living standards proves instrumental for assessing the economy of viceregal America and its influence on the developments of the post-independence period.

Although further research is very much needed, available evidence suggests that: (a) Spanish America, rather than Western Europe (e.g. the Netherlands, United Kingdom, etc.) might have been the place where some of the new consumption patterns appeared for the first time: the so-called «consumer revolution» of the Early Modern Era (sugar, tobacco, cocoa, oriental manufactures, etc.); and (b) these goods were progressively accessible to wider sections of the population, at least in some territories such as New Spain (Dobado-González 2014)⁴. The early diffusion throughout Spanish America of goods unknown or uncommon in Europe was made possible by the combined effects of the Columbus Exchange (e.g. sugar) and the Manila Galleon (e.g. Asian textiles). The study of real wages is important for understanding the «consumer revolution» as pointed out by Allen (2001). Thus, conversely, any study of living standards in this part of the world needs to take into account — which is not always the case — that some «exotic» items (i.e. sugar, cocoa and tobacco) were frequently consumed by increasing segments of the population from the beginning of the Early Modern Era. Moreover, other particularities of the consumption patterns in Spanish America deserve consideration: in contrast to other parts of the world, a surprising ease of access, even if unevenly distributed spatially, to animal

⁴ «Creo que dentro de Nueva España y sobre todo en la segunda mitad del siglo XVIII, el comercio transpacífico modificó el carácter de sus cargamentos: de artículos suntuarios y textiles muy lujosos y caros, a textiles baratos y artículos de uso corriente en la colonia, lo que propició que las mercancías que introducía el galeón fueran accesibles para la población media e incluso pobre» (Yuste 1995, p. 240).

proteins in everyday diets during most of the post-Columbian period (see Section 3).

An important contribution to the study of living standards has been made from a distinct, albeit to a large extent complementary, discipline: anthropometric history. The study of anthropometric measures, mainly heights, as a proxy for net nutritional status or biological well-being has become one of the most popular fields in social sciences during the last decades. The efforts made by two generations of anthropometric historians have permitted the expansion of the knowledge frontier in topics such as the welfare of human populations, with which economic history has been dealing since its constitution as an independent field of research (Komlos and Baten 2004; Steckel 2009). Although with some delay, the anthropometric history of Spanish America has finally started to offer new evidence and insights into the still poorly known evolution of human welfare in this part of the world (Baten and Carson 2010). However, in sharp contrast with Europe and the United States, only the studies of Argentina conducted by Salvatore (1998) and Salvatore and Baten (1998), starting their analysis from the late pre-independence period, had been published before 2009⁵.

Thus, studying living conditions in Spanish America during the Early Modern Era is justified by reasons that are neither scarce nor minor. The article is organised as follows. This introduction is followed by the second section that presents what may be described as the «optimistic» and «pessimistic» views on the subject under consideration. In the third section, a methodological discussion is presented. The paper concludes with some final remarks.

2. «OPTIMISM» VS. «PESSIMISM»

The first optimistic example of the «new generation» of research on the material conditions of life of pre-independent Spanish Americans is that of Dobado-González and García-Montero (2009)⁶. The paper was presented at the conference *A Comparative Approach to Inequality and Development: Latin America and Europe*, organised by Luís Bértola, Leandro Prados de la Escosura and Jeffrey Williamson in Madrid⁷. In their attempt to put Spanish America on the emerging map of living standards throughout the

⁵ The Human Development Index approach followed by Prados de la Escosura (2004) is worth mentioning as an alternative attempt at estimating the level and dynamics of welfare in the region. However, this author does not examine the pre-independence period.

⁶ Available at <http://ideas.repec.org/p/ucm/wpaper/14-09.html>.

⁷ Other authors, such as Leticia Arroyo-Abad and Jan Luiten van Zanden, who have also contributed to the post-2009 literature, also joined the conference. More details at: <http://www.fundacionareces.es/fundacionareces/cargarAplicacionAgendaEventos.do?verPrograma=1&idTipoEvento=1&idSubtipoEvento=99&fechaInicio=01%2F01%2F2009&identificador=980&fechaFinalizacion=30%2F11%2F2009&nivelAgenda=2>.

pre-industrial world, Dobado-González and García-Montero (2009) estimated power purchasing parities of the daily wages of skilled and unskilled workers in terms of the cheapest grain and meat in the early 19th century for a number of countries in the Americas and Eurasia⁸. In addition, a comparison of grain and meat wages of unskilled workers over the 18th and early 19th centuries between Bogota, London, Mexico Milan and Potosi was presented.

Regarding real wages, Dobado-González and García-Montero (2009) departed from the methodology that has become the standard for this type of studies: specifying a representative basket of consumer goods (Allen 2001, 2005; van Zanden 2005) and estimating welfare ratios (Allen *et al.* 2011a, 2011b, 2012). Further discussion of methodological issues is provided later in this article. For the moment, I will simply mention the main reasons why Dobado-González and García-Montero (2009) made their choice: (a) paucity of data on prices of the goods included in the usual baskets for pre-independence Spanish America and (b) the attempt to widen the geographical scope of the comparison as much as possible.

The paper also showed and analysed heights of adult males from northern and south-eastern Bourbon Mexico — including parts of today's south-western states of the United States — and Maracaibo (Venezuela). It included an exploration of inequality from a different perspective to that adopted by Williamson (2009), although influenced by his previous work (Williamson 1999). Thus, two ratios were calculated: (1) GDP per capita to grain wages for the early 19th century, an adaptation of the Williamson inequality index to available data and (2) a more speculative index of inequality computed as the ratio of GDP per capita to heights.

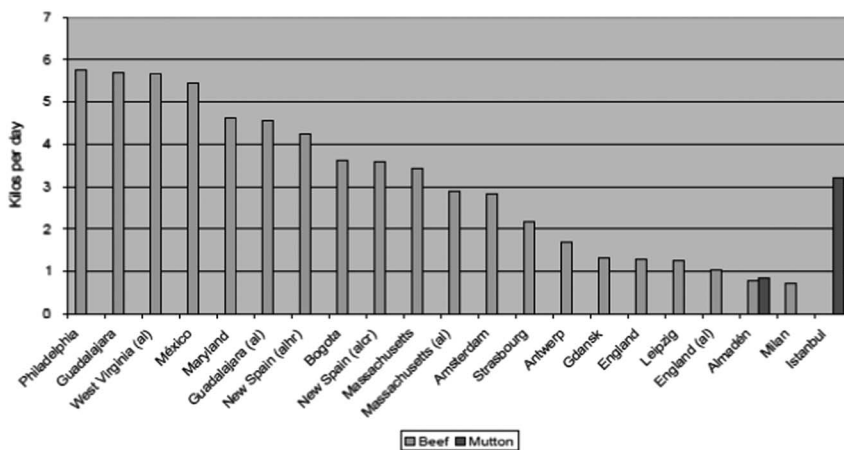
This double approach to the study of living standards offered a basically «optimistic» view⁹. In fact, grain and meat wages in the early 19th century in Bogota, Guadalajara, «hot» and «cold» regions of New Spain, Mexico City, Potosí and San Luis Potosi compared fairly well with or surpassed those of Eurasia. Moreover, throughout most of the 18th and early 19th centuries, grain wages in Bogota, Mexico City and Potosi were at a similar level to or above those in London and southern England and consistently higher than in Italy. It was even more surprising to observe that meat wages — a superior good in the late pre-industrial world — in Bogota, Guadalajara, Mexico City and Puebla were always higher than in the two locations taken as representative of the band of variation in Europe (see Figure 1).

Heights of Spanish American adult males showed significant regional differences. However, the sample, covering cohorts born from the 1730s to

⁸ Rafael Dobado-González and Héctor García-Montero acknowledge Amílcar Challú's generosity at sharing his unpublished data set on New Spain's wages.

⁹ The possibility that real wages are more closely related to heights than GDP per capita was recognised by Allen (2001).

FIGURE 1
MEAT WAGES OF UNSKILLED WORKERS CIRCA 1803.



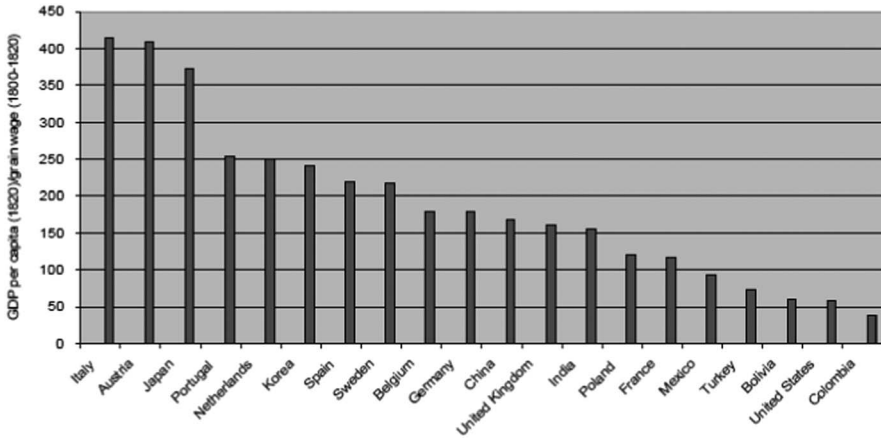
Note: al: agricultural labourer; alhr: agricultural labourer «hot regions»; alcr: agricultural labourer «cold regions».
Source: Dobado-González and García-Montero (2009).

the 1770s, made it clear that heights were not shorter than in many European regions, except for south-eastern New Spain where they were clearly in the low range of the international standards of the time (Asia excluded). A racial — social? — gap did indeed exist but it was neither larger than in other societies nor increasing over the decades under consideration. Furthermore, inequality in Bolivia, Colombia and Mexico, measured by the «adapted-to-data-availability» Williamson index, was among the lowest in a sample of countries that included several western countries (see Figure 2). Certainly, these findings might be in need of revision if a further expansion of the sample so suggested. In any case, as far as inequality is concerned, the conclusions presented in Dobado-González and García-Montero (2009) were in tune with claims by Coatsworth (2008) and Williamson (2009)¹⁰.

