

# «Urban Premium» or «Urban Penalty»? The Case of Lisbon, 1840-1912

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## 1. INTRODUCTION

The picture of comparative rural/urban living standards in Europe during the 19<sup>th</sup> and early 20<sup>th</sup> centuries has been based mainly on the more advanced and urbanized societies of the region. It rests on a sizeable «urban penalty», at least until the late eighteenth hundreds when rising real wages and the creation of adequate urban infrastructures finally began to attenuate the worst effects of poverty, ill health and unsanitary living conditions in large urban centres<sup>1</sup>. Revisionists have pointed out that this characterization may not always be applicable, however. In the case of the less industrialized European countries or of the lesser cities of the more industrialized ones, there are signs that urban populations could have been as well or even better off than in the rest of the country (Mokyr and O'Grada, 1996; Martínez-Carrión and Pérez-Castejón, 1998; Quiroga-Valle, 2002).

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1. Large urban centres in Western Europe have been recognized by historians as «graveyards of humanity» in periods well before the Industrial Revolution, although, paradoxically, they enjoyed higher average incomes per capita than elsewhere. See POUNDS (1979), VAN ZANDEN (1995), and HOFFMAN *et al.* (2005). Full blown industrialization in the 19<sup>th</sup> century would seem to have changed the nature and scale of the problem, at least in the view of the «pessimists» in the standard of living debate. For a contrary position on this, see WILLIAMSON (1981).

There are several reasons why this might occur. Size is an obvious candidate. Other things being equal, the larger the agglomeration, the greater would be the problems of inadequacy of water supply and excrement removal, of overcrowding and of atmospheric pollution, which contributed heavily to a general lowering of standards. Papers by Martínez-Carrión and Moreno-Lázaro (2007), Humphries and Leunig (2007b) and A'Hearn (2003) have shown the advantage enjoyed in this respect by smaller and medium towns, as well as Southern European ones generally. In addition, for the same dimension, a faster rate of urbanization was likely to augment the «urban penalty» since it would compound and magnify the negative features of this process, as happened with rapidly emerging urban centres in Spain, for example (Reher, 2001). In the third place, a town which was able to integrate closely with a hinterland abounding in protein-rich food supplies might find it easier to escape the curse of the «urban penalty», a situation less likely to occur with major cities (Komlos and Baten, 2004).

Economic structure is another potential source of difference. A diversified urban economy, as is often found in seats of political power and administration, should be better off on average vis-à-vis the rural world than manufacturing towns, given its more balanced distribution of wealth (with a larger middle class), higher average income per capita and a lesser dependence on environmentally degrading activities. Cities which relied heavily on the tertiary sector and particularly the provision of government services offered greater stability of employment than their industrial counterparts or the rural world. Their inhabitants were less exposed to the hardships of cyclical instability. Finally, the volume and composition of the migratory flows sustaining urbanization played a part here too. The urban labour market may have attracted the more robust and capable among the rural population and thus enhanced the capacity of the mass of urbanites to earn a better living and deal with the worse problems of urban life (Humphries and Leunig, 2007a).

Given the multiplicity of factors involved in the standard of living debate, indicators of their global impact on human welfare are especially valuable. Historians have resorted to two kinds of solutions in this matter. Demography furnishes indices which relate to the duration of life, the prevalence of disease and the frequency of mortality. Anthropometric history, on the other hand, provides evaluations of the robustness of the population at certain points in time, mostly through the measurement of stature. By construction, both approaches have specific biases and, naturally, their strengths and weaknesses. Not surprisingly, they are also apt to diverge as to the answers they can provide (Horlings and Smits, 1998). Nevertheless, in their respective ways both are effective at reflecting, synthetically, consumption levels, environmental conditions, disease experience and «bodily insults» like excessive labour in childhood. They can also help to distinguish specific effects of certain determinants of the living standard from the overall ones.

The focus of this study is Portugal. In the 19<sup>th</sup> century it was one of the least developed countries in Europe and one where, it has been suggested, the «urban penalty» may not have existed, despite industrialization and urbanization. We concentrate on Lisbon, the largest urban and industrial centre, and compare its living conditions between 1840 and 1910 with those obtaining in the countryside. The aim is to see whether life in the city carried an extra cost in welfare. In view of the dearth, in this case, of suitable demographic data, we have opted for the anthropometric approach.

In large part, the answer we get here will depend on how «urban» is defined. Is the aim to match urban and rural populations globally? Or only specific occupations in each context so as to disentangle economic structural effects from environmental ones? Should the exercise exclude migrants, who may «contaminate» the samples because of either positive or negative selectivity?

The paper consists of six parts. The following section introduces the background and gives reasons for why conditions in Lisbon might not have been more detrimental to the wellbeing of its population compared to elsewhere. It is followed by an account of the current state of knowledge concerning the standard of living in Portugal during the eighteenth century and the issue of an «urban penalty» in Lisbon. The fourth part presents the anthropometric data on which the study is based. The fifth section reveals the stability of living conditions in Lisbon and in rural areas over the period 1840-1910 and concludes that the «urban penalty» may in fact have been an «urban premium». It also brings out the heavier impact of environmental aspects on urban existence and the city's superiority in terms of material consumption. The sixth section concludes.

## 2. SOCIAL, DEMOGRAPHIC AND ECONOMIC BACKGROUND

As the capital city and the seat of the royal court, Lisbon was for centuries the premier city of Portugal. With a population of about 170,000 around 1800, it was the fifth largest urban centre in Europe, a position it came to lose during the next half century of demographic stagnation. This was the result of a combination of negative natural growth with a failure to attract new arrivals, owing to political and economic instability and a flurry of epidemics. Thus it was not until the 1850s that Lisbon started to grow again, at a rate which increased until the 1890s and slowed down thereafter until 1911, by which time it had reached a total of 435,000 inhabitants<sup>2</sup>.

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2. While in 1860 it was the 11<sup>th</sup> largest European city, by 1910 it had dropped to 14<sup>th</sup>. See SILVA (1997).

Portugal was never a highly urbanized society. The only other major town, Porto, was roughly half the size of Lisbon. The remaining urban agglomerations rarely exceeded 20,000 residents and the global rate of urbanization – a mere 13.4 per cent in 1801 – was only 16.6 percent by 1911, in keeping with the persistently agrarian vocation of the economy. Nevertheless, urban growth was one of the principal features of Portuguese 19<sup>th</sup> century demographics, particularly between 1864 and 1900, when towns and cities increased by 77.0 per cent, while the rural population expanded by less than a quarter (Sousa and Marques, 2004).

