



CHAPTER 6

Population, Biological Welfare and Human Capital in Norway, Sweden, Bolivia, Chile and Peru During the Nineteenth and Twentieth Centuries

Rodrigo Rivero-Cantillano and Manuel Llorca-Jaña

I INTRODUCTION

Population trends have been a permanent concern of both economists and economic historians since population growth has been usually taken

We are very grateful to Göran Rydén, Kristin Ranestad, Cristián Ducoing, José Péres-Cajías, Carlos Contreras, Tania Vásquez Luque and Martín Monsalve for providing references and general advice. This chapter received funding from ANID PIA SOC180001 and to Fondecyt project number 1180005.

R. Rivero-Cantillano (✉)
Facultad de Artes Liberales, Universidad Adolfo Ibáñez, Santiago, Chile
e-mail: rodrigo.rivero@uai.cl

M. Llorca-Jaña
Escuela de Administración Pública, Universidad de Valparaíso, Valparaíso, Chile

© The Author(s), under exclusive license to Springer Nature
Switzerland AG 2021

C. Ducoing and J. Peres-Cajías (eds.), *Natural Resources and Divergence*, Palgrave Studies in Economic History,
https://doi.org/10.1007/978-3-030-71044-6_6

as a proxy of progress, prosperity and social order (Livi-Bacci, 2017). Throughout history, there have been periods of expansion, stagnation and even of decline, according to the evolution of the economic cycle but also due to changes in many other variables (Livi-Bacci, 2017; Lee and Reher, 2011). Indeed, even in periods/countries with no change in income, population and life expectancy have improved over time thanks to substantial improvements in scientific and medical knowledge (Deaton, 2013).

During the last two centuries in particular, world's population has experienced its fastest growth, achieving over 7 billion people. The increase between 1900 and 1990 was four times as great as the increase during the previous thousand years; that important it is this development (Fogel, 2004). As part of this phenomenon, nations have overcome many obstacles, of diverse nature, including economic, environmental and biological challenges, all of which has been translated into a dramatic fall in morbidity and mortality. Indeed, the associated decline in mortality rates over the past two centuries, and the subsequent increase in life expectancy, is perhaps the greatest achievement in human history (Fogel, 1991).

Linked to this, the demographic transition theory (DT) seeks to explain, too, the world population's growth. In its simplest version, the DT refers to the historical shift from high birth rates and high mortality rates, to low birth rates and low death rates. Within this development there has been a "modernization" process in the reproductive pattern of the population, based on a profound transformation of societies that passed from being predominantly agrarian and rural to being mainly urban (Rivero-Cantillano, 2016; Chesnais, 1986; Notestein, 1945).

In turn, scholars of the DT have preferred to separate countries into two large groups. For the first group the DT would be mainly explained by the behaviour of endogenous variables, such as the processes of economic, social, cultural and scientific modernization. Within this group fall Western European countries and their offspring, who experienced their DT between the late eighteenth century and the first half of the twentieth's. This certainly includes the Nordic countries, as we shall see. For these countries there was a gradual fall of mortality rates, followed by an also steady decrease in birth rates, which triggered a continuous growth of the population, but which deaccelerated during the last decades.

The second group, in turn, would encompass less developed nations, that experienced their DT later mainly during the second and third quarters of the twentieth century. This group comprises most Latin American countries,¹ including our the Andean nations. For these countries, exogenous variables are more important to explain the DT, including knowledge transfer, as well as the implementation of new technologies within the health sector, which were “imported” from developed nations (Reher, 2004; Rivero-Cantillano, 2016; Sánchez-Albornoz, 2014). In this case, there was a rapid fall in mortality rates, but birth rates remain high for a while, which led to an “explosive” population growth in a few decades (Sánchez-Albornoz, 2014; Livi-Bacci, 2017).

Linked to the DT there is another related change, the epidemiological transition (ET), essential to understand the decline in mortality rates, infant in particular and the subsequent increases in life expectancies (Omran, 2005; Deaton, 2013). The ET is characterized by a fall of infectious diseases as causes of death, together with an increment of chronic diseases as causes of decease. As a consequence, morbidity, rather than mortality, became the main epidemiological issue for most nations, and this issue concentrates within older people (Omran, 2005; Frenk et al., 1991).²

Within Latin America, the ET started during the 1930s, but at very different rates across countries. By the 1970s, Chile, Costa Rica and Cuba were at an advanced stage of the ET, enjoying morbidity and mortality rates not far away from the most developed nations. At the other extreme were countries such as Haiti, Bolivia and Peru, which by the 1980s were still at the initial stages of the ET, with an overwhelmingly predominance of infectious diseases as causes of death (Frenk et al., 1991).

As a result of these two transitions, the DT and the ET, people in most countries now live longer and healthier (Deaton, 2013). Longer longevity is explained, on the one hand, for better nutrition that triggers a stronger immune system to fight diseases, thus reducing morbidity

¹ Excluding Argentina, Cuba and Uruguay, who experienced a similar timing in their DT to Western European countries, perhaps due to the large influx of European emigrants that they received during the first globalization, a period of mass migration (Rivero-Cantillano, 2016). See also next section.

² The ET has been mainly associated to the development and diffusion of the microbial disease theory from the 1880s, which led to the introduction of new vaccines from the 1890s (Preston, 1975).

rates. But there have been also many improvements in health care provision and technological advances applied to medicine. All these changes have allowed humanity to escape from hunger and “premature death” (Fogel, 2004; Deaton, 2013; Prados de la Escosura, 2018). Going further with the argument, Fogel and Costa (1997) coined the term “technophysio evolution”. It refers to the existence of a synergism between technological and physiological improvements that has produced a form of human evolution that is biological but not genetic. Better nutrition enabled people to grow taller and stronger, leading to better cognition and productivity increases, therefore, to better human capital (Fogel, 2004).

Thus, in this chapter we describe the main demographic trends of the five countries analysed in this book during the last two centuries: two Nordic countries, Norway and Sweden on the one hand; and three Andean countries, Bolivia, Chile and Peru on the other hand. Despite their current, and evident, differences in many indicators of economic development, all these five countries for long based their development strategies largely on the exploitation of natural resources, in particular at the onset of modern economic growth in both regions (Blomström & Meller, 1991; Bértola & Ocampo, 2012). Furthermore, around mid-nineteenth century, there were not major differences in per capita GDP across Nordic and Andean countries (Ducoing et al., 2018). In this sense, by analysing their main demographic and human capital trends we provide new insights into the diverging paths they have followed during the last two centuries.

After this introduction, the chapter is organized in three other sections. Next we provide general trends of population growth, migration, ethnicity and urbanization. This is followed by a section dealing with infant mortality, life expectancy and height. Finally, before concluding, we provide the main trends on human capital, by focussing on three classic indicators: average years of schooling, literacy rates and numeracy.

