



UNIVERSITY OF OXFORD

**Discussion Papers in
Economic and Social History**

Number 54, March 2004

***THE STANDARD OF LIVING IN LATIN AMERICA
DURING THE TWENTIETH CENTURY***

**PABLO ASTORGA, AME R. BERGÉS,
AND VALPY FITZGERALD**

UNIVERSITY OF OXFORD

Discussion Papers in Economic and Social History

- 1 Hans-Joachim Voth and Tim Leunig, *Did Smallpox Reduce Height? Stature and the Standard of Living in London, 1770–1873* (Nov. 1995)
- 2 Liam Brunt, *Turning Water into Wine – New Methods of Calculating Farm Output and New Insights into Rising Crop Yields during the Agricultural Revolution* (Dec. 1995)
- 3 Avner Offer, *Between the Gift and the Market: the Economy of Regard* (Jan. 1996)
- 4 Philip Grover, *The Stroudwater Canal Company and its Role in the Mechanisation of the Gloucestershire Woollen Industry, 1779–1840* (March 1996)
- 5 Paul A. David, *Real Income and Economic Welfare Growth in the Early Republic or, Another Try at Getting the American Story Straight* (March 1996)
- 6 Hans-Joachim Voth, *How Long was the Working Day in London in the 1750s? Evidence from the Courtroom* (April 1996)
- 7 James Foreman-Peck, *'Technological Lock-in' and the Power Source for the Motor Car* (May 1996)
- 8 Hans-Joachim Voth, *Labour Supply Decisions and Consumer Durables During the Industrial Revolution* (June 1996)
- 9 Charles Feinstein, *Conjectures and Contrivances: Economic Growth and the Standard of Living in Britain During the Industrial Revolution* (July 1996)
- 10 Wayne Graham, *The Randlord's Bubble: South African Gold Mines and Stock Market Manipulation* (August 1996)
- 11 Avner Offer, *The American Automobile Frenzy of the 1950s* (Dec. 1996)
- 12 David M. Engstrom, *The Economic Determinants of Ethnic Segregation in Post-War Britain* (Jan. 1997)
- 13 Norbert Paddags, *The German Railways – The Economic and Political Feasibility of Fiscal Reforms During the Inflation of the Early 1920s* (Feb. 1997)
- 14 Cristiano A. Ristuccia, *1935 Sanctions against Italy: Would Coal and Crude Oil have made a Difference?* (March 1997)
- 15 Tom Nicholas, *Businessmen and Land Purchase in Late Nineteenth Century England* (April 1997)
- 16 Ed Butchart, *Unemployment and Non-Employment in Interwar Britain* (May 1997)
- 17 Ilana Krausman Ben-Amos, *Human Bonding: Parents and their Offspring in Early Modern England* (June 1997)

[Continued inside the back cover]

**THE STANDARD OF LIVING IN LATIN AMERICA
DURING THE TWENTIETH CENTURY**

**PABLO ASTORGA, AME R. BERGÉS,
AND VALPY FITZGERALD**

Latin American Centre
St Antony's College
Oxford OX2 6JF

Abstract

Assessing the economic development of Latin America during the twentieth century requires reliable estimates of living standards as measured by per capita income, life expectancy, and literacy. New comparable series for Latin America suggest that these three indicators made the greatest strides during the period from 1940 to 1980. This progress is probably related to state-led industrialisation, improvements in public health, and urbanisation. Comparison with US levels reveals that while average per capita income has generally remained steady, relative living standards (measured by a composite welfare index) have risen gradually as life expectancy in the two regions has converged.

JEL keywords: Economic History, Welfare and Poverty,
Demography, Education, Income and Wealth

JEL classifications: I31, N36

Corresponding author:

Dr V. FitzGerald,
St Antony's College,
Woodstock Road,
Oxford OX2 6JF.

THE STANDARD OF LIVING IN LATIN AMERICA DURING THE TWENTIETH CENTURY

I. Introduction¹

Although per capita incomes in Latin America grew fourfold during the twentieth century, by 2000 the region still ranked as ‘middle-income developing’ by World Bank criteria, with relatively low ‘human development’ by UNDP indicators. By contrast, comparable regions such as Southern Europe and East Asia have made considerable more economic and social progress, particularly during the second half of the century. While economic and social indicators within Latin America gradually converged over the century, the rate (and volatility) of economic growth changed markedly in different periods. Contested interpretations of this growth experience set the agenda not only for debates among economic historians but for current policy discussions as well.

The assessment of living standards in Latin America during the twentieth century requires reliable estimates of economic and social indicators, particularly of per capita income. Recent studies of the economic history of the region and of long run economic growth in the world as a whole highlight the best efforts to date to provide output series for some countries in Latin America and select social indicators for particular periods.² More recently, the Economic Commission for Latin America and the Caribbean (ECLAC) has published synthesised national output series for the main Latin American economies.³ Nevertheless, the lack of comparable long run data series of economic and social indicators for the whole region has hampered rigorous assessment of Latin America’s long run experience.

¹ Pablo Astorga is at Oxford Economic Forecasting; Ame Bergés is at the Latin American Centre, University of Oxford; and Valpy FitzGerald is Reader in International Economics and Finance, University of Oxford. We are grateful to the Hewlett Foundation for research funding. We thank Barbara and Shane Hunt for their life expectancy and literacy estimates prepared for the Economic History of Latin America in the Twentieth Century project, which was funded by the Inter-American Development Bank and directed by Rosemary Thorp, see Thorp (1998). We also thank the participants of the Comparative Economic History Seminar at the London School of Economics for useful comments on an earlier version.