Thus, the «optimistic» view proposed by Dobado-González and García-Montero is based on: (a) the comparison with other parts of the world and (b) the contrast between our empirical findings and the somber inferences that may be derived with respect to the material conditions of life among

¹⁰ «... what little quantitative evidence there is does not suggest that ownership of land, or other assets for that matter, was more concentrated in Latin America than in the United States» (Coatsworth 2008, p. 553). «It is not true that pre-industrial Latin America was more unequal than pre-industrial northwest Europe» (Williamson 2009, p. 14).

FIGURE 2
WILLIAMSON'S INDEX OF INEQUALITY, EARLY 19TH CENTURY



Source: Dobado-González and García-Montero (2009).

labourers in pre-independence Spanish America (relatively low real wages, short heights and high inequality) from the neo-institutionalist hypothesis. Dobado-González and García-Montero (2010) basically showed the same results regarding economic (real wages) and biological (heights) living standards and inequality. A new hypothesis was then proposed: in the light of the results obtained, it seemed reasonable to wonder whether the GDP per capita estimates by Coatsworth (2008) and Maddison (2009) should be revised upwards¹¹.

In 2010, two sessions of the Second Latin American Economic History Congress, held in Mexico City, reflected the increasing interest of economic historians from many countries in living standards and inequality in Spanish America. The session, «Origins and Trends of Inequality in Latin America» was coordinated by Bértola and Linda Twrdek, while Daniel Santilli, Inés Moraes and Julio Djenderedjian were the convenors of the session, «Prices, Wages, Inequality and Living Standards in Latin America, 1700-1850».

¹¹ In their re-estimation of pre-1820 GDPs per capita, Bolt and van Zanden (2013) proceed to some extent in this way. Their new estimates for Brazil, Chile, Colombia and Mexico in 1800 are clearly higher than those of Coatsworth (2008). The opposite happens with Argentina and Cuba, which might have previously been overestimated (1,194 and 1,312 Geary-Khamis international dollars of 1990, respectively). For 1820, the comparison is possible only for Brazil and Mexico and yields the same outcome. As for Maddison's figures for 1820, the conclusions are more ambiguous as it is difficult to make sure whether they refer to the years before or after the conflicts that eventually lead to independence.

TABLE 1
Bare-bones subsistence basket of goods

Food	Quantity per person per year	Nutrients/day	
		Calories	Proteins
Maize	165 kg	1,655	43
Beans/peas	20 kg	187	14
Meat	5 kg	34	3
Butter	3 kg	60	0
Total		1,963	60
Non-food			
Soap	1.3 kg		
Linen/cotton	3 m		
Candles	1.3 kg		
Lamp/oil	1.3 l		
Fuel	2.0 million BTU		

Note: The table is based on quantities and nutritional values for the maize diet of the Americas. For other parts of the world, the diet uses the cheapest available grain, and the exact quantities consequently vary.

Source: Allen *et al.* (2011b).

Rafael Dobado-González and Héctor García-Montero contributed to the two above-mentioned sessions. Tommy Murphy also made a contribution to one session of the II CLADHE Congress in which the initial research on living standards in the Americas conducted by Robert Allen, himself and Eric Schneider was announced. The joint work of these three authors appeared as a working paper of the IGIER in 2011 (Allen *et al.* 2011b) with the title «The Colonial Origins of the Divergence in the Americas: A Labor Market Approach»¹². From the methodology used, an estimation of welfare ratios based on a bare-bones subsistence basket of goods from 1525-1549 to 1800-1824 (see Table 1), a «pessimistic» view of Spanish American living standards is derived. In the abstract they claimed that «the Latin American colonies [were] among the least developed countries at a similar level to Southern European and Asian countries» (Allen *et al.* 2011b).

¹² The paper did not discuss — or even mention for that matter — the pre-existent literature. This is probably why they wrongly claimed that «this paper takes a first look at standards of living in a series of North American and Latin American cities» (Allen *et al.* 2011b, p. 1).

The «colonies» considered in their sample are Potosi, Bogota and rural and urban Mexico.

Allen *et al.* 2011b also offer an explanation for the «colonial origins of divergence in the Americas» based on the functioning of the labour markets across the continent. While in north-eastern America high wages reflected conditions in London, low wages in Spanish America similarly responded to those — much worse for labourers — prevailing in Madrid. This disparity was reinforced by the demography of the native population. Thus, labour mobility through inter-continental migration and differential demographic patterns play an important role in the explanation of the early Great Divergence within the Americas proposed by Allen *et al.* (2011b).

Interesting as it is, this «labour-market approach» raises some empirical doubts. The notion of a certain degree of integration of labour markets between London and north-eastern America seems plausible and may find some empirical support. This is far from being the case regarding the Hispanic Monarchy. The progress, if any, of labour-market integration within Spain in the Early Modern Era was at best limited. Migration within the territories that comprise Hispanic America (e.g. Peru, New Spain, etc.) was more common than generally thought (Robinson 1990). Some degree of intra-territorial labour integration may be assumed, for example, across some parts of New Spain or the Andes. However, there is no evidence of significant migration across territories and hence of inter-territorial labour-market integration. If compared with the British colonies in North America, geography and cultural diversity (language included) were powerful obstacles to long-distance, inter-territorial migration within Spanish America. As for integration across the Atlantic, some data are interesting: in 1580-1640, the ratio of Spanish migrants to Spanish America to the population of New Spain and Peru in 1600 equals that of British migrants to the North American colonies (5 per cent); the same ratios for 1640-1760 and 1700 are, respectively, 6 and 42 per cent¹³. In other words, contrary to what happened in the colonies of British North America, the number of Spanish migrants was simply not significant enough to permit some integration of labour markets between Spain and Spanish America. What is more, Spanish migrants were rarely or never labourers competing in the unskilled labour market. By and large, Spaniards worked as civil servants, clergymen, members of entrepreneurial families, professionals and skilled artisans. Therefore, it is very unlikely that wages in those highly skilled segments of the Spanish American fragmented labour market in which Spaniards were over-represented, responded to conditions ruling over Spanish labourers living in, say, inner Castile, thousands of miles away from Mexico City or Lima and unable to afford the expansive trip to Spain, not to

¹³ Percentages obtained using data on migration to the Americas from Engerman and Sokoloff (2012) and Maddison's estimates of population (<http://www.ggd.net/maddison/oriindex.htm>).

mention Peru (nothing similar to the indentured servitude ever existed in the Hispanic world). Moreover, unskilled urban labour was very often supplied by an ethnic group peculiar to the Spanish America society and with an increasing presence over the centuries after the Conquest: *mestizos*. In New Spain, the most populated viceroyalty, *mestizos* represented nearly a quarter of total population and a significantly higher percentage of urban dwellers by the late 18th century (Sánchez Santiró 2007).

Allen *et al.* (2011b) published an article in *The Journal of Economic History* in 2012. While this paper recognises the originality of its attempt to find an explanation for the differences in wages between British North America and pre-independent Spanish America, it is most probably wrong as all the available evidence runs against its main conclusion: «two streams of migrations in the colonial period — one emanating from North-Western Europe at high wages and the other from Iberia at lower wages — created an early difference in income levels in British and Spanish America» (Allen *et al.* 2012, p. 889). Some difference in living standards may be observed, although it was not always very significant or even existent at all (see Figure 1 and Table 5). In any case, the magnitude of this difference crucially depends on the measure of real wages used. Moreover, even if the causal relationship hypothesised by Allen and his co-authors and even if their estimates are accepted (see Table 2) some empirical problems arise: (a) other Europeans, including those richer than the Spaniards, were also clearly poorer than some 18th-century Spanish Americans; (b) Londoners were richer than some North Americans from 1650 to 1750, although not afterwards; (c) some north-western Europeans were richer than some British North Americans until 1750 and (d) differences among British North Americans were consistently not insignificant either. Differences in living standards within Spain and Spanish America and between Spanish America and Spain are also apparent: in 1750-1799, welfare ratios in Valencia were clearly above Madrid (33 per cent); some welfare ratios in Spanish America were higher than others (Mexico-urban vs. Mexico-rural) and all welfare ratios were higher in Spanish America than in Spain. Therefore, one would expect a more detailed explanation of the intra-Spanish, intra-Spanish American, and inter-Spanish and Spanish American wage differentials in terms of the «labour-market approach» proposed by Allen *et al.* (2012). Might it be that the North American exceptionalism explains differences with the rest of the world of which Spanish America would be a particular case and not the most appropriate term of comparison?

Thus, I disagree with the contention that «these initial wage differences led to the Great Divergence in the Americas» (Allen *et al.* 2012). To explain a process as complex as this Great Divergence, a broader set of factors deserves an appropriate consideration: geography (Gallup *et al.* 2003; Dobado-González 2009), the «pre-Columbian legacy» (Dobado-González 2009), the economic consequences of independence (Prados de la Escosura 2006), the

TABLE 2
Subsistence ratios: labourers

	1500-49	1550-99	1600-49	1650-99	1700-49	1750-99	1800-49
North America							
Boston			1.66	2.89	3.84	4.15	
Philadelphia					5.06	5.34	
Maryland				4.41	3.62	4.32	
Latin America							
Potosi				1.83	1.82	1.75	1.71
Bogota				1.28	2.14	2.15	2.05
Mexico-urban					2.54	2.37	1.53
Mexico-rural	0.18	0.61	0.91	1.27	1.50	1.44	0.93
North-western Europe							
London	3.73	2.96	2.83	3.49	4.16	3.51	3.77
South England towns	2.89	2.21	1.65	2.03	2.79	2.52	3.15
Antwerp	2.88	2.87	2.89	2.48	2.75	2.48	2.32
Amsterdam	3.80	3.64	3.84	4.33	4.20	3.77	2.89
Southern and Central Europe							
Valencia	2.46	1.65	1.70	1.87	1.82	1.35	
Madrid	1.99	1.77	1.71	1.65	1.39	0.99	0.73

TABLE 2 (Cont.)