2 POPULATION: GENERAL TRENDS

By 1820 Sweden was the most populated of all five countries, more than doubling the population of all others. By 2010, though, Sweden’s population was well behind Peru’s and Chile’s, being only above that of Norway (Table 1). During these nearly two centuries, Chilean and Peruvian population increased 22-fold, Bolivia ninefold, while Norway and Sweden

Table 1 Population (number of inhabitants and growth)

<i>Year</i>	<i>Thousand people</i>					<i>Rate of growth (annual)</i>					
	<i>Bolivia</i>	<i>Chile</i>	<i>Peru</i>	<i>Norway</i>	<i>Sweden</i>	<i>Period</i>	<i>Bolivia (%)</i>	<i>Chile (%)</i>	<i>Peru (%)</i>	<i>Norway (%)</i>	<i>Sweden (%)</i>
1820	1100	771	1317	970	2573						
1850	1374	1410	2001	1392	3462	1820–50	0.7	2.0	1.4	1.2	1.0
1870	1495	1945	2606	1735	4164	1850–70	0.4	1.6	1.3	1.1	0.9
1913	1881	3431	4295	2447	5621	1870–1913	0.5	1.3	1.2	0.8	0.7
1929	2370	4202	5396	2795	6113	1913–1929	1.5	1.3	1.4	0.8	0.5
1950	2766	6091	7633	3265	7014	1929–1950	0.7	1.8	1.7	0.7	0.7
1980	5441	11,094	17,295	4086	8310	1950–1980	2.3	2.0	2.8	0.8	0.6
2010	9947	17,081	28,995	4890	9378	1980–2010	2.0	1.4	1.7	0.6	0.4
2010/1820	9.0	22.2	22.0	5.0	3.6	1820–2010	1.2	1.6	1.6	0.9	0.7

Source Maddison Project Database, version 2018. Bolt et al. (2018). Available at (accessed on 4 October 2020): <https://www.rug.nl/ggdc/historica/development/maddison/releases/maddison-project-database-2018>

“only” fivefold and 3.6-fold, respectively. And indeed, between 1820 and 2010, the population’s compound annual growth rate of Sweden was 0.7%, less than half of that enjoyed by Peru and Chile (1.6%). This is in line with the experience of most developing countries during the second half of the twentieth century, which greatly expanded their population. They were latecomers to the DT. Latin America in particular experienced a vibrant population growth during the 1960s–1980s, which has been labelled as “explosive” (Sánchez-Alonso, 2006; Pérez-Brignoli, 2010).

Regarding migratory movements during the last two centuries, let’s start with the Andean countries. European immigration in Bolivia, Chile and Peru during the nineteenth and the early twentieth centuries was modest,³ in particular if compared to nearby countries such as Argentina, Uruguay or Brazil, which received large influx of European immigrants during the age of mass migration (Sánchez-Albornoz, 2014; Bértola & Ocampo, 2012; Sánchez-Alonso, 2006; Pérez-Brignoli, 2010). The labour markets of the Andean countries were relatively better supplied than in the Atlantic South American countries, and the cost of travelling from Europe to Peru, Chile or Bolivia was higher than to Atlantic countries. Finally, the Andean countries’ governments were relatively less interested in subsidizing immigration than in the River Plate countries or Brazil’s cases, although there were some immigration programmes in place in Peru and Chile. In Peru in particular the bad experience of early Chinese immigrants led to the unwillingness of others to follow, since it received extensive international press coverage (Contreras, 1994). Real wages were also lower in the Andean countries, so that immigrants preferred to go elsewhere. Indeed, European emigration to Latin America was highly concentrated in a handful of countries, namely, Argentina, Uruguay, Brazil and Cuba, while at the same time Latin America was a latecomer to the age of mass migration (Sánchez-Alonso, 2006; Pérez-Brignoli, 2010).

³For example, in Chile’s case, according to the censuses, foreigners never accounted for more than 5% of the total population during the nineteenth and twentieth centuries (Pérez, 2020). In Peru too, foreigners were 4% of the population in 1876 and only 1% in 1940, being around half of them Asian people (Contreras, 1994). Finally, in Bolivia, immigration was of even less consequence than in either Peru or Chile. For example, in 1992 and 2001, foreigners accounted for 0.8% and 1.1% of the population (mainly Argentineans, Brazilians, Peruvians and Mexicans), respectively, being these the higher ever rates, at least from 1911. They reside mainly in Santa Cruz and La Paz (Vargas, 2009).

That said, Chile and Peru did receive some immigrants during the late nineteenth century and early decades of the twentieth century, and although their numbers were low, its significance should not be dismissed, since they impacted on many sectors of the economy. For example, many of these immigrants or their descendants ended being high-profile entrepreneurs after establishing many new manufacturing or financial enterprises (Llorca-Jaña & Miller, 2020). Finally, Bolivia too received some immigrants, although to a far lesser extent. Indeed, of the three Andean countries, immigration has been almost negligible in the Bolivian case (Branisa et al., 2020). In the Chilean case in particular immigrants arrived mainly from Germany, Croatia, Switzerland, Italy, Britain, France, Spain and some Arab countries (Baten & Llorca-Jaña, 2020; Pérez, 2020). Peru in turn, received Chinese and Japanese immigration, the former to be employed mainly in guano, sugar and cotton industries, while a few thousands Europeans also arrived to the country (Contreras, 1994; Yamawaki, 2002).⁴ There were also some internal migratory movements within the Andean region, in particular of Peruvians and Bolivians to the Chilean nitrate district after the end of the Pacific War (1884). During the 1910s–1920s, around a third of all the inhabitants of the Chilean Tarapacá province—the heart of the nitrate industry—were either Peruvians or Bolivians (Pérez, 2020).

WWI, the Great Depression and WW2, though, greatly reduced the international movement of people into our three Andean countries (Pérez, 2020), as mostly elsewhere in the world. These decades were followed by political instability and the economic crisis of the 1980s, a lost decade for Latin America as a whole, at least as far as its economic performance is concerned. Thus, the 1920s–1980s were rather quiet regarding international movement of people into and out Peru, Bolivia and Chile. Yet, from the mid-1980s, and in particular during the last two decades of the twentieth century and early decades of the twenty-first-century Bolivians and Peruvians started to emigrate to nearby countries, as well as to Europe and the US in a remarkable fashion.⁵ Peru and Bolivia are now

⁴In particular, some German, French, and Italian immigrants also arrived to Peru during the nineteenth century, but in smaller numbers if compared to the Asian arrivals (Contreras, 1994).

⁵Peruvians have emigrated importantly to Spain (the favourite destination), US, Italy, Japan, Argentina and Chile (Berg & Paerregaard, 2004; Altamirano, 1996). Bolivians, in turn, have also emigrated importantly during the last few decades, to Argentina, the

“net exporters” of people, and in sizeable numbers. Chileans, in contrast, except for the sad period of Pinochet’s military dictatorship, which saw the exodus of so many political exiles, have never emigrated massively on a permanent basis, neither during the last half a century, nor before.⁶ On the contrary, Chile is currently a “net importer” of people, having received large number of immigrants during the last decades, quite a new phenomenon for the country, in particular from Peru, Colombia, Haiti, Venezuela, Bolivia and Argentina,⁷ attracted by higher wages, and despite the rampant inequality of the country. Finally, Peru too has received recent waves of immigrants from Colombia and Venezuela (escaping from high political instability), also a rather new phenomenon for this country.