The onset of a vigorous process of internal migration around mid century was another distinguishing aspect of this period's population dynamics<sup>3</sup>. During this period, most of it was directed towards Lisbon and Porto and was responsible for much of the expansion which both centres recorded during these decades. In the case of Lisbon, natural growth accounted for only a quarter of population increase, with the other three quarters arising from the inflow of country dwellers to the capital. Precise quantification of the latter is not available and recent estimates put the net figure at between 100,000 and 200,000 (Rodrigues, 1995; Silva, 1997). A good indicator of the impact of migration on the city is the share of its resident population born beyond the limits of the municipality. In 1890, it reached 46.5 per cent, while in 1910 it was 53.2 per cent<sup>4</sup>.

For its time, it was a typical migratory phenomenon, though less intense than that which occurred in heavily industrialized areas of the advanced economies<sup>5</sup>. Predominantly, those involved were male, young, single and poor. A large part consisted of unskilled, illiterate labourers, who became, according to an observer, «the majority of the day workers and factory operatives of the capital» (Nazareth, 1906, 3: 9). Skilled workers and artisans, however, arrived in significant numbers too<sup>6</sup>. In both cases, the motives were essentially economic. They came from all over the country and spread throughout the urban territory, at first into the older, central parts; then, in wider concentric circles of recent development; and, later still, into the less settled, semi-rural zone on the periphery, where they were closer to the new industrial enterprises which sprung up there (Salgueiro and Garcia, 1984). Their presence is revealed in the profile of Lisbon's population: high masculinity ratios in the 20-30 and 30-40 age groups, and a disproportionate share of residents of working age compared to the «natural» population model. A third feature was a high celibacy rate among male residents (Rodrigues, 1995).

3. For Portugal as a whole, a third important feature was emigration. Lisbon was not affected by it significantly, however. See RODRIGUES (1995).

4. These are the first dates for which population censuses provide reliable information.

5. In Bochum, a typical industrial town of the Rhur, 77 per cent of its residents in the 1880s had not been born there. See CREW (1979).

6. Two studies which are informative on this score are VIDAL (2006) and CASCÃO (1998).

Lisbon always had a mixed economy based on manufacturing and the service sector, with agriculture and fishing in subsidiary but not insignificant roles. In the late 18<sup>th</sup> century, masters, craftsmen and apprentices came to slightly less than one third of the male work force, while trade, transport, the public service and the liberal professions represented about half (Macedo, 1982). From the 1840s, a process of industrialization took place which by 1914 had made it the country's main manufacturing centre (Pereira and Mata, 1996). Output data are unavailable but occupational statistics make it clear that even so the structure of the urban economy had not changed much. Around 1900, industrial employment, including construction, was close to 40.0 per cent of the work force, while the service sector corresponded to around 35.0 per cent. The remainder were domestics, agriculturists, «unspecified occupations» and those living on unearned income.

Large European cities have tended always to concentrate a disproportionate share of the country's income. Their population has also comprised significant intermediate groups, between the very wealthy and the mass of the population. Despite the paucity of data an impressionistic assessment of 19<sup>th</sup> century Lisbon suggests it did not depart from this pattern. Several reasons support this claim. One of them is the combination of a high degree of masculinity in the work force with the fact that men earned higher wages and enjoyed a higher participation in employment than women. Another is the conjunction of a more educated population in Lisbon with the fact that literacy was associated with higher pay. A third is the prevalence of economic sectors in the capital –industry, public administration, trade and transport– with a lower variance of employment than that experienced by rural folk. Moreover, the average remuneration in these sectors was also higher given that they employed a larger proportion of skilled employees, whose wages were considerably above those of unskilled labourers working the land. In the services, white collar employees received even higher pay differentials so that probably at least 60.0 percent of Lisbon's active population enjoyed rates of pay and of employment well in excess of their rural counterparts (Nazareth, 1906-1908; Reis, 2005 and 2007)<sup>7</sup>. Finally, one must recall that many of those who owned the country's income-earning assets were city dwellers, a majority of whom resided in Lisbon. These were the stakeholders in the nation's Public Debt, in its corporate sector, in trade and shipping, as well as the owners of a large part of the country's land and buildings<sup>8</sup>.

Two implications can be drawn from this regarding the urban standard of living debate. One is that city per capita income and pattern of income distribution appears more

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7. SOUSA and MARQUES (2004), claim that more than 80.0 per cent of rural Portuguese consisted of small farmers and labourers.

8. Confirmation for this asymmetry of wealth between town and country comes from the higher consumption standards of urban residents. See REIS (2009).

favourable to the living standard of the population than that of the rural districts. The other is that the pollutant nature of Lisbon's economy, a critical factor for human well being, was less intense than would have been the case had it displayed a stronger industrial calling of many European major urban centres. Before pursuing the welfare implications of this situation, however, we must consider first how the issue has looked to observers placed at different points in time.

### 3. EARLY VIEWS ON LISBON'S «URBAN PENALTY»

Studies on the standard of living in Lisbon in the 19<sup>th</sup> century have been neither abundant nor especially helpful to the present enquiry. They are useful to us, however, in one respect. They show that those who have looked into the matter have failed to be impressed by the differences between the urban and rural contexts in which the population lived. The inference is that the gap may have been less than significant.

Generally speaking, contemporary observers had a negative impression of living conditions in Lisbon. Whether doctors, politicians, engineers, men of letters or civil servants, «enlightened» opinion was unanimous. It was a nauseating place, ridden with disease and dirt, where the masses led an overcrowded and mean existence. Both in tone and content, their statements sound very much like what was said at the time about other large cities in Europe. For Eça de Queiroz, a novelist, the streets were «pigsties»; for Ramalho Ortigão, another writer, they were «sombre and fetid» (Salgueiro and Garcia, 1984). Working class habitation was described in a medical report, in 1906, as «slaughter houses where every year hundreds of humans beings are annihilated by the conditions in which they live» (Reis, 2009: 268). The poor consumed an inadequate fare almost entirely of cereals and vegetables, and with only a very occasional taste of meat (Martel, 1911).

From our perspective, it is of interest that the perception of how the rural population lived was hardly different. Morais (1889), an agronomist, wrote at the end of the century that the majority of country folk lived «like animals», in «small, blackened, semi-ruined hovels, with the entire family sharing a minuscule room and the rain coming in». Another writer, Rebelo da Silva, described them as «malnourished, weak, apathetic, and sickly» and sunk in «mephitic exhalations» (cited by Sousa and Marques, 2004: 181). Medical reports from the provinces revealed a prevalence of infectious disease as devastating as in Lisbon, and sanitary conditions at a similar level too<sup>9</sup>. In terms of consumption, the convergence is also striking. Usually, no great nutritional distinction could be found between the mass of the

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9. Some of these are published in *Annaes* (1838-42), others later in the daily press.

rural and the urban poor. Andrade (1918: 104) remarked that «neither in quantity nor in quality are the budgets of low class rural families worse than those of urban families».