	1500-49	1550-99	1600-49	1650-99	1700-49	1750-99	1800-49
Florence		1.29	1.52	2.35	1.92	1.64	1.82
Milan	3.28	2.07	1.82	1.99	1.77	1.35	
Naples	2.46	1.65	1.70	1.87	1.82	1.35	
Leipzig	1.99	1.77	1.71	1.65	1.39	0.99	0.73
Vienna		1.29	1.52	2.35	1.92	1.64	1.82
Asia							
Beijing					1.25	1.04	0.79
Lower Yangtze			0.78	2.17	1.79	1.15	0.78
Delhi			2.96	2.99			1.30
Bengal					1.39	0.83	0.84

Source: Allen *et al.* (2011b).

«commodity lottery» (Bulmer-Thomas 1994), late 19th-century developments and even others in the 20th century (Prados de la Escosura 2007).

In 2011, the working paper «Between Conquest and Independence: Real Wages and Demographic Change in Spanish America, 1530-1820», co-authored by Leticia Arroyo-Abad, Elwyn Davies and Jan Luiten van Zanden, was published. It appeared in *Explorations in Economic History* (hereinafter Arroyo-Abad *et al.* 2012)¹⁴. The authors first «confirm the fact that living in colonial Latin America was costly». This result coincides with that of Allen *et al.*: «The cost of living indexes immediately highlight the inflationary effect of the silver economy» (Allen *et al.* 2012, p. 874). Plausible as it sounds, this shared claim is not necessarily true regarding the main items of the consumption basket of the commoners during the 18th and early 19th centuries. Corn was consistently cheaper in Bogota than wheat in London, southern England and Milan. It was more often than not less expensive in Mexico than in these European locations. However, it was certainly more expensive in Potosi than elsewhere, but only until the 1790s¹⁵. As for meat, Spanish America, except sometimes Potosi, was by and large more favourable to consumers than Western Europe. Sugar was especially cheap in some parts of Spanish America, albeit not in Potosi and the Southern Cone. Thus, results crucially depend on the methodology followed. Arroyo-Abad *et al.* (2012) basically replicate Allen's methodology, although they introduce some changes (see Table 3).

Although not much discussion of these changes is offered, they recognise the fact that Spanish Americans could consume a comparatively very high amount of animal proteins, as pointed out by Dobado-González and García-Montero (2009, 2010). This sole change in the basket, along with the widening of the sample — Peru, Argentina and Chile are added — explains why their results are not far from those previously found by Dobado-González and García-Montero (2009, 2010) and also depicts a much more «optimistic» picture of living standards (see Table 4).

Therefore, in Argentina, Bolivia and Mexico, and to a lesser extent in Chile, real wages were «relatively high, and compared favorably with real wages of large parts of Western Europe» (Arroyo-Abad *et al.* 2012, p. 160). In other parts (Peru and Colombia), real wages «were not particularly high before the 1720s» but exceeded the subsistence level afterwards.

¹⁴ This paper does not include any comment on previous works on the topic either. Arroyo-Abad *et al.* (2012) wrongly cite «Gonzalez (2009)» instead of Quiroz (2005) as the author who found the low price of meat in Mexico City. Allen *et al.* (2012) mention Quiroz's work as support for the notion that consumption patterns in Hispanic America were similar to those (*quasivegetarian*) in the rest of the world.

¹⁵ One of the main reasons why prices in Potosí — located about 4,000 m above sea level in a previously scarcely populated area — were high, when that was the case, is basically geographical and has passed unnoticed by both Allen *et al.* (2012) and Arroyo-Abad *et al.* (2012): the surrounding area did not provide enough food to satisfy local needs (Bakewell 1989) and the distance to important supply markets of both agrarian produce and manufactures was long.

TABLE 3
Bare-bones baskets in Europe and Hispanic Latin America

Goods	Unit	Calories	Protein	Europe	Mexico, Peru, Bolivia, Colombia	Argentina, Chile
Food						
Wheat/oats	Kg	3,370	88	155		132
Maize	Kg	3,370	70		165	
Beans	Kg	1,455	71		45	
Meat (beef/pork)	Kg	2,500	200	5	35	105
Butter	Kg	7,286	7	3		
Other						
Soap	Kg			1.3	1.3	1.3
Linen/cotton	Million			3	3	3
Candles	Kg			1.3	1.3	1.3
Lamp oil	Kg			1.3	1.3	1.3
Fuel	Million BTU			3	3	3
Total calories (daily)				1,936	1,943	1,938
Total protein (daily)				60	60	89

Source: Arroyo-Abad *et al.* (2012).

TABLE 4
Average welfare ratios in Spanish America and Europe (1525-74/1774-1820)

	Argentina	Bolivia	Chile	Colombia	Mexico	Peru	London	Leipzig
1525/1574					0.76		3.22	1.89
1575/1624					1.20	1.10	2.67	1.64
1625/1674					2.36		3.02	1.76
1675/1724		2.95	1.46	1.80	3.03	1.18	3.84	1.48
1725/1774		2.95	1.45	1.78	2.99	1.18	3.84	1.29
1775/1820	9.47	2.20	2.40	1.58	1.86	1.48	3.31	0.71

Source: Arroyo-Abad *et al.* (2012).

Arroyo-Abad *et al.* (2012) rely on anthropometric data for additional evidence in support of their claims: «Our results are by and large consistent with biological standards of living studies» (Arroyo-Abad *et al.* 2012, p. 150). However, they only mention the studies of heights of a few authors — not including those of Dobado-González and García-Montero (2009, 2010) — and do not present their own data. Arroyo-Abad *et al.* (2012) share a hypothetical proposition made by Dobado-González and García-Montero (2010). They also suggest that Maddison's estimates of GDP per capita might need to be revised upwards: «the starting level at the eve of the 19th century may have been higher than assumed so far» (Arroyo-Abad *et al.* 2012, p. 160).

Arroyo-Abad *et al.* (2012) find that real wages in Spanish America are explained mainly by general demographic trends and, in the case of the mining centres, by the booms and busts of production. The scarcity of labour, which «was common throughout the Spanish empire in the Americas», was the most influential circumstance on the functioning of labour markets, even on non-market institutions, such as *mita* and *encomienda*, and their results show that living conditions are clearly higher than those estimated by Allen *et al.* (2012). I think that the rather «optimistic» view of real wages and the demographic explanation suggested by Arroyo-Abad *et al.* (2012) is more consistent with the available quantitative evidence than the «pessimistic» one and the labour-market approach that Allen *et al.* (2012) propose.

A recent research by Challú and Gómez-Galvarriato (2014) on living standards in Mexico City from the 1750s to the 1910s seems to be closer to «optimism» than «pessimism»¹⁶. On the one hand, it is true that living conditions deteriorated during the late part of the 18th century. However, a similar trend is observed not just in Mexico City but in other places as well (see Tables 2 and 4). Except perhaps in North America (least disfavoured ethnic sectors excluded), the second half of the 18th century and the first decades of the 19th century were not favourable for commoners in terms either of traditional consumption items or inequality in many parts of the world. Challú (2010) offers a «pessimistic» view of the evolution of heights that, as discussed below, is not found in all available data sets and was exclusive of New Spain. On the other hand, the level of real wages in Mexico City, estimated using Allen's bare-bones basket, was still lower in 1900-1913 than in 1758-1774, while in 1875-1899 it was slightly higher than in 1775-1779. In addition, between 1760 and 1810 — when the Insurgencia started — welfare ratios in Mexico City were declining but were comparable

¹⁶ «Mexico did not have exceptionally low living standards. Even during the worst years of the period analyzed Mexican construction workers could buy two times the «bare-bones» subsistence basket and during the best years three times that basket. The comparison with Amsterdam is revealing: Mexico compared well to a relatively wealthy (yet declining) northwestern European city for a long part of the period under analysis. Yet, our results support a pessimistic view of Mexico's long nineteenth century economic development» (Challú and Gómez-Galvarriato 2014, p. 24). Kindly shared by the authors before publishing.

to those — also evolving downwards — in London and, especially, Amsterdam and clearly higher than in Beijing, except in some especially adverse agricultural conjunctures (i.e. the mid-1780s and the early-1810s).

In Dobado-González and García-Montero (2014), the methodology used is again the estimation of purchasing powers of daily wages, although a new good — sugar, a luxury product — is included. By doing so, we try to improve the reliability of our deflators to capture the economic welfare of Spanish American commoners, as the consumption of sugar was relatively widespread in some territories (i.e. New Spain and Bogota). Another advantage of including sugar is that the range of income elasticities of the three deflators used (grain, meat and sugar) is expanded. These three goods represented the lion's share of the consumption expenditure in most Spanish America territories. In addition, we introduce into the debate on living standards the results offered by Hersh and Voth (2011): a higher than usually recognised increase in welfare as a consequence of the new goods, sugar included, accessible to Europeans after 1492 (see Table 4).

Dobado-González and García-Montero (2014) enlarge the comparison on heights as well and, complementing the picture that emerges from our measures of real wages, reinforces our conditional «optimism». Differences in both economic and physical welfare within Spanish America, as pointed out by Arroyo-Abad *et al.* (2012), are significant (i.e. southern New Spain heights) (see Table 5).

The «pessimism»/«optimism» dichotomy may also be valid to describe the main conclusions of the anthropometric studies on pre-independence Spanish America (in fact, New Spain) published since 2009. In contrast with Dobado-González and García-Montero (2009, 2010, 2014), Challú (2009, 2010) and Grajales-Porrás and López-Alonso (2011) are rather «pessimistic».

3. METHODOLOGICAL DIFFERENCES

As previously mentioned, the divide between «optimists» and «pessimists» is mainly owing to methodological differences, although not always: for example, Allen *et al.* (2012) vs. Challú and Gómez-Galvarriato (2014) regarding Mexico City real wages. These differences will be discussed in this section. Several arguments will be presented to justify the departure from the methodology initiated by Allen (2001) to study real wages in the past.