The migratory movements of Norwegian and Swedish people were the opposite: they emigrated mainly during the second half of the nineteenth century and receive immigrants a century later. It is well known that during the first globalization there were many improvements in transport and communications, combined with low barriers to the international movement of people, which fuelled a massive wave of emigration from Europe, in particular to the Americas: around 30 million Europeans emigrated between *c.*1860 and 1914 (Sánchez-Alonso, 2006; Hatton & Ward, 2019). Scandinavian countries, including Norway and Sweden, were among the earliest and most important providers of emigrants, in particular in relation to the size of their population. The 1880s in particular saw many Norwegian and Swedish leaving their home towns. It is estimated that around 1 million of the European emigrants of the first globalization came from Sweden alone, which accounted for an estimated one quarter of the country’s total population by 1910. In turn, some 600,000 Norwegian emigrated too during this period (Semmingen,

US, Brazil, Chile, Spain and a few other countries. Argentina in particular has historically attracted most Bolivian emigrants (Domenech & Hinojosa, 2009). It is believed that around a 20–25% of those born in Bolivia currently live outside the country, although there are not reliable figures. This a new phenomenon for a country that for long tried hard to restrict the outflow of people (Domenech & Hinojosa, 2009).

⁶There were only short-term emigration boom periods, such as that linked to the California Gold Rush of the mid-nineteenth century or the emigration to Peru to work in railways construction during the late nineteenth century (Pérez, 2020; Contreras & Cueto, 2004).

⁷The case of Argentina is interesting because many Chilean have also emigrated there at several periods, in particular from the south of the country (Pérez, 2020).

1960).⁸ The Swedish went mainly to the US, which was the main receptor of European immigrants by far (Ejeremo et al., 2020). Norway too sent most of its emigrants to the US: 97% of all Norwegian that left during these decades went to the US (O'Rourke & Williamson, 1999). So important was this movement of people that it is estimated that between 1870 and 1910, emigration lowered the labour force by 24 percent in Norway (O'Rourke & Williamson, 1999). Many Swedish and Norwegian, though, returned home after a few years in the US, while not many emigrated after WWI (O'Rourke & Williamson, 1999). Between WWI and present times, not many Scandinavian left their shores: their countries greatly improved their living standards during that period. More than that, during the last few decades, the flow of people for these countries have reversed, since they have received many immigrants from developing countries. This is unsurprising since during the last few decades most European countries' population growth came from immigration (Amenta & Steinmo, 1995; Bengtsson, 2019; Hveem, 1991; Lindert, 2004; Ljungberg & Schön, 2013; Sandberg, 1979).

As far as the ethnic composition of our five countries is concerned, we could say that, before the wave of emigration into Chile during the last few decades, the population of the country was fairly homogenous, mainly consisting of white people (descendants of European immigrants) and mestizo people (Llorca-Jaña et al., 2021), existing less representation of indigenous groups, in particular if compared to other Andean countries. Indeed, the first sound ethnicity data available for Chile is for the 1907 census, and it shows that Mapuche people, the most important native group, accounted for just around 3% of total population, while the censuses of 1920, 1930 and 1940 provide similar figures (Pérez, 2020). In contrast, in Bolivia and Peru the indigenous population (Aymaras, Quechuas, Guaranies & Amazonian) has always been far more important than in Chile during the whole of the nineteenth and twentieth centuries (Bértola & Ocampo, 2012). Finally, in the particular case of Peru, people with Asian background is also notorious, as well as the important presence of black people due to the impact of the slavery trade before independence.

In turn, our two Scandinavian countries remained for long, and until recently, relatively ethnically homogeneous since they did not receive

⁸After Ireland and Italy, and in relation to the size of its population, Norway was the most affected European country by their emigration flows (Semmingen, 1960).

much immigration. This, though, has changed dramatically during the last few decades. Sweden in particular has become increasingly ethno-cultural heterogenous. By 1970 only 6% of the population was foreign born, but this share increased to 13% by 2006 (Eger, 2010). Likewise, in Norway, between 1995 and 2011 the number of immigrants trebled, reaching 600,000 people, out of less than 5 million inhabitants (Eriksen, 2013). Apart from other European immigrants coming into these Nordic countries, Asian immigrants are the most important group within both Sweden and Norway, in particular from countries such as Iraq, Iran and Turkey (<https://www.scb.se/en/>; <https://www.ssb.no/en>).

Regarding urbanization rates, in Chile's case, in 1854 almost 20% of the population lived in urban areas, increasing up to nearly 50% by 1940, to over 70% in the 1960s and to over 80% in the 1980s. Indeed, by the mid-twentieth-century Chile became one of the most urbanized countries within Latin America, together with Argentina and Uruguay, and indeed even if compared to most European countries (Pérez, 2020), including Norway and Sweden (see below). Currently its urbanization rate is some 88%. Peru, in turn, increased its urbanization rate slowly from 17 to 27% between 1876 and 1940 (Contreras, 1994), and then rapidly to 64 and 73% in 1980 and 2010, respectively (Bértola & Ocampo, 2012), being always below Chile. Of our three Andean countries, Bolivia is the less urbanized of all. Its urbanization rate was around 11% in 1846 and only 10% in 1900 (Branisa et al., 2020). Only in 1980 it achieved an urbanization rate of 45%, and then 66% in 2010, well below the rate of the other two Andean countries under consideration (Bértola & Ocampo, 2012). Finally, as far as our two Scandinavian countries is concerned, Sweden's level of urbanization was about 10% before 1850, increasingly steadily to 21% in 1900 and 47% by 1950 (Dyson, 2011), and to a remarkable 88% according to the latest figures, quite similar to Chile. The path followed by Norway was quite similar. It currently enjoys an urbanization rate of some 83%, but this was not always as high. By 1890 it was only 30%, increasingly steadily, in particular around mid-twentieth century, to reach 70% in 1990 (Byfuglien, 2008).

3 INFANT MORTALITY, LIFE EXPECTANCY AND HEIGHT

It is not secret that “life is better now than at almost any time in history” (Deaton, 2013: 12). Populations are living longer and enjoy healthier lives. The increase in life expectancy at birth has been mainly a result of

a dramatic fall in infant mortality, as we shall see Fogel (2004). In turn, people's diet has improved too, so that height and BMI has increased in most populations. People are now taller and stronger than ever before (Fogel, 2004; Deaton, 2013; Floud et al., 2011). When doing comparative studies across countries, it is worth, therefore, paying attention to the development of key variables such as infant mortality, life expectancy and height.