This body of knowledge recognized, however, the existence of some differences between the two milieus. Martel (1911) and Poinsard (1912) registered a marginal urban superiority with respect to protein consumption. On the other hand, demographics pointed in the opposite direction. Higher infant and global mortality rates in the city were unmistakable, although the early 20<sup>th</sup> century also revealed an improvement in these indicators, under the effect of more abundant piped water, a modernised sewage system and a variety of measures of public health<sup>10</sup>. Unfortunately, none of these authors drew a clear conclusion as to whether or not living in the capital entailed a net disamenity relative to conditions in the rural parts of the country.

With research, one should note that the standard of living has received attention in only a small number of specialized studies and that various recently published multi-volume Histories of Portugal give it little, if any mention. Interestingly, the findings are not particularly different from those of a century ago and the approach has been mostly of the conventional kind. The key issues are still nutrition, which has been analysed in some depth by Pereira (1975) and Reis (2009), and real wages (Martins, 1997). None of these authors, however, has addressed the emergence of an «urban penalty» in Portugal during this first era of modern urbanization. Rather, the focus has been on how consumption evolved during a time of mild economic growth between the 1880s and the 1910s, the prevailing view being that a small improvement probably occurred in the countryside during these years, while a noticeable decline took place in the capital. No clear perception is provided, however, of the gap between urban and rural conditions overall.

In the cases of housing, and atmospheric and sanitary conditions, not much more is known now than a century ago. Qualitative judgements by historians echo those of the «social scientists» of the past. The conventional wisdom is that a century ago the working class lived under conditions of «utter moral and material misery», in narrow shoddily-built shacks erected on the damp ground, amidst filth and wandering domestic animals, with no light, air or comfort (Sousa and Marques, 2004).

The most important advances in this field have come about recently thanks to the availability of fresh demographic evidence, in particular, new estimates of life expectation at birth. As a consequence, a more accurate rural-urban contrast can now be drawn, namely

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10. The per capita supply of piped water in Lisbon rose from 14.3 litres, in 1835, to 26.7 litres, in 1874, and 183.2 litres during the 1880s. A modern sewage system was in place by 1897. See CARQUEJA (1916).

that throughout the nineteenth century an unmistakable «penalty» afflicted those who lived in Lisbon when compared to the rural population (Leite, 2004 and 2005). The gap in this expectation, of about six or seven years, remained fairly stable during the decades of rapid urbanization after the 1860s, and then during the great urban improvements of the 1880s and 1890s (Silva, 1997). In 1902, life expectation at birth was *circa* 36 in the cities of Lisbon and Porto, while the national average was 44.0. Both figures had risen since the 1860s by 20.0 percent.

#### 4. THE DATA

The advantage of life expectation estimates is that they afford us an accurate picture of the long term vital consequences for human beings of their living conditions. Their shortcoming is that being very sparse in the case of Portugal, they tell us little about what happened to the population in welfare terms. Moreover, they are difficult to relate to individual social and economic attributes such as income, origin, residence or education. In a setting marked by intense social change, this is a loss.

With the anthropometric approach, both problems are circumvented. As is well known, human physique bears a strong relation to per capita income via consumption, as well as to «insults» to the body like disease, childhood stress and other negative life events (Steckel, 1995). Height statistics allow a high frequency measure of the joint impact of these factors, as well as assigning it to individuals with different relevant attributes. We can thus put together a clearer-cut picture of living standards and their determinants than would have been possible with a purely demographic approach. On the negative side, their provenance, from military records, only permits consideration of the condition of males. Moreover, they leave us in the dark as to the evolution of welfare over the arc of time that occurs after this measurement is taken. To date, the use in Portugal of anthropometric information for historical studies has been infrequent, although earlier it enjoyed a certain vogue<sup>11</sup>. A century ago, anthropologists and other social scientists acknowledged that «the well-being of a people favours the increase in its stature and its misery helps to reduce it» (Carqueja, 1916).

The information used here is the by-product of the military recruitment process undertaken annually in Portugal, on a universal basis, after 1857<sup>12</sup>. This new system en-

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11. The survey of the historical anthropometric literature on Portugal in REIS (2002/3) is still up to date.

12. The system was instituted under the recruitment law of July 27th, 1855. Regarding «pre-modern» laws and procedures from the mid 18<sup>th</sup> to the mid 19<sup>th</sup> centuries, see ALVES (1994: 138-40). The twelve military laws subsequently passed during the second half of the nineteenth century involved mainly



compassed all Portuguese youths of ages 20 to 21 (after 1887, reduced to 20 only) and registered them for military duty. Subsequently, it also determined their suitability for military service. The procedure was the following. Every year, every municipality drew up a list of all the youths born in it who had reached the age for enlistment. In the meantime, Parliament defined the number of recruits needed and the government then apportioned the share of candidates with which each municipality would have to contribute. At this stage, municipal authorities granted exemptions on compassionate grounds, thereby freeing a variable but always large number of youths from their obligation. The list of excuses was long, varied and poorly defined. It contemplated those who were indigent, their family's sole breadwinner, the oldest son in a farmer's progeny, the brother of one already recruited and so on. Those wishing to be excused from recruitment, and who had not succeeded, were permitted to do so by paying a personal fine to the state (remission).

Those still left at this point were usually too numerous for the state's needs. A lottery followed in order to reduce their number and thereby simplify the process. It selected those who would finally be sent for inspection and, if approved, for enlistment<sup>13</sup>. Lists of this «military contingent» were compiled at district level and medical boards picked those who were fit to serve. The selection criteria were «robustness», physical disabilities and chronic illnesses, and height. A minimum of 155 centimetres was required before 1887 and, of 154, after that date. At this stage, it was still possible for a draftee to avoid incorporation into the armed forces by presenting a replacement to go in his stead (substitution). Substitutes were induced by means of an attractive pecuniary compensation to compensate them for their sacrifice.

In the present study, we consider the military inspections carried out between 1857 and 1932 in the administrative district of Lisbon. A total of about 32,000 observations have been gathered of men who lived either in the city of Lisbon, its rural hinterland, or in even more distant parts of the country but who, for reasons which are unclear, were registered in Lisbon. Ideally, the municipal lists produced in the first stage of the process should have been used for this study since they contain the entire cohort, but they hold information only on the names of those concerned. We have resorted therefore to the shorter district lists for the purpose of the medical inspection of the second stage of recruitment. Besides own and parents' names, they contain, with gaps, information on age,

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alterations in the regime of special derogations of military obligations and in the length of military service. The two sources employed were: until 1895, «Livros da Junta de Recrutamento Militar de Lisboa»: Instituto do Arquivos Nacionais Torre do Tombo (IANTT), Governo Civil de Lisboa, NT – 535-586; after 1895 and up to 1933, the same books are unclassified and held in the Arquivo Geral do Exército, Chelas, Lisbon.