Allen's methodology basically consists of (1) design subsistence consumption baskets (including both food and non-food items)¹⁷; (2) calculate

¹⁷ Allen presented a first basket of goods. Except for substituting bread, «the commodity consumers actually bought» (2001, p. 413), for grain, not much justification of its composition is offered: «the quantities used as weights for the Laspeyres index. They were suggested by examining many budgets and weighting schemes» (Allen 2001, p. 422). They are thought to correspond «to the spending pattern of a worker when real incomes were high, such as a fifteenth century craftsman»

TABLE 5
Nominal and real wages by the early 19th century (selected locations)

Grams of silver per day		Kilos of grain per day		Kilos of meat per day		Kilos of sugar per day	
Pennsylvania (1)	23.1	Pennsylvania (1)	17.9	Buenos Aires (1)	34.8	Pennsylvania (1)	3.7
Massachusetts (1)	20.4	Vermont (2)	12.8	Pennsylvania (1)	7.2	Massachusetts (1)	2.8
Massachusetts (2)	19.5	Bogota (1)	12.3	Vermont (2)	6.9	Massachusetts (2)	2.6
Potosi (4)	18.2	Potosi (4)	9.9	Guadalajara (1)	5.7	Mexico City (1)	2.3
Maryland (2)	17.4	Guadalajara (1)	9.5	Mexico City (1)	5.6	Bogota (1)	2.0
London (1)	17.2	Leipzig (1)	8.7	West Virginia (3)	5.6	New Spain, Highlands (2)	1.5
Vermont (2)	14.1	Guadalajara (2)	7.6	Maryland (2)	5.4	London	1.4
West Virginia (3)	13.8	Istanbul (1)	7.5	Massachusetts (1)	4.6	Vermont (2)	1.3
Potosi (1, 4)	12.1	London	7.4	Guadalajara (2)	4.6	Buenos Aires (1)	1.1
Southern England (1)	12.1	Mexico City (1)	6.7	Massachusetts (2)	4.4	Potosi (4)	1.0
Buenos Aires (1)	10.9	Potosi (1, 5)	6.6	New Spain, Highlands (2)	4.1	Southern England (1)	1.0
Guanajuato (4)	10.6	Antwerp (1)	5.9	Potosi (4)	4.1	Barcelona (1)	0.9
Chile (4)	9.6	Guadalajara (2)	7.6	Bogota (1)	3.2	South England (2)	0.7
Amsterdam (1)	9.2	Southern England (2)	5.2	Amsterdam (1)	2.8	Potosi (1, 4)	0.7
Barcelona (1)	9.1	Gdansk (1)	3.6	Potosi (1, 4)	2.7	Santiago de Chile (1)	0.6
Mexico City (1)	9.1	Calcutta (3)	3.1	London (1)	2.1	Antwerp (1)	0.5
Southern England (2)	8.6	Buenos Aires (1)	3.0	Palencia (1)	1.5	Milan (1)	0.4
Guadalajara (1)	7.6	Almaden (1)	2.6	Barcelona (1)	1.5	Calcutta (3)	0.4
New Spain, Lowlands (2)	7.1	Porto (1)	2.2	Southern England (1)	1.5	Amsterdam (1)	0.4
Antwerp (1)	6.9	Vienna (1)	2.1	Beijing (1)	1.3		
Palencia (1)	6.7	Milan (1)	1.8	Almaden (1)	1.1		

San Luis Potosi (3)	6.3	Kyoto (1)	1.6	Southern England (2)	1.0		
Guadalajara (2)	6.1	Beijing (1)	1.6	Vienna (1)	1.0		
Bogota (1)	6.1	Pune (3)	1.1	Milan (1)	0.7		
Santiago de Chile (1)	6.1						
New Spain, Highlands (2)	6.0						
Istanbul (1)	5.3						
Porto (1)	5.1						
Gdansk (1)	4.8						
Almaden (1)	4.8						
Leipzig (1)	4.1						
Beijing (1)	3.2						
Canton (1)	3.0						
Milan (1)	2.7						
Kyoto (1)	2.5						
Vienna (1)	2.4						
Pune (3)	1.3						
Calcutta (3)	1.1						

Note: (1) Urban; (2) rural; (3) unspecified; (4) qualified miner; (5) unqualified miner, *mitayo*.

Source: Dobado-González and García-Montero (2014).

Bold values indicate locations in Spanish America for easiness of distinction from others in the rest of the world.

its annual cost — increased by 5 per cent in order to capture housing — in grams of silver for a family (one man, one woman and two children) at the subsistence level¹⁸; (3) determine the yearly nominal wage (250 working days) of a full-time male unskilled labourer; and (4) estimate welfare ratios as the division between these earnings and the cost of the family subsistence basket. If the ratio's value is one, it means that the family consumption is identical to the subsistence basket. By construction, higher ratios imply better living conditions. This approach has improved previous attempts to estimate and interpret real wages.

However, for general and particular reasons, we do not consider the most appropriate approach for the case of Early Modern Hispanic America. This is why we have followed the rather traditional procedure of calculating the purchasing power of daily nominal wages in terms of three types of goods (grain, meat and sugar), complementing the results with those rendered by the research on biological living standards through the estimation of male average heights. I am conscious of the limitations of the Dobado-García approach. Nonetheless, it is my contention that it offers a sounder comparative perspective of the level and dynamics of both economic and physical welfare of Spanish American commoners during the Bourbon period. This is partially owing to our still unsatisfactory — despite the improvements reached over the last decade — knowledge of the history of prices in this part of the world. Therefore, gains in the time and space coverage have a cost of opportunity in terms of precision.

Dobado-García's critique of Allen's methodology, in particular regarding Early Modern Hispanic America, is based on the following arguments: uniformity

(footnote continued)

(Allen 2001, p. 422). The inclusion of significant quantities of alcohol (182 l, 20.6 per cent of total spending) and some meat (26 kg, 6 per cent) is, then, not surprising. Rent is omitted. Interestingly, differences in consumption patterns across Europe were taken into account: white bread, olive oil and wine vs. rye bread, beer and butter. Accordingly, the fuel ration was set at two million BTUs for Spain and Italy and at five million BTUs for north-western Europe. In Allen (2005), alcoholic beverages and fuel were dropped from the baskets specified to compare real wages in Europe and Asia. Allen *et al.* (2011a) distinguish between «bare-bones» (minimum consumption for survival) and «respectable» (London lifestyle) baskets for Europe and northern China. The «respectable» baskets were basically that of north-western Europe in Allen (2001) with a few modifications for northern China (fish and rice wine instead of meat and beer, respectively). The «bare-bones» baskets replicate those of Allen (2005), although they include fuel (three million BTUs) and reduce meat consumption from 26 to 5 kg. Minor adaptations to differences in the subsistence baskets between northern Europe and Milan (oats vs. polenta) and between Suzhou/Canton and Beijing (rice vs. sorghum) may be observed in Allen *et al.* (2011a). In China, fish substitutes for meat as a source of animal proteins. These authors recognize the medieval inspiration of the «respectable» basket that represented the London, as «it does not contain new commodities like sugar and potatoes introduced into Europe after the voyages of Discovery» (Allen *et al.* 2011a, p. 24). By construction, from the subsistence basket post-Columbian new commodities are excluded. Allen *et al.* use the subsistence baskets based on the assumption that «there were strong similarities in the spending patterns of poor laborers around the world» (2012, p. 872).

¹⁸ In his attempt at constructing a «second-generation» CPI for the western part of the Netherlands, van Zanden (2005) showed the significant effects of including rent in the expenditure of labourers over the Early Modern Era.

of consumption patterns across the world; stability of consumptions patterns over the Early Modern Era; assumptions on factors that influence families' income and expenditure; demanding data requirements; adaptation to Spanish America consumption peculiarities. They are assessed, sometimes jointly, in the rest of this section.

As opposed to Allen's methodology, that of Dobado-García does not need any assumption to start with. Allen *et al.* (2012) rely on an arguable premise: the identity of consumption patterns across the world (excluding southern England and the Low Countries) and, by inference, within Spanish America (Allen *et al.* 2012, pp. 872-873). To a certain extent, it is true that the consumption patterns of commoners in pre-industrial economies shared some characteristics as a result of the worldwide low levels of income. Nonetheless, abundant evidence shows that differences also existed. Inevitably, they are underestimated if a basic universal, basket of consumption is designed in isolation. Geography, ethnicity, economic conditions and cultural practices differed across Hispanic America. This diversity could not but influence consumer decisions. Observed contrasts regarding the nutritional traditions and the availability of staple food between Mesoamerica (maize, squash, bean and pulque) and the Andes (potato, quinoa, charqui and coca leaves), or between the Southern Cone (yerba mate, wheat and beef) and the Caribbean (rice, bean and dried beef), were not minor. Market integration, economic growth and cultural exchange within the pluri-continental Hispanic Monarchy may have favoured some convergence of consumption patterns. However, diversity probably remained higher than in other more homogeneous, parts of the world in terms of geography and culture (Europe and East Asia). For obvious geographical reasons, the need for intake of calories and protection from the climate (clothing, fuel, etc.) varied widely across Hispanic American territories (e.g. Potosi vs. Mexico City). This shortcoming inherent to the universal basket turns out to be more apparent when North America and Europe (Boston, Philadelphia, London, Leipzig, etc.) are included in the comparison. This circumstance is considered by Allen (2001). In Allen *et al.* 2011a fuel consumption contributes to the distinction between the «bare-bones» (three million BTUs) and the «respectable» (five million BTUs) baskets in Europe and north China. However, it does not play any role in the subsistence baskets designed either for Shouzhou/Canton and Beijing or for northern Europe and Milan. Moreover, no differences in consumption patterns across those locations, other than using different carbohydrates as sources of the same amount of calories (the cheapest ones being rice for Shouzhou/Canton, sorghum for Beijing, wheat for north-western Europe and polenta for Milan) may be observed in the respective subsistence baskets.