The fight against infant mortality has been a battle against poverty and inequality: infant mortality is most usually concentrated within the poorest strata of society, despite remarkable advances in worldwide health. Indeed, health progress has created gaps in health in the same way that material progress created gaps in living standards (Deaton, 2013). Infant mortality rates are highly influenced by overall health conditions, the socioeconomic environment, education and by the health of the parents (in particular of the mother), as well as by the quality and access conditions to health services (Schneider et al., 2002). And indeed, the worldwide reduction of infant mortality has been mainly due to effective public health reforms, advances in medical knowledge and the implementation of better health practices, improvements in personal hygiene (and education), and to rising income and better standards of living, including better nutrition (Fogel, 2004). Would this be the case, the differences in infant mortality across our countries' sample would be a direct consequence of disparities in the level of economic, social and cultural development of their populations.

As can be seen in Fig. 1, Norway and Sweden have enjoyed far lowest infant mortality rates (IMR) than our three Andean countries, and with a permanent decreasing trend. By the 1930s, these Scandinavian countries' IMR were below 50 deaths per 1000 live births, which was half the IMR achieved at the beginning of the twentieth century. It continued its decreasing trend until achieving staggering values below 4, one of the lowest IMR ever achieved in the world. Our Andean countries, in turn, have experienced a convergence process towards these rates, in particular during the second half of the twentieth century, but much remain to be done regarding public health policies, in particular in Bolivia.

The case of Chile is truly exceptional. Within Latin America, no other country has experienced such a dramatic fall within such a short period of time in its IMR. At the beginning of the twentieth-century Chile had the sad record of suffering one of the highest IMR for those countries for which there is available information all over the world. Nowadays,

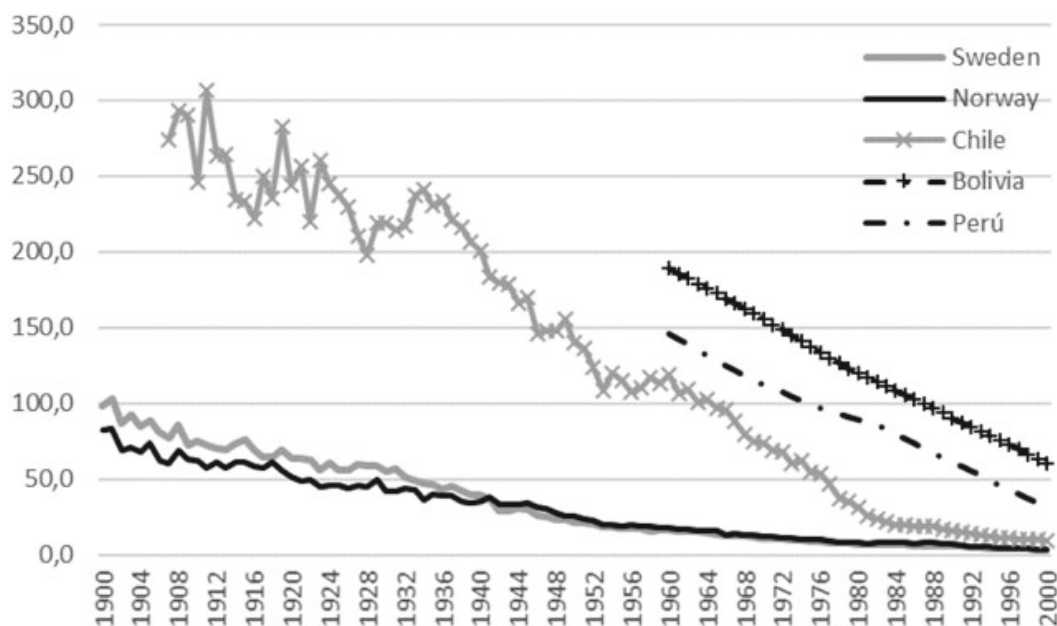


Fig. 1 Infant mortality rate (per 1000 live births)⁹ (Source For Sweden and Norway from Human Mortality Database [<https://www.mortality.org/>]. For Chile Díaz et al. [2016]. For Perú and Bolivia World Bank [<https://www.bancomundial.org/>])

though, Chile enjoys the lowest IMR within Latin America, being at a level similar to many developed countries. This remarkable transition has called the attention of Nobel Prize winner Angus Deaton (2013) when stating that some countries have done much better than might be expected from their incomes, mentioning Chile as a case in point due to its currently very low IMR and high life expectancy.¹⁰ Yet, there is still an important gap between the Nordic nations and the other two Andean countries' IMR. The IMR of Peru and Bolivia at the end of our period of study are 11-fold and 18-fold, respectively, the IMR currently enjoyed by either Sweden or Norway. Peru and Bolivia, are therefore, around three-quarters of a century behind both Norway and Sweden regarding this indicator.

⁹The concept of infant mortality rates applies to deaths by age 1.

¹⁰That said, Chile's infant mortality was one of the highest on earth by the late nineteenth century (Llorca-Jaña et al., 2021). That is, it is true that Chile successfully managed to greatly reduce its IMR, but coming from very high levels.

Table 2 Life expectancy at birth (years)

<i>Year</i>	<i>Bolivia</i>	<i>Chile</i>	<i>Peru</i>	<i>Norway</i>	<i>Sweden</i>
1900	26	29		53	52
1910	28	30		58	58
1920	31	31		59	59
1930	33	35		64	63
1940	36	38	37	66	67
1950	40	49	40	72	71
1960	43	57	48	74	73
1970	46	62	54	74	75
1980	52	69	60	76	76
1990	58	74	66	77	78
2000	62	75	69	79	80

Source For Bolivia, Chile and Perú, Bértola et al. (2012); for Sweden and Norway, Human Mortality Database <https://www.mortality.org/>

A direct consequence of improvements in IMR is that life expectancy increases. Those who managed to survive their first year of life increase dramatically their chances of reaching adulthood (Rivero-Cantillano, 2016). Table 2 portrays the important increases in life expectancy at birth (LEB) of our five countries. The current LEB of our two Nordic countries is around 80 years, gaining almost 30 years if compared to the early twentieth century. The absolute gains (in years) for the Andean countries have been even greater, but coming from far lower levels. Once again, as for IMR, the convergence rate of Chile towards the LEB levels of either Norway or Sweden has been more substantial than that enjoyed by Peru and Bolivia. The current LEB of Chile is some 75 years, at the same level of many developed countries such as the US,¹¹ and not far away from the Nordic countries. Chile's achievement is the most remarkable since it achieved its current rate of LEB with a quarter of the per capita income of the US (Deaton, 2013). The improvements in LEB of Peru and Bolivia have also been significant, but they are still well behind Chile, not to mention the Scandinavian countries. Yet, the experience of our three Andean countries confirm that there are ways of ensuring relatively good health at rather low incomes (Deaton, 2013).

¹¹ <https://datos.bancomundial.org/indicador/SP.DYN.LE00.IN>.