13. This means that there is no «truncation» in these data. Between 6.0 and 10.0 per cent of those summoned for inspection were found to be under the minimum height.

height, place of birth and residence, occupation, physical condition and health. Random samples of around a thousand individuals were taken for each available year, roughly half from the city and half from provincial lists. From each of these groups we selected all those with ages between 19 and 22<sup>14</sup>. This meant excluding a considerable number of volunteers, who were allowed to offer themselves although they were out of age. Regrettably, the officials in charge of these procedures were less than zealous and many entries are incomplete. Altogether, we are left with some 22,000 individuals divided into birth cohorts of usable data of various sizes, but nearly always sufficiently large to assure satisfactory representation and statistically significant results from the regression analysis carried out below<sup>15</sup>. The numerous gaps in the yearly series are due either to some years being left with an insignificant number of complete entries or to records not having been located.

Table 1 shows the size and distribution over time of this body of evidence, as well as various descriptive statistics. Observations are referred back twenty years, to the draftees' age of birth, as is normal in these studies. In almost every year, The Jarque-Bera test (col. 7) allows us to conclude that the great majority of samples has a normal distribution, a fact confirmed by the small size of the respective mean-median gap (cols. 4 and 6)<sup>16</sup>.

As in all exercises of this type which involve sampling, the risk of selectivity problems has to be contemplated. The information which has come down to us concerns «military contingents» which were formed out of a succession of selection procedures, each one of them a potential source of bias. Two of these can be reasonably ignored. The substitution of recruits by paid replacements who might be systematically shorter because of their lower economic status, fell upon individuals who had been inspected already by a military board. Consequently, it would not affect the representativeness of the data issued from that examination. The lottery, which was the step preceding the constitution of the «military contingents», could in theory have been tampered with and this could lead to errors. There is no direct evidence for this, however, but it is worth noting that it is not one of the evils of the recruitment system mentioned by contemporary critics (Duarte, 1876; Augusto, 1884). The reasons why this may have been so are that it was a public act, and therefore difficult to rig; and that there were other forms of illicit interference available which were easier to implement.

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14. We have aggregated these four ages in to a single variable after establishing that stature, in this range, was not significantly affected by age. The coefficient of height regressed on age was found to be seldom significant.

15. In three cases we have aggregated several years: 1837-8; 1850-1 and 1873-5.

16. The only years in which the Jarque-Bera statistic is not significant and the distribution is therefore not normal are 1850 and 1911.

**TABLE 1**  
**Portuguese Conscript Heights 1837-1912: Descriptive Statistics (ages 19-22)**

1 Year of birth	2 Number of observations used	3 Mean (cm)	4 St. Dev.	5 Median (cm)	6 Jarque Bera (p)	7 % urban	8 % rural
1837	325	163.9	6.254	164.0	0.796	22	78
1838	358	163.1	5.818	163.0	0.124	23	77
1839	765	163.2	5.827	163.0	0.418	19	81
1840	703	163.5	6.611	164.0	0.429	18	82
1841	155	163.5	5.771	163.0	0.926	32	68
..	..	..	..	..	..	..	..
1850-1	202	163.7	5.923	164.0	0.168	33	67
..	..	..	..	..	..	..	..
1859	457	163.7	5.595	164.0	0.146	12	88
1860	880	163.0	6.137	163.0	0.608	40	60
1861	680	163.1	5.914	163.0	0.351	10	90
1862	686	164.0	5.958	164.0	0.499	14	86
1863	623	163.5	5.818	164.0	0.061	17	83
1864	666	163.3	6.083	163.0	0.668	17	83
1865	814	163.4	6.016	164.0	0.014*	8	92
1866	915	163.6	5.765	163.5	0.389	3	97
1867	891	163.3	5.876	163.0	0.062	14	86
1868	888	163.6	6.018	164.0	0.600	11	89
1869	884	163.3	5.856	163.0	0.051*	15	85
1870	977	163.6	5.743	163.5	0.324	0	100
1871	755	164.5	5.768	164.5	0.209	71	29
..	..	..	..	..	..	..	..
1873-5	112	164.6	5.429	165.0	0.800	na	na
..	..	..	..	..	..	..	..
1880	779	163.6	6.242	164.0	0.211	17	83
1881	968	163.7	6.081	164.0	0.213	36	64
..	..	..	..	..	..	..	..
1889	985	162.8	5.987	163.0	0.606	49	51
1890	990	162.9	6.111	163.0	0.157	49	51
1891	874	163.3	6.114	163.1	0.089	51	49
..	..	..	..	..	..	..	..
1899	873	163.6	5.899	163.5	0.087	40	60
1900	1,015	162.7	5.939	162.5	0.160	49	51
1901	873	163.0	6.069	163.0	0.612	..	..
..	..	..	..	..	..	..	..
1910	994	163.9	6.167	164.0	0.303	50	50
1911	998	164.3	6.487	164.5	0.003*	51	49
1912	1,004	164.4	6.509	164.5	0.005*	51	49
<b>Mean values</b>	<b>745</b>	<b>163.5</b>		<b>164.0</b>		<b>28</b>	<b>72</b>

Note: \* these years do not have a normal distribution but the median-mean gap is nevertheless small.

Sources: see text.

A different situation occurred with the dispensations from military duty granted by local authorities on benevolent grounds. Once referred to by the leader of one of the major parties as «the great weapon in the hands of electioneering agents» (Almeida, 1995: 326), this was something which, at election time served widely to secure votes<sup>17</sup>. In a political system where the possession of wealth and human capital largely determined who got the vote, it is hardly surprising that the better-off –and probably the tallest– were especially favoured by such manipulations. The rich were thus excused from the call-up with no good reason, and the poor were dragged off to be soldiers, even when they should have enjoyed an exemption. As one high official noted, «nearly all the youths who present themselves for inspection belong to the poorer classes. They are nearly all rural workers, factory operatives, building labourers. Those decently dressed and looking reasonably well-off are rarely seen there» (Alves, 1994: 142).

Because the middle and upper class presence was more common in urban centres these were affected by this proportionately more than the countryside. Interestingly, the author of a manual of recruitment procedures confirmed that it was in the city that such irregularities were most prevalent, even though it was there «that the observance of these laws might be expected to be the more pure and scrupulous» (Duarte, 1876: 5). One presumes that a downward bias influenced both urban and rural mean heights but the former were driven down further by this than the latter.