Llopis *et al.* (2009) assign different shares to some food (bread, meat, beans, fish and wine) and non-food items (fuel and lighting and housing) in their comparison of consumer price indices (CPIs) between three Spanish towns (Madrid, Palencia and Seville) in the 18th century. In early 20th-century Spain, significant differences in diets still existed not only

between regions but also within regions or even provinces, especially in terms of the consumption of some vegetables and, in particular, animal proteins (Nicolau and Pujol 2006). Thus, in geographically heterogeneous countries, such as Spain — not to mention others in Spanish America¹⁹ — inter-regional and intra-regional differences in nutrition were complemented with intra-provincial differences²⁰.

As mentioned above, Arroyo-Abad *et al.* (2012) rightly distinguish between three baskets in order to capture differences in consumption between Europe and Spanish America and within Spanish America (see Table 3). This attempt to adapt the universal basket to the specific conditions prevailing in different territories simply alters some food items. Interestingly, no large changes in the baskets — simply the quantities of meat and beans — are needed to modify upwards the results obtained by Allen *et al.* (2012) and therefore to depict a more «optimistic» picture of living standards of Spanish Americans.

Hispanic America could hardly have been left unaffected by the Columbus Exchange. The inter- and intra-continental diffusion of species (wheat, cattle, sugar, cacao, etc.) that widened the nutritional basis of human populations in the Americas and elsewhere in the world, progressed unevenly over time and space. However, it was precisely in the American territories of the Hispanic Monarchy where diets probably experienced an earlier and deeper change across the whole social spectrum over the Early Modern Era. Therefore, keeping the consumption basket constant over the centuries might be misleading as it overlooks the changes experienced by humans after 1492, and not only in the New World²¹. Allen himself recognises that his first CPI «was very much a premodern basket», as the «European colonization of America and the Indies expanded the consumption of some goods (e.g., sugar) and introduced others (e.g., tobacco, potatoes, tea, and coffee)» (Allen 2001, p. 420). By the end of the 18th century these goods «were consumed by working people» (Allen 2001; Allen *et al.* 2012).

The extent of the changes in diets — and even the economy and society — in post-Columbian America is revealed, among other food items, by sugarcane and cacao, not to mention wheat or beef. Sugarcane was previously unknown. Native to the Amazon region, cacao was consumed as a drink by Mesoamerican elites and probably also by commoners in pre-Hispanic times

¹⁹ «Latin America is more [geographically] fragmented than any region of the world» (Gallup *et al.* 2003, p. 97). In particular: «countries like Bolivia, Brazil, Ecuador, Colombia and Peru show an astonishing geographical diversity» (Gallup *et al.* 2003, p. 96).

²⁰ As the significant ones in terms of cost and composition found for Navarre in 1905 by Lana (2002).

²¹ According to Chen and Kung (2012), maize was not only rapidly adopted in China (i.e. in 1511 and 1522 in Anhui and Gansu, respectively) but contributed to significant changes in the total agricultural output and presumably to food consumption. Rice share in agricultural output dropped from roughly 70 per cent in 1637 to 36 per cent in 1931-1937.

(Kiple 2007)²². After 1492, cocoa and sugar became complementary goods that were widely consumed in New Spain (Menegus and Tortolero 1999). According to von Humboldt (1822/1991), neither sugar nor cocoa were consumed exclusively by the rich. Rather the contrary appears to be true: «el uso del chocolate en toda América en frecuentísimo, el más moderado lo toma dos veces, por la mañana y a las tres de la tarde; muchos lo toman tres veces; no pocos cuatro»²³. Imports from Guayaquil made possible the consumption of «cheap» cocoa by the «poor» in 18th-century New Spain (Miño 2009). By the end of the pre-independent period Caracas and Guayaquil had been producing and exporting significant quantities of cocoa since at least the 17th century. Exports from Guayaquil reached most ports in the Pacific — from New Spain to Chile — and even sometimes Montevideo (Contreras 1990). Sugarcane cultivation had spread across a number of territories (New Spain, Cuba, Peru, etc.). British colonies in North America do not seem to be very different in this respect²⁴. Even in Chile, sugar was present with a share of 70 per cent in the index of imported products elaborated by Larraín (1992). It also appears among the selected products considered by Johnson (1992) in his study of prices and wages in late Bourbon Buenos Aires²⁵. In Arequipa, both Spanish and *mestizas* families consumed sugar on a regular basis, according to Brown (1992)²⁶.

Indeed, as claimed by Allen (2001), including sugar in the basket «may not affect the overall conclusions» (Allen 2001, p. 420). However, the additional exclusion of cocoa, tobacco, alcohol and other items that, in accordance with a variety of sources, became familiar to many Hispanic Americans sooner or later after the start of the Columbus Exchange, distorts the reality of their everyday consumption. Thus, the practical reason argued by Allen (2001) is more convincing for justifying their exclusion from the representative consumption basket, although that procedure has a non-negligible impact on the results in terms of welfare ratios²⁷.

²² The idea that cocoa consumption was restricted to the Mexican nobility is more frequently found in the literature.

²³ Ajofrín (1936, p. 67); I owe this quotation to Andrés Calderón.

²⁴ In their comparison of living standards between Massachusetts and West Virginia and between Massachusetts and England, Go and Lindert include sugar (1.8 kg/person per year) in their consumption basket (<http://gpih.ucdavis.edu/Datafilelist.htm#NorthAmerica>). This figure is the estimate for rural English poor 1787-1796, a «hungry period», by Davies and Eden as reported in Clark *et al.* (1995).

²⁵ «La ubicación del azúcar en la dieta local, por otra parte, era claramente importante» (Johnson 1992, p. 164).

²⁶ «Sin duda, el costo del azúcar disminuyó en la medida en que creció la producción local. A lo largo del siglo XVIII, se estableció un cierto número de plantaciones de azúcar en los valles de Tambo y Camaná, a lo largo de la costa y Arequipa no se vio entonces en la necesidad de importar azúcar de Lima, Lambayaque o del Caribe. La disminución de los precios es reflejo de esa situación» (Brown 1992, pp. 202-203).

²⁷ «This [introducing new items into a consumer price index] requires extremely detailed budget information that is not available for the early modern period» (Allen 2001).

There is another difficulty with the use of fixed baskets over a three-century-long period, especially if significant changes in relative prices — for example, meat in terms of grain, etc. — occur such as during the Early Modern Era. Substitution effects on consumption patterns, that may be large and unevenly distributed across time and space, cannot be captured through fixed baskets of goods. For example, in London, from c. 1660 to 1810, sugar cheapened substantially with respect to wheat, while the price of beef in terms of wheat increased, albeit more moderately; in Bogota, from the mid-18th century to the early 19th century the price ratio meat/grain grew faster than in Mexico City. Income effects on consumer choices, that were presumably not negligible either — that is, 18th-century England and, to a lesser extent, New Spain — are also opaque to very long-term fixed baskets.

Thus, especially in some parts of Spanish America — mainly, New Spain and Lower and Upper Peru, contemporary Peru and Bolivia, respectively — the very notion of an immutable consumption basket during the whole viceregal period conflicts with substantial evidence. In other parts, fixed shares of food items over a sufficient number of decades can overlook important changes in the diet.

Wages would also be sensitive to changes intended to reflect cross-country, cross-regional and cross-sectoral variations of two arguable assumptions on which Allen's methodology is based: the average family size is fixed without further elaboration at four members (husband, wife and two children of undetermined age), while the standard number of yearly working days is established at 250. As we will see, these aspects are especially problematic over a three-century period and across all parts of the world.

A universal estimate of yearly working days is not consistent with the variety of labour practices existing in different economic sectors (urban, rural and mines) and their likely long-term changes. Moreover, the increasing substitution of free for coerced labour probably influenced the number of days worked per year in Spanish America. The conclusions reached by Voth (2000, 2001) support the expansion of both the annual working hours and days in England from 1750 to 1830, and cast some doubt on the general validity of Allen's assumption regarding the comparison between 18th-century London and 17th-century Potosi or 16th-century rural New Spain²⁸. More generally, it is reasonable to expect that the number of working days, and/or daily hours, changed upwards in response to increases in prices, especially if they were very intense — that is, 16th-century Valencia and 18th-century Mexico City (Allen *et al.* 2012; Arroyo-Abad *et al.* 2012).

²⁸ Differences in working days between Protestant Westphalia and the Netherlands and Catholic France and Spain c. 1600 and c. 1650 might be in the range of the 10-13 per cent. Working days in Spain might have increased from around 270 to 282 between c. 1600 and c. 1750 (García-Montero-Zuñiga 2011, p. 15).

Something similar may be claimed in relation to the assumption about family size. It seems reasonable to expect that the number of family members changed in response to economic conditions and evolved over its life cycle²⁹. Ethnicity also influenced family size³⁰. In addition, the contribution by women and children to family subsistence was common and, more importantly, unevenly distributed over time and across space. The changeable contribution of self-production to family consumption of goods and services renders the joint examination of urban and rural living standards more difficult. The role of transactions made outside the marketplace could not but respond to the level of GDP per capita: presumably, the higher the latter, the lower the former. The economic heterogeneity of countries included in the samples used by Allen *et al.* (2012) and Arroyo-Abad *et al.* (2012), and the very long period under consideration, might have an effect on the role of the market as a source of income. The very ideas of the «industrious revolution» and the «consumer revolution» illustrate the role of the family as an important character, probably the main one, in this story. In 16th-century Seville, according to González-Mariscal (2013), the spectacular growth of prices — much higher than estimated by Hamilton (1934) — forced families not only to change consumption patterns (e.g. substituting bacon for meat or introducing dry cod in their diet) but also to increase the supply of labour of wives and children in the market in order to prevent living standards from falling below the subsistence level. Sarasúa (2013) suggests for southern central Spain in the mid-18th century that the rate of activity in the labour market of children between 10 and 15 years alone was 39 per cent. In the same vein, Humphries (2012) is emphatic: «child labor, in terms of child participation rates and younger working, increased during the classic era of industrialization» (Humphries 2012). In fact, finding welfare ratios lower than 1 in periods of population growth, as shown in Table 2 (Madrid between 1750 and 1849 and rural Mexico in 1800-1849) suggests a growing participation of family members in the labour market and/or in non-market activities³¹. Additional support is found in Llopis and García-Montero (2011). Their study of wages and prices in 18th-century Madrid shows that family incomes did not necessarily evolve like men's wages because of: (a) an increasing participation of women in the

²⁹ «... los cambios en la nupcialidad siguen a los de la economía después de un corto intervalo. Estos resultados tienden a confirmar la sensibilidad de la nupcialidad a las oscilaciones en los niveles de vida en Nueva España durante el siglo XVIII» (Reher 1992, p. 634).