Why the exceptionality of Chile within the Andean countries? It is true that Chile's per capita GDP is higher than that of Peru and Bolivia, but we also know that the US enjoys a far higher level of per capita income than Chile and both enjoyed similar rates of LEB. That is, differences in IMR and LEB are not only down to differences in personal disposable income. Other factors must be brought into the analysis. In this sense, it is believed that Chile was a pioneer within Latin America in expanding its water supply systems, its waste collection infrastructure, its programmes of education for women and future mothers, its programmes of health prevention and universal health services, and the implementation of complementary food programmes, in particular for lower socioeconomic groups. These initiatives certainly impacted positively on the biological welfare of the population, triggering a rapid convergence, in particular from the 1960s, towards the IMR, morbidity and LEB levels of developed nations (Uauy & Vio, 2007; Albala & Vio, 1995; Vio & Albala, 2000; Szots, 2002, 2003). The increasing social expenditure, as both a fraction of GDP and in per capita terms, and despite moderate economic growth, has been linked to the emergence of an incipient welfare state. This allowed a substantial and steady increase in the flow of resources devoted to social policies (Núñez & Pérez, 2015; Arellano, 1985). More than an increase in fiscal revenues, there was a reorientation of government expenditure to finance social policies. As a consequence, Chile's real per capita social expenditure increased six-fold between the 1960s and the 1980s, and then again five-fold between the 1980s and the 2010s (Díaz et al., 2016).¹²

The last indicator of this section is height. It is now widely accepted that adult height is a direct result of health and nutrition during childhood, and that environmental factors play a part too. People who enjoy better diet, clothing, shelter, sanitary conditions and education during the first years of existence should be taller, or at least taller than people who grew up under less favourable conditions. There is also a positive correlation between height and life expectancy (Steckel, 1995, 2009; Komlos, 1985; Baten & Komlos, 1998). Likewise, increases in height and BMI are believed to have led to a decline in the prevalence of chronic diseases (Fogel, 2004). Hence the importance of analysing the evolution

¹²In contrast, per capita fiscal income increased "only" 81% between the 1960s and the 1980s, and "only" doubled between the 1980s and the 2000s (Díaz et al., 2016). That is, social expenditure increased at far higher rates than fiscal revenues.

of adult stature. Unfortunately, most of the data available is for males only, although we would expect similar trends shall we consider female data too.

Nowadays, Scandinavian people, together with the Dutch, are the tallest inhabitants of the world, reaching around 180 cm of adult stature for men. The Swedish and Norwegian are no exception (Fig. 2): they are currently far taller than Peruvians and Bolivians, by as much as some 15 cm. The difference with Chile is currently less substantial, Swedish and Norwegian are some 8 cm taller than Chileans. Indeed, within all Latin American countries Chileans are among the tallest of all (Llorca-Jaña et al., 2021). These differences in stature between Nordic and South American countries were not as high, say 150–175 years ago. Indeed, by the 1850s, Norwegian and Swedish were only some 3 cm taller than Chileans. From that time, though, there has been an importance divergence process in the biological welfare of developed nations and less developed countries, as seen in Fig. 2. For our particular countries, there has been a sharper height divergence process between Nordic countries and Bolivia and Peru.

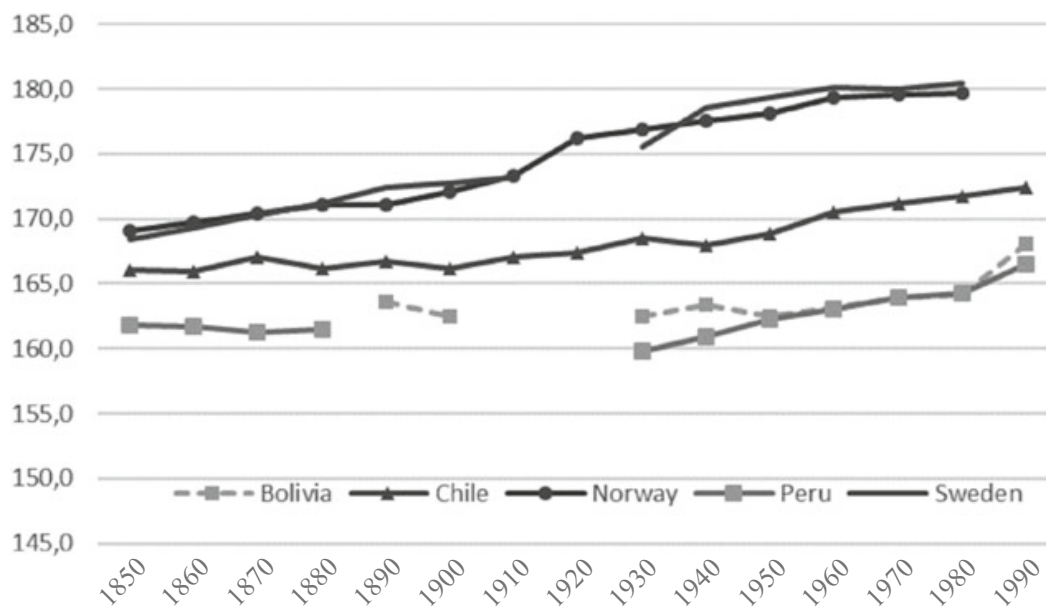


Fig. 2 Raw average height of adult males (cms) (*Source* For Chile, our own data; Baten and Blum (2012) for all others, available at Clio-Infra project [<https://clio-infra.eu/>])

4 HUMAN CAPITAL: SCHOOLING, LITERACY AND NUMERACY

History of education has a long tradition. However, it was during the late nineteenth century and the twentieth century that people's education became a crucial engine of economic growth and of social development for most countries. In turn, education is a multidimensional variable, touching on most aspects of our everyday life, being behind most radical changes in advanced societies, including improvements in living standards, increasing personal disposable income, adoption of new technologies, reduction of inequality, enhanced democracy and even on the evolution of the rates of mortality and natality (Morrisson & Murtin, 2009). Indeed, education is perhaps the most important driver of human capital, and in turn human capital impact directly and positively on workers' productivity and real wages (Schultz, 1960). All in all, the level of education of the economically active population, as well as its evolution, is a key determinant of people's development and more generally of any nation's economic growth (Thorp, 1998).

In the long run, the main education's achievements of our three Andean countries can be seen in the reduction of their illiteracy rates (Table 3). During the course of the twentieth century, Bolivia passed from having an extremely high illiteracy rate (82%) to a respectable 85% literacy rate. Perú, in turn, reached a literacy rate of 90% by the end of the twentieth century, while Chile's current rate is close to 100%. However,

Table 3 Illiteracy rates
(% of the adult
population)

<i>Year</i>	<i>Chile</i>	<i>Bolivia</i>	<i>Peru</i>
1900	57	82	76
1910	47	80	71
1920	37	78	67
1930	25	75	63
1940	27	72	58
1950	21	68	49
1960	16	56	40
1970	12	42	28
1980	8	31	21
1990	6	22	14
2000	4	15	10

Source Moxlad (<http://moxlad.cienciassociales.edu.uy/>)

if compared to the Nordic mirror, these achievements are less important. Both Sweden and Norway achieved almost complete literacy within adults by the mid-nineteenth century. And indeed, the successful convergence tale of per capita income of these two Scandinavian countries towards the most advanced nations is largely due to their education's improvements during the first globalization of *c.*1870s–1914 (O'Rourke & Williamson, 1995). On the contrary, no Latin American country enjoyed substantial improvements in their education levels before the 1930s. It was only between the 1940s and the 1960s that a substantial improvement in Latin America's literacy rates took place in most countries of the region (Thorp, 1998). And indeed, as can be seen in Table 3, it was only from the 1950s that illiteracy rates decreased importantly in both Chile and Peru.