Remission probably had a similar effect. It was an expensive step –the due to the state cost the equivalent to 300 days of an unskilled workman’s wages– which was only accessible to the well-to-do. Once again, the positive association between height and per capita income entailed that the mean height of the «contingent» appear lower compared to what it would have been in the absence of this mechanism. More importantly, those with the requisite wealth, human capital and political influence for using this device were located disproportionately in cities and this further reinforced the underestimation of average urban heights, as measured, relative to rural ones.

The net impact of the various forms of draft avoidance is impossible to quantify but must have been significant since there can be little doubt that altogether they involved a considerable number of young men. In terms of the rural-urban welfare gap, this would mean that in the event of an «urban penalty», we should conclude that an overestimate was likely. On the contrary, should an «urban premium» be found instead, then we would have to consider expecting an underestimate.

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17. Statistics on these dispensations have yet to be compiled but the numbers reported are of an order of magnitude of at least 20.0 per cent of the cohort (ALMEIDA, 1995). In Italy, FEDERICO (2003) claims draft dodging reached 11.0 percent in 1901 and 7.0 percent in 1911.

A final point regarding data still remains to be clarified. It has to do with those who were migrants in the city of Lisbon at the moment of their military inspection and were identified in the military rolls as living in Lisbon and born outside the city. We have no direct information as to when they moved from one place to the other. This is obviously critical for the present study since what is being tested is whether the circumstances of early childhood made a serious difference to physical development and therefore to stature in early adulthood. The usual anthropometric assumption is that the height of young adults was more closely related with the material conditions of life in the first years of the person's life than at other stages of personal development. In this case, it is far from evident where these migrants lived between the moment of birth, in the countryside, and the call-up in Lisbon. This makes it difficult to assign them to one background or the other. Getting this wrong could lead to a potentially large error in the analysis.

According to Rodrigues (1994), migration to Lisbon of families with their offspring was on the rise throughout the period but was always a small fraction of the city's children. She also shows that no more than 6.9 per cent of those living in the capital had undergone this transition before the age of ten, a clear sign that those who combined a rural origin with early upbringing in Lisbon were relatively few at the time of call up. Our own research on the age distribution of deaths in a sample of Lisbon residents of all origins corroborates her finding. This is a small scale exercise covering one year's demography in a parish of heavy immigration<sup>18</sup>. Of the three hundred who expired in 1900 in the parish of Alcântara, 140 were males. Sixty six of these were under the age of five. Only one tenth of these infants, however, had been born outside Lisbon. The suggestion from these two pieces of evidence is that children of this description were a very limited proportion of all migrant children. The implication must then be that it is reasonable, with little risk of error, to treat as «rural» all of the many young men who were born in the country and later, after migrating, registered as residents in the city in preparation for the draft.

## 5. «PREMIUM» OR «PENALTY»?

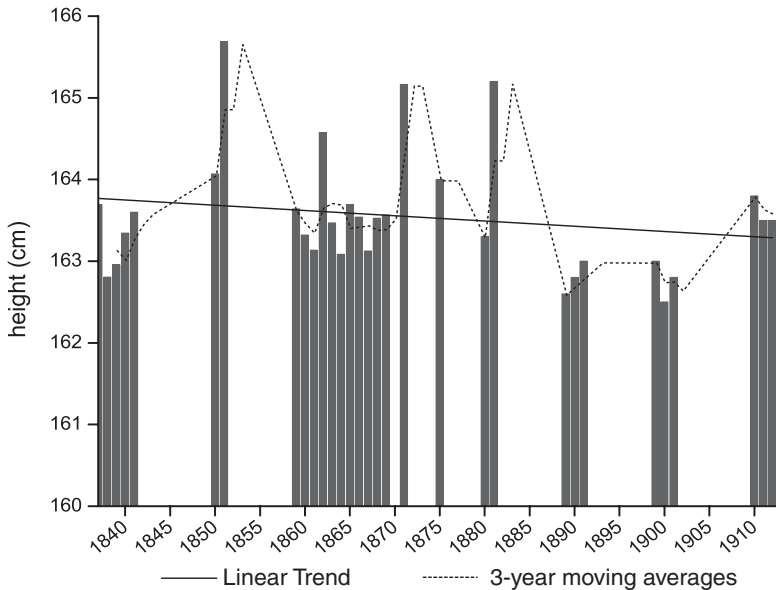
With these caveats in mind, we turn to the question of what the data can tell us about the existence and relative magnitude of the «urban penalty» in Lisbon. We start with Figure 1. This displays the long term evolution of the heights of males between the ages of 19 and 22, mostly from the Lisbon district. Two series are available, one showing mean heights based on the raw evidence for Lisbon. The other, which we prefer on method-

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18. The registers employed are in IANTT: Registos Paroquiais de Lisboa, Óbitos, Alcântara, DO 41, caixa 70.

ological grounds and is represented in the Figure, is a «corrected» national series in which average Lisbon and rural heights are weighted by their respective shares in the Portuguese population. This avoids problems posed by fluctuations over time in the urban-rural breakdown in the yearly aggregates of the raw data, as shown in Table 1 (see cols 3 and 4)<sup>19</sup>.

**FIGURE 1**  
**«Corrected» Portuguese heights, 1837-1912**  
**(weighted by national urban/rural distribution)**



Note: Linear trend and 3-year moving average lines are superimposed on the data.  
 Sources: see text.

Two conclusions may be drawn usefully from this graph because they contextualize our anthropometric evidence and reinforce its plausibility. One is that, by western standards, the Portuguese, just as they were poor, they were also short. With an average stature, by the early 20<sup>th</sup> century, of around 164 centimetres, they were slightly below their Spanish counterparts and two centimetres shorter than the Italians. Military recruits in the more advanced countries were quite a bit taller (Floud, 1990; Federico, 2003). This matches the low position occupied by Portugal on the scale of real GDP per capita rankings for this period (Prados, 2000). The second finding is that the mean height of young Portuguese males changed very little over the course of the 70 years considered but exhib-

19. The two curves are in fact very close to each other. For an easier reading of this graph, we have superimposed linear and polynomial of degree 2 trends.

ited a slightly downward trend, at a rate of change of -0.2 per cent a year. This is also unsurprising, as it barely diverges from the exceptionally low though positive rate of per capita yearly growth which characterised the contemporary Portuguese economy (Lains, 2003). A small «growth paradox», which was not unusual elsewhere in this period, is thus implied and can be attributed to a combination of three circumstances: Kuznets income distribution effects, changes in food market dynamics, and environmental deterioration, all of them associated with the process of economic growth then occurring (Reis, 2002/3).