³⁰ Based on the limited evidence available, Pérez Moreda (1997) suggests that patterns of nuptiality, fecundity and family size were not homogeneous across the varied ethnic spectrum that characterises Spanish America. They also changed over time: the pre-Columbian patterns prevailing among the aboriginals were getting closer to those of the Spaniards, especially in urban populations, by the late Bourbon period. Therefore, assuming a family of four members is not always appropriate for Early Modern Spanish America.

³¹ For Madrid, Carbajo (1987) and Llopis and García-Montero (2011). For rural Mexico, McCaa (1993).

labour market³² and (b) women's wages could decrease less than men's³³. The limitations of the unchanging assumptions over time and space are further illustrated by Moreno (2006) in his study of living standards in Palencia between 1800 and 1936³⁴.

The across-the-board 5 per cent allowance for rent might also be misleading, as, presumably, it penalises rural living standards and less dynamic towns over the Early Modern Era³⁵. van Zanden's (2005) estimates for Holland show a higher and growing percentage (7 and 11 per cent «c. 15th» and «c. 18th», respectively) of labourers' expenditures. For Seville, González-Mariscal (2013) shows that housing was by far the most rapidly growing item in the CPI: it grew from 6.5 per cent of total expenditure in 1521-1550 to 15.5 per cent in 1551-1600, and to 17.4 per cent in 1601-1650. According to Drelichman and González-Agudo (2012), in 16th-century Toledo, rent represented 9.5 per cent of total expenditures and evolved differently to other items. In spite of this, an appropriate consideration of housing costs reduces the welfare gap between Toledo and Antwerp and Amsterdam by 9.5 and 4 per cent, respectively. The estimates of Llopis *et al.* (2009) for 1680-1800 are 12.5 per cent for Madrid and Seville and 10 per cent for Palencia. Lana (2002) also finds higher rents for Navarre: 7.8 per cent in 1780 for a family of five members, and between 6 and 10 per cent for a family of four members. Based on a previous monographic study of housing conditions in late Bourbon Mexico City (Calderón 2009), Calderón (2014) proposes 8.5 per cent for the main American town until the 19th century. In some cases, even housing shares of 5 per cent might be failing to capture the fact that the real expenditure on that item could change over time: in Palencia, according to Moreno (2002), it grew from an index of 85.4 (1780-1784 = 100) to 204.8 in 1825 and moved downwards to 141.5 in 1837 (Moreno 2002, pp. 108-110).

Far from minor is the problem that Allen's methodology is very data demanding. Very long series of prices of all items in the basket (soap, candles, fuel, etc.) — some of them not usually recorded — and wages are

³² «la oferta por habitante de trabajo aumentó notablemente en determinadas fases de la Edad Moderna. Especialmente en el caso de las mujeres, y, en consecuencia, las rentas salariales de las familias tuvieron, en el largo plazo, una evolución bastante menos negativa que la de los jornales» (Llopis and García-Montero 2011, p. 296).

³³ «En un período inflacionista, como lo fue la segunda mitad del siglo XVIII, las mujeres trabajadoras pudieron perder menos poder adquisitivo por el hecho de que la parte de su salario que percibían en especie era, en promedio, mayor que la de los hombres» (Llopis and García-Montero 2011, p. 305).

³⁴ «..., mis nuevas estimaciones corroboran el declive de los niveles de vida en las décadas centrales del XIX, que los asalariados palentinos pudieron mitigar gracias a los ingresos proporcionados por mujeres y niños. Por el contrario, durante el primer tercio del siglo XIX, las rentas familiares no fueron tan sustanciosas como sugiere la evolución de los salarios de los varones, debido a la caída de los niveles de ocupación femenina, imputable, entre otros factores, a la crisis de la manufactura tradicional y a la filoxera, ...» (Moreno 2006, p. 26).

³⁵ Allen *et al.* (2012, p. 876) cite Gootenberg's estimate for early-19th-century Peru of 7.8 per cent.

needed for different locations and long periods. Despite all the efforts made over decades by the many scholars who have produced data on prices and wages, such a huge amount of data is simply not available. This explains why number of procedures for filling in a plethora of gaps is frequently used, albeit not always convincing (regressions, interpolations, averages, assumptions on the behaviour of markets and goods, etc.). For instance, in Arroyo-Abad *et al.* (2012), the series of wages for Argentina between 1775 and 1810 results from combining data on «construction workers» (1775-1810) with «government officials» and «bricklayers» (1810-1860) from Buenos Aires; that for Peru mixes the wages of «*mita* workers» in Huamanga (1597-1603) — a mining area in the Andes — with those of «porters» in Lima (1625-1760). The explanations of the sources used for Mexico City wages³⁶ and firewood³⁷ by Allen *et al.* (2011b) represent interesting examples of arguable attempts to fill the gaps in the available time series. The way in which Arroyo-Abad *et al.* (2012) account for missing data for textiles in Peru, Potosi and Chile also raises some reservations³⁸. Using prices from Lima (the commercially active and coastal capital of the viceroyalty) «to interpolate missing price data for Potosi» — a remote mining town, located more than 2,000 miles away from Lima and closer to northern Argentina's markets — does not seem to be fully justified (Arroyo-Abad *et al.* 2012). In Allen *et al.* (2012), prices of cotton cloth in Lima substituted for those in Bogota. Thus, it is not always easy to understand how the various methods used to build continuous time series from incomplete or non-existent information for all items in the basket influence the results obtained in terms of real wages.

Given the dynamics usually exhibited by prices and wages in pre-industrial economies (volatility vs. stability, respectively), the errors in the estimation techniques used to overcome the lack of much original data are likely to affect (volatile) prices more than (stable) wages. Hence, missing-data intervention produces worse results in the case of prices than in that in the case of wages. Thus, confronted with the paucity of data, we have opted for a version of the approach previously suggested by Allen himself for the case of Asia: «In view of the weakness of Asian price data for other commodities, it might be better to relate wages to the basic cost of a calorie

³⁶ «Unskilled wages from 1525-1600 were interpolated using a regression line. A general increase in wages to a constant 1.75 reales/day was created drawing upon Gibson's wage estimates. Garner's rural and urban wages were converted from monthly wages, assuming that workers worked 21.7 days per month. From 1700-49 regressions were used to interpolate rural and urban wages separately. From 1750-1856 Gonzalez et al.'s wage index was used to interpolate missing values in Garner's series» (Allen *et al.* 2011b, p. 49). Incidentally, a more careful reference of the mentioned authors would have benefited the paper.

³⁷ «Very little firewood data existed for Mexico; therefore, the average price of firewood from Bogotá was used in the basket» (Allen *et al.* 2011b, p. 48).

³⁸ «Price movements for most imported commodities in Peru, Potosi and Chile were very similar, although the price levels were usually distinct. [...] we filled gaps in the price series of textiles in one region with prices from another region» (Arroyo-Abad *et al.* 2012, p. 163).

implied by bread and rice rather than to the broader cost of living» (Allen 2005, p. 122).

The «universal» consumption basket estimated by Allen *et al.* (2012) clearly contrasts with the specific patterns of consumption found in different parts of Spanish America. Differences between the simple (four items) and «quasivegetarian» food component of the former and the diversity and relative sophistication of the latter are significant. The CPI estimated for a *mestizo* family by Brown (1992) shows that bacon, mutton, sugar, potatoes and coca leaves, among other goods, were consumed in Arequipa. The cost of this basket decreased from 199.6 pesos/year in 1690 to 129.5 in 1820. This decrease contrasts with the increase estimated by Arroyo-Abad *et al.* (2012) for Lima: from 699 g of silver in 1675-1724 to 729 in 1775-1820. Johnson (1992) suggests that meat and fish (fresh and dried) were important items in the diet of the Buenos Aires commoners, along with significant quantities of bread and yerba mate³⁹. The structure of expenditure in Santiago de Chile reveals that consumption was also quite diverse, as fat, sugar, animal proteins (dried beef, mutton, fresh and dried fish, and seafood), fruit and vegetables (potatoes) play an important role: the share of non-vegetarian items, animal fat excluded, is 27.1 per cent in 1754-1758 (Larraín 1992).

The CPIs constructed by Llopis *et al.* (2009), González-Mariscal (2013) and Calderón (2014) for, respectively, 18th-century Madrid, Seville and Palencia, Seville from 1521 to 1650, and 18th-century Mexico City show a similar picture of variety in food consumption that contrasts sharply with the extremely austere basket specified by Allen *et al.* (2012). In different proportions, in the Spanish baskets we find less cereal and more meat and wine than expected and even some delicacies (sugar, spices, etc.), albeit with a very light weight. Moreno's (2006) study of living standards in Palencia in 1800-1936 also shows food items that are ill-represented or not represented at all in Allen's «bare-bones» basket (meat, wine and milk). The Mexican basket surprises by its richness, as it includes relatively abundant animal proteins and alcoholic drinks, along with some vegetables, sugar and cocoa, among others.