Another useful indicator of a population's education level is the average years of schooling (Table 4). During the second half of the twentieth century, Peru, but in particular Chile, closed the gap with the Nordic countries. However, the case of Bolivia is unfortunate. Rather than converging towards the average years of schooling of Norway or Sweden (as Peru and Chile did), it went backwards. Between 1960 and 1980 Bolivians' average years of schooling decreased by around one year, recovering only by the end of the century, suffering a clear divergence process regarding our two Scandinavian countries.

All in all, despite the evident advances in literacy during the twentieth century by the three Andean countries, there are significant differences across Bolivia, Peru and Chile, not to mention the wide gap if compared to the Nordic countries, in particular during the first half of the twentieth century, but even by the end of our period of study. For example,

Table 4 Average years of schooling among the population older than 15

<i>Year</i>	<i>Bolivia</i>	<i>Chile</i>	<i>Peru</i>	<i>Norway</i>	<i>Sweden</i>
1950		4.9	2.8	7.3	7.5
1960	5.4	5.6	3.8	8.2	7.9
1970	4.8	7.0	5.2	9.6	9.3
1980	4.6	8.1	6.3	10.5	10.2
1990	5.0	8.9	7.3	11.3	11.0
2000	5.6	9.5	8.0	11.9	11.1

Source For Bolivia, Perú and Chile from Bértola et al. (2012). Norway and Sweden from Morrisson and Murtin (2009)

the literacy rate of Chile and Peru by the end of the twentieth century was at a similar level of that achieved by both Norway and Sweden by the early nineteenth century, that is, around 200 years earlier (Johansson, 2009; Peres-Cajías & Ranestad, 2021; O'Rourke & Williamson, 1995). Likewise, at the end of the twentieth century, Chile's and Peru's average years of schooling, were at the same level of those of Norway and Sweden three-four decades earlier.

Finally, our last indicator of human capital is numeracy. During the last decade the age heaping method has been widely accepted by economic historians as a good proxy for basic numeracy skills (A'Hearn et al., 2009; Crayen & Baten, 2010a; Crayen & Baten, 2010b; Manzel et al., 2012; Tollnek & Baten, 2017), so that we are resorting to it too. Age heaping-based numeracy estimates rely on the assumption that poorly educated people, more often than not, round their ages if they do not have basic numerical skills. For example, when self-reporting your age, you may report that you are 25 when you are actually 23, 24 or 26, or that you are 20 years old when your actual age is, say 19 or 21–22. Table 5 contains the numeracy index known as ABCC, which is a bounded variable and cannot go beyond 100 percent, and which is a derivation of the original Whipple Index (A'Hearn et al., 2009). The lower the value of the

Table 5 ABCC index of numeracy

<i>Decade</i>	<i>Bolivia</i>	<i>Chile</i>	<i>Norway</i>	<i>Peru</i>	<i>Sweden</i>
1820			98		100
1830			98		100
1840			98		99
1850			98		100
1860			99	45	100
1870	44		99	67	100
1880	55			73	100
1890	60	87		76	100
1900	70	86	100	82	100
1910	79	91	100	85	100
1920	84	93	99		98
1930	89	94	100		100
1940	93	95	100		100
1950	95		100		100
1960	96		100		100

Source Clio-Infra project (<https://clio-infra.eu/>)

ABCC, the lower the basic numeracy skills of that population. A value of 100 means that 100% of the adult population got basic numeracy skills, which is not difficult to achieve.

As can be seen, our two Nordic countries had completely achieved basic numeracy skills by the mid-nineteenth century. Throughout the entirety of our period of analysis almost 100% of the adult population of both Norway and Sweden were equipped with basic numeracy skills. In contrast, the first data available for Bolivia shows that by the 1870s, less than half of the adult population had basic numeracy skills. The situation in Peru by the 1860s was quite similar to Bolivia's. Since then, Bolivia has shown a steady improvement in the numeracy skills of its population, so that by the 1960s around 95% of the population eventually achieved basic numeracy skills. Chile achieved a similar rate two-three decades earlier. We have not got data for Peru for the period after the 1910s, but it should be at an intermediate position to that of Bolivia and Chile, we believe, in line with the rest of the indicators analysed in this section. That is, nowadays most the population of these three Andean countries got basic numeracy skills, although this is a rather new phenomenon, in particular if compared to the Nordic mirror. This is consistent with the earlier data on average years of schooling and literacy we have provided.

5 CONCLUSIONS

In this chapter we have provided a comparison of the main demographic and human capital trends of two Nordic countries (Norway and Sweden) and three Andean countries (Bolivia, Chile and Peru) during the nineteenth and twentieth centuries. During this period, all countries experienced a demographic and epidemiological transition but at different paces and at different times. In all five countries people now live longer, being also taller, stronger and healthier. Their population are also better educated than ever before, although there are contrasting realities across countries. The selected indicators we have used in our comparative analysis include population, migration flows, ethnicity, rate of urbanization, infant mortality, life expectancy, height, average years of schooling, literacy rates and numeracy.

As was to be expected, during the last decades in particular, the population growth of the three Andean countries has been far greater than that of Norway and Sweden, since Bolivia, Chile and Peru are late comers in

the demographic transition. Regarding the path followed by other indicators of economic development and living standards, Norway and Sweden excel the three Andean countries, and by far, in all the indicators we have considered: they enjoy far lower infant mortality rates; their population live longer and are far taller; while their human capital is also remarkably superior. Likewise, there are small differences between these two Scandinavian countries, at least as far as the pool of indicators we have selected.

However, within the three Andean countries Chile performs far better than both Bolivia and Peru, being currently close to both Norway and Sweden in many indicators of economic development, in particular in life expectancy, despite being a middle-income country, and in spite of the chronic inequality of Chilean society, in particular if compared to more equalitarian nations such as Sweden and Norway. The rate of urbanization of Chile is higher than in Bolivia and Peru; its infant mortality rates are also lower; the adult male population is far taller; the literacy rates and the average years of schooling are also higher; while the numeracy of the Chilean population has been better than that of Peru and Bolivia for the periods for which there is data available. In turn, there are also some important differences between Peru and Bolivia, the former performing better in most indicators. And indeed, the performance of these three Latin American countries is far more heterogenous than that of the Nordic countries.

Chile's better performance than Peru and Bolivia is somehow puzzling since the three countries have relied massively on the exploitation of natural resources for their economic development. Chile in particular has always depended heavily on mineral exports, to an extent unequalled in Latin America except for twentieth-century Venezuela (Llorca-Jaña & Miller, 2020). Future research should focus on trying to explain the diverging paths of the three Andean countries, by focussing on differences in fiscal structure, macroeconomy stability and other institutional settings; on the impact of the War of the Pacific; among other more classic topics such as the impact of public investment in education.