The next step is to compare the heights of Lisbon's population with those of countrymen, both of which collected from military records. We adopt as the «rural» benchmark a set of young men born either in the countryside or in small rural towns and who were still resident in the same type of location (though not necessarily in the same place) when they were measured for the army. The presumption is that between these two events they kept such a residence and were therefore raised in a «non-urban» environment. As justified above, we have added to this group, those who were rural-urban migrants at the time of the draft and whom we suppose to have settled in Lisbon permanently only after their early years of life. This benchmark is matched up with a sample of young «urban» men, who were born in the city of Lisbon and still resided there at the time of being called «to the colours». The assumption of a permanent residence in Lisbon holds as above for the intervening period. For convenience, we designate them respectively as «urban» and «rural», although the latter in a small part originated from small provincial towns.

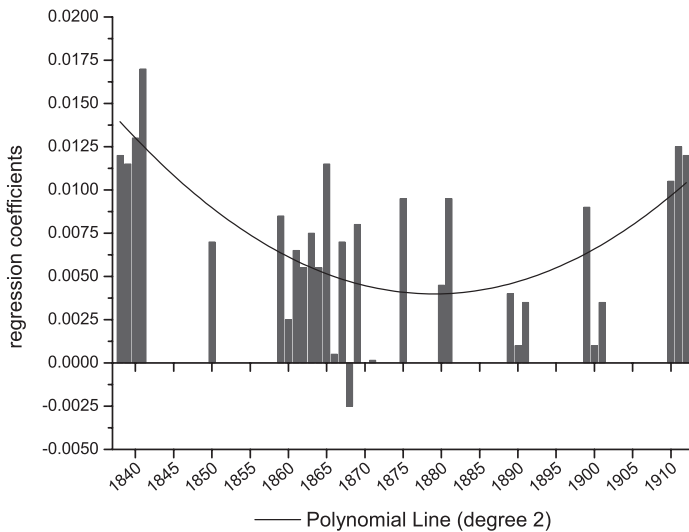
As a first approach, we estimate a regression of heights on age, as a control variable, and on a dummy, for urban origin. Rural heights are the reference group and separate regressions were run for each year in which suitable data are available. Figure 2 presents the yearly coefficients for the urban height variable in the regression. They proxy the gap between urban and rural heights. Twenty one out of the available twenty seven are statistically significant and all but one are positive. Three conclusions can be derived from these findings. The first one is that from an anthropometric viewpoint being brought up in the city was consistently advantageous relative to being raised in the countryside. Rather than a «penalty», the capital conferred a biological standard of living «premium» during the period considered. The second is that this advantage was small. The differential revealed by the regression is always less than half a centimetre but is in keeping with the already noted static nature of Portugal's anthropometric history in this period<sup>20</sup>. On the other hand, one should recall the earlier discussion on selectivity bias which suggested that

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20. This contrasts with a highly dynamic case –England in the 18<sup>th</sup> and 19<sup>th</sup> centuries– where economic change was intense and coefficients of this kind were between one and three centimetres. See CINNIRELLA (2008).

this is a lower bound result. The third is indicated by the polynomial fitted to these data, indicating an evolution of this premium in keeping with historical facts alluded to before. The incompleteness of the evidence makes this a tentative claim. It is interesting, nevertheless, to note how conditions in Lisbon were relatively better in the earlier years, before urban growth took off; worsened in the intermediate period of faster urbanization; and recovered when this slowed down while urban improvements started to make themselves felt.

**FIGURE 2**  
**The urban-rural height gap, 1837-1912**



Sources: see text.

Does this deal satisfactorily with the issues raised by the «urban penalty» debate? At one level of analysis, this comparison reflects all we need to know about the «urban penalty» in Lisbon. The two samples were obviously dissimilar in terms of social and economic composition and, consequently, of the levels of consumption. At the same time, this description merely recognizes an evident fact, that on average Lisbon offered better material opportunities than the countryside, though it may have penalized those who lived there more severely in other ways. The conflation of these various dimensions which anthropometric analysis permits shows its inhabitants as being overall better off than rural folk, leaving aside how this well-being was distributed within the groups under comparison. This perspective simply replicates the accepted heuristic procedure of demographic history when it employs death rates and life expectations for the same purpose. In both approaches, indices are highly aggregated, with the disadvantage of preventing us from grasping the diversity in material standards found within the rural and urban populations, respectively.



By tradition, the «urban penalty» debate has focused, however, on the lower strata of the urban world. The rich and the middle classes have usually been considered to be of secondary interest, although they suffered no less the disamenities of urban life. Shifting to such an outlook requires controlling for socio-economic characteristics, in order to gauge separately the anthropometric effect of differences in location, in other words, in how each kind of labour fared, respectively in the city and in the countryside. Were humble working people, who did the same work and had the same social position, better or worse off in an urban milieu than elsewhere during this period? Were people with more wealth and human capital better than manual labourers at neutralizing the deleterious effect of the hostile environment encountered in Lisbon?

The construction of suitably homogeneous and comparable groups to serve this enquiry faces several difficulties. One is that the number of observations with the appropriate attributes is now more restricted –we have to make do with fewer years and with smaller yearly samples. Another comes from the difficulty in using occupation as an indicator of socio-economic status or material wellbeing. The economic condition associated with many of the job categories registered in the muster rolls is poorly known and hard to define, and considerable variance across time and space may be expected in this regard. A third difficulty is that we need to know the occupational category of the fathers of the draftees at the time when the latter were still infants. Yet all we have is the occupation of these infants twenty years later, at the time when they were called up.

On this last issue, arguably this was not a society renowned for its social mobility. Occupational continuity from fathers to sons seems to have been common and would help reduce the corresponding bias. In the second place, we base this comparison on three large occupational categories defined essentially by broad economic and human capital attributes. These are sufficiently encompassing that inter-generational upward or downward movements into the other ones would have been unusual. At the same time, their wide ambit gets us round the problem of the poor definition of categories, although it entails an undesirable increase in intra-group heterogeneity and loss of information.

The first category, counting from the bottom of the social ladder, is designated as «unskilled labour». It comprises all workers who did not use any human capital in their work and earned only the most basic daily wage<sup>21</sup>. The next one, called «skilled labour», embraced everyone who had skills significant enough to justify a specific classification, such

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21. It includes essentially «trabalhadores» (workmen), «jornaleiros» (day workers), «serventes» (unskilled workers) and all those «without occupation». Factory operatives («operários») are also part of it because though they may have had certain skills, these were not identified in the classification.

as carpenters or machinists, and earned a daily wage which might be double or triple that of the unskilled<sup>22</sup>. Literacy was not uncommon here but is not an essential component of the definition. Its humbler members enjoyed a higher social and economic status than unskilled workers, from whom they were distinguishable in anthropometric terms (Leite, 1998). The top of this pyramid consisted of those whose work was based on a non-trivial amount of human capital. Its members –called here the «white collar»– earned salaries, not wages, had non-manual occupations and earnings at least double those of most skilled workers. To be in this category they must have received several years of formal education, implying a fairly comfortable family background<sup>23</sup>.