As far as meat is concerned, Braudel (1974) already noticed that the comparative European «privilege» in terms of meat consumption during the Early Modern Era, although declining with respect to other civilisations such as India, China, Turkey and Egypt, was «re-established» towards the east (e.g. Hungary) and Spanish America (New Spain and, especially, around Montevideo and Buenos Aires). In this respect, Arroyo-Abad *et al.* (2012) propose a more accurate approach than that of Allen *et al.* (2012), as they

³⁹ «Todos los viajeros que visitaron Buenos Aires y el interior notaron lo extendido que era el consumo del mate entre los trabajadores nativos, tanto varones como mujeres» (Johnson 1992, p. 164).

distinguish between «meat eaters» (Argentina and Chile) and «others» (Bolivia, Colombia, Mexico and Peru). The consumption basket of the «others» is assumed to include much more meat than that of Europe (35 kg per capita vs. 5 kg), although the evidence suggests that meat consumption might be even higher. As for Mexico City, Quiroz (2005) is clear in this respect: «Comer carne no era un privilegio para la sociedad capitalina» (Quiroz 2005, p. 81). The aboriginals were not excluded from this easy access to meat: «La carne de res era uno de los alimentos básicos para el mantenimiento de los grupos indígenas instalados en la periferia urbana» (Quiroz 2005, p. 87). Thus, the impressive level of meat consumption estimated for Mexico City in 1767 (142 kg per capita) comes as no surprise. Her estimates for lard (125 kg per capita) and eggs (1,104 units per capita) are also remarkable. The difference with Europe and other parts of the world, North America included, becomes evident⁴⁰. The share of meat in the CPI calculated by Calderón (2014) is 16 per cent. Quiroz (2005) does not overlook distributional issues. She «ideally» proposes a daily consumption per capita of 163 and 460 g for, respectively, *mestizos* and Indians and «whites». Accepting these conjectural estimates, the yearly consumption of a family of the size assumed by Allen *et al.* (2012) would be nearly 180 kg for the «poor» and more than 500 kg for the «rich»⁴¹.

Any possible reduction of meat consumption in response to religious alimentary practices, as suggested by Johnson (1992)⁴², could not change the basic fact: Allen *et al.* (2012) and, to a lesser extent, Arroyo-Abad *et al.* (2012), seem to underestimate meat consumption in some Spanish American territories, even if some decline in the late decades of the 18th century was the likely result of price increases⁴³. Arroyo-Abad *et al.* (2012) partially avoid this problem as they assume a yearly consumption of 105 kg per capita for Argentina and Chile. While the notion that meat was very cheap in

⁴⁰ According to Baics (2010), consumption of fresh red meat by New Yorkers grew from 132.3 pounds per capita annually in 1790 to 166.5 between 1795 and 1816, while in the Thirteen Colonies the figure was slightly higher than in Republican New York.

⁴¹ In other New Spanish towns meat was also cheap (e.g. Guadalajara (van Young 1981) — see Figure 1 — and Cuernavaca (Barret 1974)). The miners of Real del Monte could buy substantial amounts of meat in the 1760s with just a part of their daily wages (Ladd 1992).

⁴² For Buenos Aires, this author suggests that abstinence of meat could reach 30 per cent of the days over the year. However, fish — «una parte aparentemente importante» (Johnson 1992, p. 157) of the local diet — substituted for meat in those days of religiously motivated abstinence. The extent to which the population followed the Catholic prescriptions remains unknown. In any case, animal proteins were not absent from the diet of more or less pious *bonaerenseses*.

⁴³ «En otras regiones de América estos hábitos alimenticios eran similares, Castellero-Calvo señala que en Panamá durante la primera mitad del siglo XVIII se comía carne a dos carrillos, en una cantidad normal para un adulto de una libra diaria, costumbre que había creado una costumbre difícil de abandonar; tanto así que la carne era la base de la alimentación del panameño y la dieta cárnica tan magnánima como la del europeo a fines e la Edad Media. La América tropical, especialmente en Centroamérica, Venezuela y Colombia, donde la carne en tasajo era la manera más corriente de alimentar a los trabajadores de Tierra Caliente, la medida más usada era la vara — ya que la carne para su conservación se cortaba en tiras largas y se secaba — esta vara igualmente equivalía a una libra y solía ser la medida para las raciones diarias» (Quiroz 2005, p. 71).

Argentina is widely accepted, the comparatively meat-intensive consumption patterns in Santiago de Chile shown by Quiroz (2009) are somewhat less well known.

The difference between the hypothetical meat consumption in Allen *et al.* (2012) and the real one suggested by abundant qualitative and quantitative evidence significantly contributes to their «pessimism». The more realistic assumptions about meat consumption adopted by Arroyo-Abad *et al.* (2012) substantially increase the degree of «optimism» — no matter how conditional — concerning Spanish America living standards. The inclusion of other goods that were usually consumed by the Spanish Americans of the Bourbon period would have a similar effect.

As far as alcohol is concerned, habits in some American territories do not fit with the claim that it «was seldom enjoyed» (Allen *et al.* 2012, p. 872). Abundant evidence suggests that rather the contrary was true. Wine represented 4.5 per cent of the agrarian products price index for Santiago de Chile in 1754-1758, down from 18 per cent for that of 1669-1673 (Larraín 1992). Wine and *eau de vie* were increasingly consumed during the late Bourbon period in Buenos Aires (Johnson 1992). von Humboldt mentioned the «enormous quantity» of pulque consumed by the inhabitants of Mexico City (compared with total alcoholic beverages sold in Paris), irrespective of their diverse ethnicity (Indians, *mestizos*, *mulatos* and even a majority of the *creole* whites) (von Humboldt 1822/1991, p. 133)⁴⁴. *Chicha* was popular among the Andean population and Brown (1992), therefore, includes it, along with coca leaves, in his basket representative of *mestizo* families' expenditures in 18th-century Arequipa. Neither *chicha* nor coca leaves were part of the ill-defined «Hispanic family», which, on the contrary, consumed wine and tobacco.

Tobacco was present in the everyday lives of many Spanish Americans. At least in 18th-century Mexico City, where cigarettes were «invented», even women and children were heavy smokers: «Esclavas y criadas, para entretener a los hijos de sus amos, les dejaban chupar de sus cigarros; así se escribirá con horror a mediados del siglo XVIII que en México «fuman hasta los párvulos» y que en muchos niños arraigaba la costumbre cuando contaban diez años de edad» (Céspedes 1992, p. 31). Two centuries earlier, smoking was already common among the poor, after previously having been «cosa de esclavos y bebedores de taberna y gente de poca consideración» (Céspedes 1992, p. 29)⁴⁵. Thus, based on a previous work, Calderón (2009, 2014) estimates at 9 per cent the share of tobacco within his CPI for Mexico City. von Humboldt confirms that consumption of tobacco in New Spain «debe parecer enorme» (von Humboldt 1822/1991, p. 298). Smoking was also

⁴⁴ Vásquez (2005) shows the importance of pulque consumption by the inhabitants of Mexico City (see also Quiroz 2005).

⁴⁵ An interesting image may be seen at <http://www.arqueomex.com/S2N3nVeracruz119.html>.

significant in Spain. von Humboldt considered «exorbitante» the stock of powder tobacco — other types of tobacco excluded — that might occasionally be accumulated at Seville (eighteen or nineteen million pounds), while the royal monopoly in Spain yielded, in 1782-1786, an annual net revenue of six million pesos (roughly 140 metric tonnes of silver for a population of fewer than eleven million inhabitants)⁴⁶. In other parts of Hispanic America, with the exception of Cuba, tobacco consumption was probably less widespread. However, the revenue obtained by the Crown from the tobacco monopoly was far from insignificant (Céspedes 1992), which suggests a more than merely occasional use of this non-essential.

Despite its internal heterogeneities, the Hispanic world on both sides of the Atlantic seems, to some extent, to share some early and peculiar consumption patterns. These patterns were unevenly distributed over the whole Early Modern Era, across territories and throughout all social segments. Meat, sugar, alcoholic beverages, cocoa, tobacco and probably some Asian manufactures such as anti-flea combs, cheap porcelain and textiles (*paliacates* and *rebozos* are still part of the Mexican popular national dress) were usual among elites and commoners. The latter should not be always identified with aboriginals (e.g. Southern Cone and, to varying extents, New Spain, Upper Peru, the Caribbean Basin, etc.). Therefore, abundant evidence is at odds with the universal and permanent subsistence basket proposed by Allen *et al.* (2012) as a valid standard measure of material welfare in pre-independence Spanish America.

An excessively simple «sober» basket of consumption turns out to be unable to capture distinct features of the complex and heterogeneous nutritional patterns over the Early Modern Era in the cradle of the «Columbus Exchange» and probably of the «consumer revolution» as well. Based on CPIs that, paradoxically, are closer to the «first generation» than to the «second generation», the simple estimate of real wages by Dobado-González and García-Montero (2009, 2010, 2014) offers straightforward intuitive results for Bourbon America that are clearly less «pessimistic» than those of Allen *et al.* (2012). Besides, reassuringly enough, they are not inconsistent with the findings of Arroyo-Abad *et al.* (2012), if reinforced with substantial evidence on biological living standards. The Dobado-García «optimistic» picture does not

⁴⁶ Smuggling is unknown. The Spanish figures are comparable — most likely even higher — if other types of tobacco (cigars, cigarettes, etc.) were available with those offered for mid-18th-century England by Nash (1982). Under the assumption of similar prices in the sales by the royal monopoly, tobacco consumption in New Spain exceeded that of the metropolis, as the revenue obtained by the Crown was similar to that in Spain while the population did not surpass 6,000,000. Even if the share in Mexico City's CPI might be somewhat overestimated, as the main tobacco factory in New Spain was located in the capital city of the viceroyalty, value added by this non-essential good would not be far from 3 per cent of the GDP. I owe these remarks to Andrés Calderón in personal communication. As differences in GDP per capita between New Spain and Britain or the Netherlands existed in c. 1800 and tobacco demand may be assumed to be rather income elastic than not, consumption basket design (of a «third generation») needs to be flexible to capture particular preferences.

contrast with that of Challú and Gómez-Galvarriato (2014) for Mexico City, in which heights are also used. Some differences in the interpretation of the biological welfare of the New Spaniards between these authors and ours exist and will be discussed below. Our estimates of economic and biological living standards show significant variations within Spanish America, as was also claimed regarding welfare ratios by Arroyo-Abad *et al.* (2012). Nonetheless, living standards across Europe were also far from similar, that is, Amsterdam vs. Madrid or London vs. Leipzig (see Tables 3 and 4). Thus, the idea that Spanish America was a «normal» part of the pre-industrial world should be seriously considered: life was not especially harsh for its uniquely multi-ethnic commoners. Most likely some of its territories were — both economically and biologically — wealthier and less unequal — or, at least, not poorer or more unequal — than other societies of the Early Modern Era.