REFERENCES

- A'Hearn, B., Crayen, D., & Baten, J. (2009). Quantifying quantitative literacy: Age heaping and the history of human capital. *Journal of Economic History*, 68(6), 783–808.

- Albala, C., & Vio, F. (1995). Epidemiological transition in Latin America: The case of Chile. *Public Health*, 109(6), 431–442.
- Altamirano, T. (1996). *Migración, el fenómeno del siglo. Peruanos en Europa, Japón y Australia*. Lima: Pontificia Universidad Católica del Perú.
- Amenta, E., & Steinmo, S. (1995). Taxation and democracy: Swedish, British, and American approaches to financing the modern state. *Contemporary Sociology*, 24(2), 216. <https://doi.org/10.2307/2076871>.
- Arellano, J. P. (1985). *Políticas Sociales y Desarrollo: Chile 1924–1984*. Santiago de Chile: Cieplan.
- Baten, J., & Blum, M. (2012). Growing taller, but unequal: New findings and new background evidence on anthropometric welfare in 156 countries, 1810–1989. *Economic History of Developing Regions*, 27(S1), S66–S85.
- Baten, J., & Komlos, J. (1998). Height and the standard of living. *Journal of Economic History*, 57, 866–870.
- Baten, J., & Llorca-Jaña, M. (2020). *Inequality, low-intensity immigration and human capital formation in the regions of Chile, 1820–1939* (CESifo Working Paper No. 8177).
- Bengtsson, E. (2019). The Swedish Sonderweg in question: democratization and inequality in comparative perspective, c.1750–1920*. *Past & Present*, 244(1), 123–161. <https://doi.org/10.1093/pastj/gtz010>.
- Berg, U., & Paerregaard, K. (Eds.). (2004). *El Quinto Suyu*. Instituto de Estudios Peruanos: Transnacionalidad y formaciones diaspóricas en la migración peruana.
- Bértola, L., Hernández, M., & Siniscalchi, S. (2012). Un Índice Histórico de Desarrollo Humano de América Latina y algunos países de otras regiones: metodología, fuentes y bases de datos. Serie Documento de Trabajo, Programa de Historia Económica y Social, Facultad de Ciencias Sociales, Montevideo.
- Bértola, L., & Ocampo, J. A. (2012). *The economic development of Latin America since independence*. Oxford: Oxford University Press.
- Blomström, M., & Meller, P. (1991). *Diverging paths: Comparing a century of Scandinavian and Latin American economic development*. Washington: Inter-American Development Bank.
- Branisa, B., Peres-Cajías, J., & Caspa, N. (2020, May). The biological standard of living in La Paz (Bolivia), 1880s–1920s: Persistent stagnation and inequality. *Economics & Human Biology*, 37, 100849.
- Byfuglien, J. (2008/1995). Urbanisation and centralisation in Norway. *Norwegian Journal of Geography*, 49(1–2), 35–44.
- Chesnais, J. C. (1986). La transition démographique. Etapes, formes, implications économiques. Institut national d'études démographiques, Cahier n° 113, Paris: Presses Universitaires de France.

- Contreras, C. (1994). Sobre los orígenes de la explosión demográfica en el Perú: 1876–1940. Instituto de Estudios Peruanos, Documento de trabajo No61, Serie Economía No 21.
- Contreras, C., & Cueto, M. (2004). *Historia del Perú contemporáneo*. Lima: IEP.
- Crayen, D., & Baten, J. (2010a). New evidence and new methods to measure human capital inequality before and during the industrial revolution: France and the U.S. in the 17th to 19th centuries. *Economic History Review*, 63(2), 452–478.
- Crayen, D., & Baten, J. (2010b). Global trends in numeracy 1820–1949 and its implications for long-run growth. *Explorations in Economic History*, 47(1), 82–99.
- Deaton, A. (2013). *The great escape: Health, wealth, and the origins of inequality*. Princeton: Princeton University Press.
- Díaz, J., Lüders, R., & Wagner, G. (2016). Chile 1810–2010. *La República en cifras*. Historical statistics. Santiago: Ediciones Universidad Católica de Chile.
- Domenech, E., and Hinojosa, A. (2009). Emigración, Estado y sociedad en Bolivia: la reivindicación del “voto en el exterior. In M. Roosta (Ed.), *Población y Desarrollo. Bolivia y los fenómenos de la migración internacional*. La Paz (Bolivia): CIDES-UMSA/OMS.
- Ducoing, C., Peres-Cajías, J., Badia-Miró, M., Bergquist, A.-K., Contreras, C., Ranestad, K., & Torregrosa, S. (2018). Natural resources curse in the long run? Bolivia, Chile and Peru in the Nordic countries’ mirror. *Sustainability* (Switzerland), 10(4). <https://doi.org/10.3390/su10040965>.
- Dyson, T. (2011). The role of the demographic transition in the process of urbanization. *Population and Development Review*, 37(s1), 34–54.
- Eger, M. A. (2010, April). Even in Sweden: The effect of immigration on support for welfare state spending. *European Sociological Review*, 26(2), 203–217.
- Ejermo, O., Enflo, K., Eriksson, B., & Prawit, E. (2020). *Home, Swede home? Across the Atlantic and back again during the age of mass migration*.
- Eriksen, T. H. (2013). *Immigration and national Identity in Norway*. Migration Policy Institute.
- Floud, R., Fogel, R., Harris, B., & Hong, S. C. (2011). *The changing body: Health, nutrition, and human development in the western world since 1700*. Cambridge: Cambridge University Press.
- Fogel, R. W. (1991). The conquest of high mortality and hunger in Europe and America: Timing and mechanisms. In P. L. Higonnet, D. S. Landes, & H. Rosovsky (Eds.), *Favorites of fortune: Technology, growth, and economic development since the Industrial Revolution*. Harvard University Press.
- Fogel, R. W. (2004). *The escape from hunger and premature death, 1700–2100* (p. 2004). New York: Cambridge University Press.