With this broad classificatory grid, we can now divide the raw material of this study into six interaction dummy variables which combine location of upbringing (rural or urban) with occupational standing (unskilled, skilled or «white collar»). The sub-categories are then the «urban unskilled» (Urbunsk), the «urban skilled» (Urbsk) and the «urban white collar» (Urbedu); and the «rural unskilled» (Rurunsk), the «rural skilled» (Rursk) and the «rural white collar» (Ruredu). A multiple regression of these variables on height for each year of available data is estimated, with age as a controlling variable. The reference variable is «unskilled rural» labour and the coefficients obtained therefore proxy the impact on stature of these important circumstances of life in comparison with this category. They help us unravel the question of whether the rural-urban anthropometric differences noted above were merely compositional or were a product also of contrasting environments<sup>24</sup>.

Overall, these results show quite pronounced fluctuations, which make the picture somewhat difficult to read. They may be due either to normal short term economic oscillations or to changes in sanitary and health conditions. They could also be caused by inadequate sample sizes and by the weak definition of the explanatory variables used. We organize them into two figures, the first of which (Figure 3) consists of three panels, each one matching one of the three occupational categories in their respective urban and provincial settings. In order to enable us to make sense out of these charts more easily, we have grouped yearly observations together in short periods of a few years at a time.

According to Figure 3, the weight of the evidence is once again favourable to a revision of the «urban penalty» debate but we can go now still further. In all its three panels –«white collar» (A), «skilled» (B) and unskilled» (C) – city-bred people can be seen to have been, on the whole, taller than those brought up in a rural setting. This is more evident

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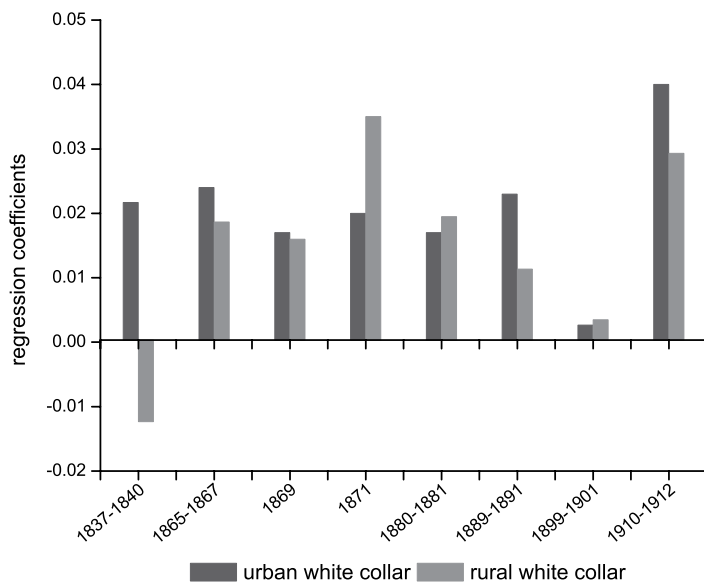
22. On late 19<sup>th</sup> century earnings differentials in the Portuguese labour force, see REIS (2007).

23. Examples are office workers, liberal professionals, businessmen and, of course, students.

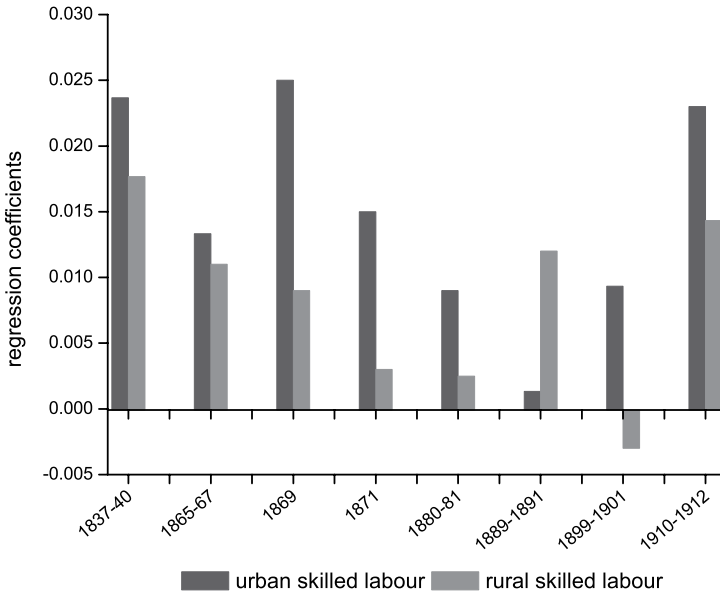
24. A table with the full results of this estimation is available from the author.

in panels B and C than in panel A, where the «urban white collar» element was overtaken by its provincial counterpart in the middle years of the interval. A possible interpretation is that even if their consumption levels were higher, «urban white collar» workers suffered at this time a great deal of urban disamenity associated with rapid urbanization without any environmental improvement. This wiped out their original consumption advantage, which was recovered only later, from the early 1890s on, when city life became more healthy. A second message is that Lisbon's «urban premium» was not predominantly a compositional effect, as one might have supposed. Since inter-occupational height gaps were of the same order of magnitude (see Figure 4 below), no matter how the two populations were distributed, in terms of our socio-economic categories, the city's population overall would always be taller. The average physical superiority of Lisbon population's was thus not solely due to having a higher proportion of better-of people in it.

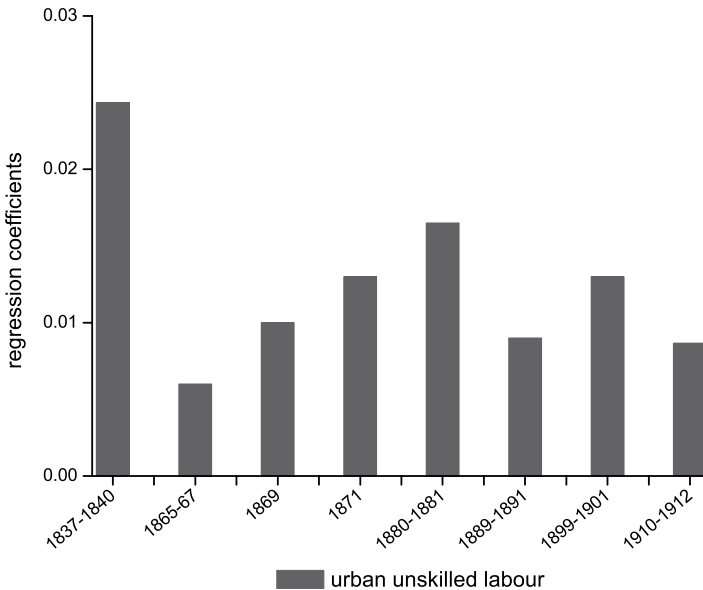
**FIGURE 3**  
**Environmental effects on stature**  
 Panel A: White collar labour: urban and rural