The few anthropometric studies of pre-independence Spanish America published since 2009 (Challú 2009, 2010; Grajales-Porras and López-Alonso 2011; Challú and Gómez-Galvarriato 2014) deal with New Spain and are closer to «pessimism» than «optimism». As Dobado-González and García-Montero (2009, 2010, 2014) basically share with them the same methodology, our differences with their studies are of another kind⁴⁷. If we consider the whole of Spanish America (see Table 6), it turns out that we can find all ranges of heights: from very tall Argentines to very short south-eastern New Spaniards⁴⁸. This variance was not larger than across Eurasia and it is consistent with the variability observed in living standards. In the 1750s, «blancos» and «pardos» from Maracaibo, with heights of, respectively, 167.5 and 166 cm, were taller than males in Moravia, France, Low Austria, Bohemia, Russia and Spain (see Martínez Carrión 2012). Regarding New Spain, some decrease in males' average height — that could parallel that of real wages during the late 18th and early 19th centuries — seems more acceptable to us than the «Great Decline» proposed by Challú (2009, 2010). Compared with Europe, this decline was rather modest: a decrease of 2.5 cm from the 1740s to the 1780s does not seem properly «great», as in many European countries it exceeded 0.9 cm/decade between the 18th-century peak and through (Komlos and Küchenhoff 2012). Moreover, the huge decline estimated by these authors for the cohorts of English males born between the 1740s and the 1840s might be interpreted in the sense that English males might finally become shorter than the Mexicans. This would be the case if we accept the estimates of physical statures for the 1840s of López-Alonso (2010) and Carson (2005, 2007), which contrast sharply with those of Challú for the 1830s. The claim that «men of Spanish descent» born from the 1750s to the 1770s in Atlixco and Tehuacán (Grajales-Porras and López-Alonso 2011) was

⁴⁷ Some of them have already been shown in Dobado-González and García-Montero (2014).

⁴⁸ This latter case shows that information on biological welfare may substitute for real wages as a valid indicator of living standards as the short height of the inhabitants of this part of New Spain confirms the hypothesis that this was a backward region poorly integrated in the dynamic economy of the viceroyalty.

TABLE 6
Average height of adult males in selected countries and regions

	1730s	1740s	1750s	1760s	1770s	1800s	1830s	1840s
Argentina (1780s-1800s)					168		171.0	169.5
Central México (Challú)		165.2	163.7	164.5	163.2	162.0	160.4	
Maracaibo «blancos»	169.0	169.0	167.5	168.0				
Maracaibo «pardos»	162.7	164.7	166.0	166.5				
Northern New Spain	164.5	165.3	165.6	164.7	166.2			
Peru							163.0	162.5
South-eastern New Spain «whites»		161.4	160.8	159.3				
South-eastern New Spain «pardos»		157.0	158.0	159.0				
Bavaria	167.1	167.9	167.3	165.7	165.5		164.0	164.2
France	166.5	167.3	165.5	166.0		164	164.6	164.8
Indonesia (1770s-1790s)					157.4			
Interior Spain				163.5				162.8
Lombardy	167.7	168.3	166.4	166.1	165.3	164.5	164.1	
Russia	164.6	164.9	164.4	163.8	163.9	160.0		
Saxony	166.9	165.2	166.2	166.4	166.7	165.8	160.1	159.7

TABLE 6 (Cont.)

	1730s	1740s	1750s	1760s	1770s	1800s	1830s	1840s
South-eastern Spain			163.4	163.5	164.1			164.5
Sweden	168.4	169.4	168.2	167.4	167.0	167.8	167.9	168.0
United Kingdom (Cinnirella)		171.0	171.0	170.5	169.5	166.5	164.8	164.6
United Kingdom (Floud <i>et al.</i>)	171.4	165.8	167.0	169.0	168.5	171.5	168.2	167.5
England (Komlos and Küchenhoff)		172.5	172.0	171.0	168.5	164.0	163.5	160.5
United States	172.1	172.1	172.2	172.5	172.8	172.9	173.5	172.2

Note: Cohorts born from the 1730s to the 1840s.
Source: Dobado-González and García-Montero (2014).

«the only case which found that Europeans were taller than their colonial counterparts» may be true for those two locations but not as a general rule for the whole New Spain or other Spanish territories. Mexicans were taller than Spaniards in 1850, 1860, 1870 and 1880 (Challú 2010, p. 92). The limited evidence on physical welfare used by Arroyo-Abad *et al.* (2012) is not inconsistent with our view on the subject⁴⁹.

Further research is needed for a better understanding of the interactions between economic welfare — measured by real wages or by GDP per capita — and biological welfare. As for Spanish America, meat-eating Argentineans are rather tall and rich in terms of real wages and GDP per capita. However, the inhabitants of Maracaibo — whether «blancos» or «pardos» — are taller than what might be expected from their comparatively low GDP per capita, while Central New Spaniards, or even more clearly those from the northern areas of that viceroyalty, do not seem to be as tall as their protein-rich diet would suggest. In Europe, similar inconsistencies may also be found. In particular, the case of Lombardy is shocking: very low real wages in Milan do not prevent that part of Italy from being only second to England in heights in the mid-18th century. Indeed, inequality matters — including within-family access to food (Borderías *et al.* 2014) — but probably genetics and other factors also play their part. In any case, it is clearly beyond the purpose of this paper to contribute to this complex puzzle.

4. FINAL REMARKS

It has been my intention to show the significant progress that the study of living standards of pre-independence Spanish Americans from an international comparative perspective has experienced in the last 5 years. The previous literature, whose existence made the more recent one possible, was empirically very rigorous at a local scale. However, any attempt to compare the particular case study with others — not generally for much longer than a century — was absent. This lack of comparability constitutes a serious limitation in the interpretation of the results obtained within the appropriate context, that is, the global history of the pre-industrial world. Thus, finding that real wages decreased in late 18th-century Spanish America is rather an empirical regularity shared with most countries in Europe than a specific singularity that anticipated the irreversible economic crisis of the «colonial system». On the contrary, some of the post-2009 literature suffers from the opposite problem: the gains in terms of comparability over time (Early Modern Era) and space

⁴⁹ «In Argentina, people were extremely tall (about 170 cm on average), even taller than most Europeans. In Peru and Colombia average heights were much lower (163–165 cm) in the early 19th century, still sizable by European standards. Mexican heights probably fell in between...» (Arroyo-Abad *et al.* 2012, p. 159).

(Eurasia and the Americas) are achieved — in particular, but not only, by Allen *et al.* (2012) — at the expense of accuracy, therefore missing the heterogeneity of consumption patterns between Spanish America and the rest of the world and within Spanish America. This weakness inevitably tends to bias the results towards «pessimism» or at least limits their «optimism».

Dobado-González and García-Montero's methodology for studying real wages was initially intended to assess what Dobado-González (2009) defines as «new orthodoxy»: the influent idea that contemporary problems of development in Spanish America (low growth and high inequality) have «colonial origins». The practically insurmountable problems involved in finding the information required to estimate the cost of the baskets proposed by Allen (2001) and van Zanden (2005) suggested the choice of a simpler approach. Indeed, it has obvious shortcomings: rural and urban (miners or others) did not only consume separately grain, meat or sugar. However, jointly considered, these three products represented the bulk of the commoners' expenditure — albeit not the whole of it — and cover consumption of food items of varied income elasticities. Regarding the interesting remark made by Allen (2001) in defense of new CPIs, it is important to bear in mind that Spanish America was different from Poland: it was by no means a major grain exporter. Thus, grain wages are not as misleading as they may be in the Polish case. Abundant evidence suggests that consumption patterns (heterogeneous and changing over the Early Modern Era as they were within Spanish America) do not adjust without frictions with the assumed universal and constant «bare-bones» basket used by Allen *et al.* (2012). Improvements made by Arroyo-Abad *et al.* (2012) do not fully solve this problem, as results obtained within the same methodological framework by Challú and Gómez-Galvarriato (2014) show. A more detailed consideration of heights offers an interesting additional perspective that is absent in alternative approaches; Challú and Gómez-Galvarriato (2014) being an exception.

Given the trade-off between scope — that is, long-term international comparisons — and focus — that is, rigorous consideration of local circumstances — it is probably time for the birth of a «third generation» of CPIs better adapted for the study of world living standards in the past. They should be more responsive to differences in consumption patterns over time, assigning changing shares to food items in the CPIs. Housing and other non-food items should receive similar treatment. By doing so, González Mariscal (2013) shows that his «third-generation» CPI for Seville evolved between the early 16th century and the late 17th century in a different way to the alternative Sevillian CPI based on Allen's (2001) fixed basket. While trends are similar, differences in levels are significant — since 1560, González Mariscal's CPI is always higher than Allen's. The gap between the two series is especially relevant from 1590 to 1640: roughly 33 per cent. Presumably, other differences may appear when comparing rural and urban locations, dynamic and stagnant towns, periods of inflation and deflation, not to

mention those of «consumer revolutions». Peculiarities in consumption patterns across the world should also be taken into account. Indeed, this «third generation» of CPIs will be very effort demanding and probably not possible for all times and places. But they will describe the diverse and changing history of living standards in the past more accurately, especially when the family is considered as the basic, and adaptive, unit of income and expenditure. Taxation on consumption that might significantly affect price differentials between locations should also receive due attention.

Meanwhile, Dobado-González and García-Montero's double approach (real wages as power purchasing parity of selected goods and heights) offers a useful international comparison of real wages and heights over time. Evidence is found in favour of an «optimistic» view of pre-independent Spanish America living standards. This contrasts in a significant way with the common wisdom on the topic, according to which, in its crudest version, the «colonial legacy» was the mother of all contemporary evils afflicting this part of the world.

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