- Fogel, R. W., & Costa, D. L. (1997). A theory of technophysio evolution, with some implications for forecasting population, health care costs, and pension costs. *Demography*, 34(1), 49–66.
- Frenk, J., Frejka, T., Bobadilla, J. L., Stern, C., Lozano, R., Sepúlveda, J., & José, M. (1991). La transición epidemiológica en América Latina. *Boletín de la Oficina Sanitaria Panamericana* (OSP), 111(6), dic. 1991.
- Hatton, T. J., & Ward, Z. (2019). International migration in the Atlantic economy 1850–1940. In C. Diebolt & M. Hauptert (Eds.), *Handbook of cliometrics*. Springer.
- Hveem, H. (1991). Developing an open economy: Norway's transformation, 1845–1975. In P. Blomström & M. Meller (Ed.), *Diverging paths: Comparing a century of scandinavian and Latin American economic development*. Inter-American Development Bank.
- Johansson, E. (2009). The history of literacy in Sweden. In H. Graff, A. Mackinnon, B. Sandin, & I. Winchester (Eds.), *Understanding literacy in its historical context. socio-cultural history and the legacy of Egil Johansson*. Lund, Sweden, Nordic Academic Press.
- Komlos, J. (1985). Stature and nutrition in the Habsburg monarchy: The standard of living and economic development. *American Historical Review*, 90, 1149–1161.
- Lee, R., & Reher, D. (2011). Introduction: The landscape of demographic transition and its aftermath. In R. Lee & D. Reher (Eds.), *Demographic transition and its consequences* (Supplement to Vol 37). Population and Development Review.
- Lindert, M. (2004). *Growing public: Social spending and economic growth since the eighteenth century* (pp. 203–206). Cambridge, UK: Cambridge University Press.
- Livi-Bacci, M. (2017). *A concise history of world population* (6th ed.). Wiley Blackwell.
- Ljungberg, J., & Schön, L. (2013). Domestic markets and international integration: Paths to industrialisation in the Nordic countries. *Scandinavian Economic History Review*, 61(2), 101–121. <https://doi.org/10.1080/03585522.2013.784214>.
- Llorca-Jaña, M., & Miller, R. (2020). Historia empresarial de Chile: operando en una economía dependiente de recursos naturales. In M. Buchelli, A. Llach, M. Monsalve (Eds.), *Historia Empresarial en América Latina, una visión de conjunto*. Lima. Fondo Editorial de la Universidad del Pacífico.
- Llorca-Jaña, M., Navarrete-Montalvo, J., Araya, R., Droller, F., Allende, M., & Rivas, J. (2021). Height in twentieth-century Chilean men: Growth with divergence. *Cliometrica*, 15(1), 135–166.
- Manzel, K., Baten, J., & Stolz, Y. (2012). Convergence and divergence of numeracy: The development of age heaping in Latin America from the

- seventeenth to the twentieth century. *The Economic History Review*, 65(3), 932–960.
- Morrisson, C., & Murtin, F. (2009). The century of education. *Journal of Human Capital*, 3(1), 1–42.
- Notestein, F. (1945). Population the long view. In T. W. Schultz (Ed.), *Food for the world*. Chicago: University of Chicago Press.
- Núñez, J., Pérez, G. (2015). Trends in physical stature across socioeconomic groups of Chilean boys, 1880–1997. *Economics and Human Biology*, 16, 100–114.
- O'Rourke, K. H., & Williamson, J. G. (1999). *Globalization and history: The evolution of a nineteenth century Atlantic economy*. Cambridge, MA: MIT Press.
- Omran, A. (2005). The epidemiologic transition: A theory of the epidemiology of population change. *The Milbank Quarterly*, 83(4), 731–57.
- O'Rourke, K. H., & Williamson, J. G. (1995). Education, globalization and catch-up: Scandinavia in the Swedish mirror. *Scandinavian Economic History Review*, 43(3), 287–309.
- Peres-Cajías, J., & Ranestad, K. (2021). Engineers and the knowledge gap between Andean and Nordic countries, 1850–1939. In: C. Ducoing & J. Peres-Cajías (Eds.), *Natural resources and divergence: A comparison of Andean and Nordic trajectories*. Palgrave Macmillan.
- Pérez, I. (2020). The first great transformation of Chilean population: Growth, migration and urbanization, 1850–1940. In M. Llorca-Jaña & R. Miller (Eds.), *An economic history of Chile since independence*. Liverpool University Press.
- Pérez-Brignoli, H. (2010). América Latina en la transición demográfica, 1800–1980. *Población y Salud en Mesoamérica*, 7(2).
- Prados de la Escosura, L. (2018). *Wellbeing inequality in the long run* (CEPR Discussion Paper 12920).
- Preston, S. H. (1975). The changing relation between mortality and level of economic development. *Population Studies*, 29(2), 231–248.
- Reher, D. S. (2004). The demographic transition revisited as a global process. *Population, Space and Place*, 10(1), 19–41.
- Rivero-Cantillano, R. (2016). El cambio demográfico en Chile y sus efectos sobre la fuerza de trabajo (1934–2006). Ph.D. thesis, Universidad de Barcelona.
- Sánchez-Albornoz, N. (2014). *La población de América Latina: desde los tiempos precolombinos al año 2025*. Madrid: Alianza Editorial.
- Sánchez-Alonso, B. (2006). Labor and immigration. In V. Bulmer-Thomas, J. Coatsworth, & R. Cortés Conde (Eds.), *The Cambridge economic history of Latin America* (Vol. 2, pp. 377–426). Cambridge: Cambridge University Press.

- Sandberg, L. G. (1979). The Case of the impoverished sophisticate: Human capital and Swedish economic growth before World War I. *The Journal of Economic History*, 39(1), 225–241. <https://doi.org/10.1017/S0022050700096418>.
- Schneider, M. C., Castillo-Salgado, C., Loyola-Elizondo, E., Bacallao, J., Mujica, O. J., Vidaurre, M., & Alleyne, G. A. O. (2002). Trends in infant mortality inequalities in the Americas: 1955–1995. *Journal of Epidemiology & Community Health*, 56(7), 538–541.
- Schultz, T. W. (1960). Capital formation by education. *Journal of Political Economy*, 68(6), 571–583.
- Semmlingsen, I. (1960). Norwegian emigration in the nineteenth century. *Scandinavian Economic History Review*, 8(2), 150–160.
- Steckel, R. H. (1995). Stature and the standard of living. *Journal of Economic Literature*, 33, 1903–1940.
- Steckel, R. H. (2009). Heights and human welfare: Recent developments and new directions. *Explorations in Economic History*, 46, 1–23.
- Szot, J. (2002). Mortalidad infantil e indicadores económicos en Chile: 1985–1999. *Revista médica de Chile*, 130, 107–112.
- Szot, J. (2003). La transición demográfico-epidemiológica en Chile 1960–2001. *Revista Española de Salud Pública*, 77(5), 605–613.
- Thorp, R. (1998). *Progreso, pobreza y exclusión: una historia económica de América Latina en el siglo XX*. Washington: Banco Interamericano de Desarrollo.
- Tollnek, F., & Baten, J. (2017). Farmers at the heart of the “human capital revolution”? Decomposing the numeracy increase in early modern Europe. *Economic History Review*, 70(3), 779–809.
- Uauy, R., & Vio, F. (2007). Health and nutrition transition in developing countries: the case of Chile. *The Nations Nutrition*. International Life Sciences Institute (ILSI) (pp. 117–28). Washington, DC, USA.
- Vargas, M. (2009). Migraciones internacional en Bolivia. In M. Roosta (Ed.), *Población y Desarrollo. Bolivia y los fenómenos de la migración internacional*. La Paz (Bolivia): CIDES-UMSA/OMS.
- Vio, F., & Albala, C. (2000). Nutrition policy in the Chilean transition. *Public Health Nutrition*, 3, 49–55.
- Yamawaki, C. (2002). Estrategias de vida de los inmigrantes asiáticos en el Perú. Instituto de Estudios Peruano, IEP.