Panel B: Skilled labour: urban and rural



Panel C: Unskilled labour: urban and rural

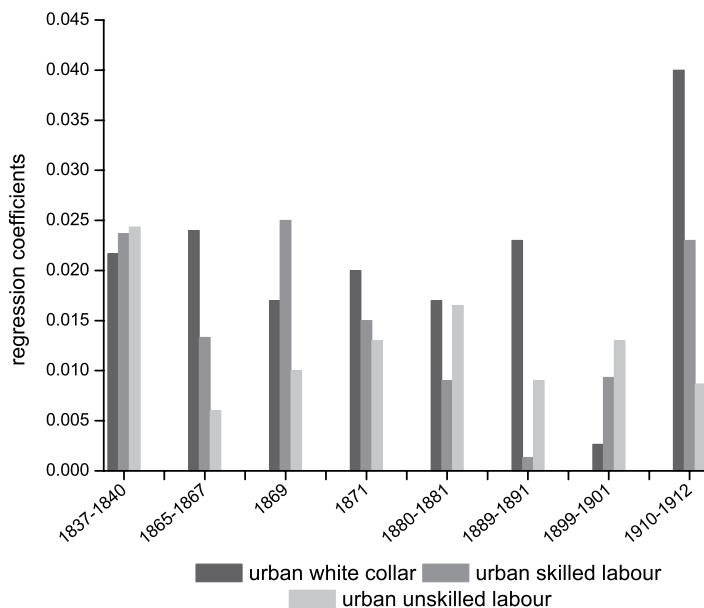


Note: in panel C, the x axis coincides with the line representing the variable 'rural unskilled labour'.  
Sources: see text.

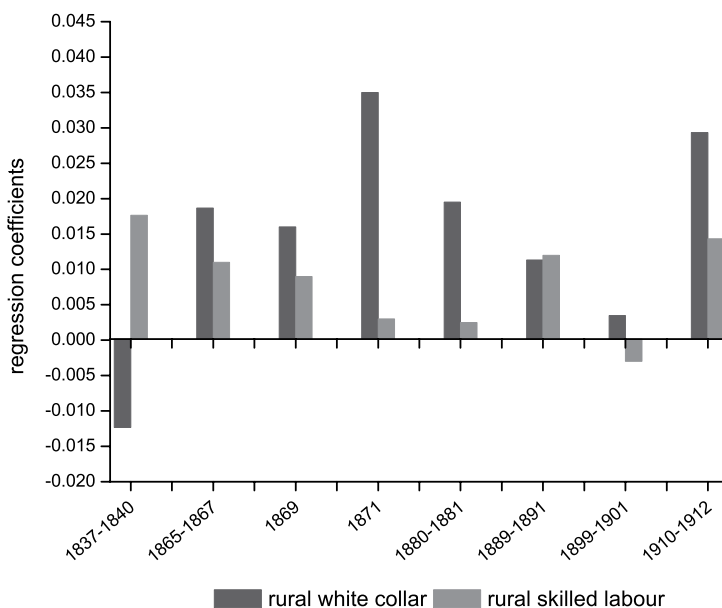
**FIGURE 4**

**Occupational effects on Heights**

Panel A: Heights and urban occupations



Panel B: Heights and rural occupations



Note: in panel B, the x axis coincides with the line representing the variable ‘rural unskilled labour’.  
Sources: see text.

Figure 4 allows us to dwell on the importance of consumption vis-à-vis environmental disamenity. As we can see from panel A, there is no clear predominance, in terms of the biological living standard, of skilled over unskilled workers in the urban world. Since the average income of the skilled was substantially higher, this tells us that anthropometric outcomes there were strongly shaped also by environmental conditions. These might be assumed to be roughly similar but were apparently severe enough to dissipate the advantage that the skilled enjoyed in terms of consumption. In this range of incomes, higher earnings were not sufficient protection enough against the malign effects of the surroundings. The situation of white collar workers, on the other hand diverged from this. The fact that they were consistently taller indicates that their consumption shielded them from some of the shocks which caused the stunting of the manual classes. The environment thus mattered for height and differentiated among socio-economic strata.

Panel B of the same Figure reveals that these relationships were different in the countryside and hint at a weaker role for non-material factors in the shaping of statures. The skilled in this setting were consistently taller than those engaged in raw labour and, in turn, the white collar workers were taller for most of the time than both groups. Height differentials consequently emerge as more closely tied to class differences than in the city, being more evidently related to earnings. The rural standard of living seems determined more by income and the presence or absence of human capital endowment, and the countryside appears as environmentally less adverse than the city. This advantage was lost to some extent, however, in terms of overall wellbeing owing to the relatively lower levels of earnings of this population. The inference is that the skills and human capital of country folk were not high enough to raise their stature to the point of overcoming the «urban premium».

## 6. CONCLUSION

All too little is known about the history of the «urban penalty» in Portugal, in contrast with the research on it in other countries. This study uses an anthropometric approach to show that even during a period of intense growth and industrialization, the standard of living in Lisbon, a major 19<sup>th</sup> century European city, was certainly not worse than in the rest of the country, and probably was superior. The scarcity and patchiness of the relevant data prevent us, however, from drawing a more vigorous conclusion on this subject.

One reason for the existence of a rural-urban height differential was a compositional advantage. Lisbon's economy simply offered a better selection of occupations, to people with higher skills, education and pay, as well as employment on a more stable basis. The

second reason is that material rewards were higher in the capital than in the provinces throughout the range of occupations. In a sense, this may be interpreted as a premium to compensate for the disamenity of a more harmful environment to which those residing in Lisbon were subjected (Williamson, 1981). Lisbon's greater environmental handicap is the third conclusion of this paper. When it is factored in, it helps to account for why the urban Portuguese population was only slightly taller than its rural counterparts despite a presumable higher material standard of living. Country folk were shorter because they were poorer but their surroundings were less noxious, contrary to some pessimism in contemporary public opinion.

In a broader European perspective, this case study reinforces the view that the urban premium concept is not a good universal predictor for the social impact of large scale 19<sup>th</sup> century urbanization. Instead, it confirms the notion that slower growth and a diversified economy could lead to the emergence of large cities, in the South or indeed elsewhere, which need not be the «graveyards of humanity» they have been supposed to be. In fact, their «urban penalty» might reveal itself as a «premium».

## ACKNOWLEDGEMENTS

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