² For instance Bulmer-Thomas (1994) and Maddison (1995).

³ See Hofman (2000).

The Oxford Latin American Economic History Database (OxLAD) now provides a quantitative basis for the analysis of a wide array of economic and social indicators.⁴ The focus in this paper is on per capita income, life expectancy, and literacy, as these are the most relevant of the set of variables that are consistent and available for all countries over the whole century. The data permit a more reliable estimate of changes in living standards for the six major economies (Argentina, Brazil, Chile, Colombia, Mexico and Venezuela, or the 'LA6') since 1900 and for the remaining 13 countries ('LA13') since 1950.⁵ The countries that comprise the LA6 are grouped this way for two reasons: first, data coverage for these countries extends across the whole of the twentieth century, from 1900 to 2000; and secondly, these six economies accounted for more than three-fifths of the region's total output since 1945, and for three-quarters of the region's total population since 1900.

Table 1 offers a general overview of the transition in per capita income, literacy, and life expectancy during the twentieth century. Average incomes in 1970 PPP (international) dollars in the LA6 rose almost five-fold between 1900 and 2000 growing at an average compound rate of growth of 1.6 per cent per annum. It is worth noting that the rate of growth increased significantly from the first to the second half of the century, from 1.4 per cent to 1.9 per cent per annum. Average incomes in the 'LA13' between 1950 and 2000 grew at the same rate as the LA6 during the first half of the century. Assuming a constant ratio of LA13 to LA6 growth rates in the two halves of the century, the LA13 would have grown by 1 per cent per annum between 1900 and 1950.

Literacy rates and life expectancy give a broad indication of the region's 'human capital'. Whereas only 33 per cent of the LA6 population over 15 years of age was considered literate in 1900, the proportion almost doubled to 60 per cent by 1950, reaching 89 per cent by 2000. The LA13 lagged behind by about two decades, rising from 46 per cent literacy in 1950 to 82 per cent by 2000. Life expectancy at birth more than doubled in the LA6 during the twentieth century, rising from 29 years in 1900 to 70

⁴ This database is available online at <http://www2.qeh.ox.ac.uk/oxlad/>. Unless otherwise noted, all data are from OxLAD. A previous version was published as the statistical appendix to Thorp (1998). Although the database contains a much broader collection of economic and social indicators, the focus here is on per capita income, literacy, and life expectancy, as these are the most relevant series that are available on a consistent basis for all countries and for the whole century.

⁵ Cuba is excluded due to the lack of reliable GDP estimates for the whole of the century. Data on Cuban GDP are available only from 1985 onward, see ECLAC SYLA (1999, 2001) and Oficina Nacional de Estadísticas de Cuba (2000). Prior to 1985, official sources of Cuban economic performance report only Gross/Global Material Product (GMP) figures, in accordance with Cuba's use of the Soviet Material Product System (MPS). Estimating GDP from GMP figures is complicated by the fact that the latter excludes non-material services and takes a 'gross value' rather than a 'value-added' approach; on this see Brundenius (1984), pp. 19–40, Mesa-Lago (1981), pp. 39, 199–201, and Mesa-Lago (2000), pp. 564–5.

years by 2000. The LA13 lagged behind by about a decade, with life expectancy rising from 45 years in 1950 to 69 in 2000.

Table 1. *Income, literacy and life expectancy in Latin America*

| Levels | 1900 | | | 1950 | | | 2000 | | |
|---------------------------|-------|----------|------|-------|----------|------|-------|----------|------|
| | GDP | Literacy | Life | GDP | Literacy | Life | GDP | Literacy | Life |
| Argentina | 497 | 51 | 39 | 827 | 88 | 61 | 1,459 | 97 | 73 |
| Brazil | 114 | 35 | 29 | 236 | 49 | 43 | 874 | 85 | 68 |
| Chile | 284 | 44 | 29 | 577 | 79 | 49 | 1,602 | 96 | 75 |
| Colombia | 290 | 34 | 29 | 383 | 62 | 49 | 921 | 92 | 71 |
| Mexico | 240 | 24 | 25 | 507 | 61 | 48 | 1,284 | 91 | 73 |
| Venezuela | 94 | 28 | 28 | 696 | 51 | 51 | 1,014 | 93 | 73 |
| LA6 | 216 | 33 | 29 | 432 | 60 | 48 | 1,077 | 89 | 70 |
| LA13 | ... | ... | ... | 371 | 54 | 45 | 747 | 86 | 69 |
| US | 1,478 | 89 | 48 | 3,284 | 97 | 68 | 8,867 | 99 | 77 |
| Standard deviation | | | | | | | | | |
| LA6 | 5.3 | 0.9 | 0.4 | 3.5 | 0.7 | 0.9 | 3.5 | 0.1 | 0.1 |
| LA13 | ... | 1.0 | 14.9 | 6.0 | 1.0 | 2.1 | 3.1 | 0.3 | 0.4 |

Notes: Income: gross domestic product per capita in 1970 PPP dollars; figures for 1900, 1950, and 2000 are 3-year averages of 1900–1903, 1949–1951, and 1998–2000, respectively; Literacy: the percentage of the population aged 15 and above able to read and write a simple statement about everyday life; Life expectancy: the number of years a newborn infant would live if prevailing patterns of mortality at the time of birth remained unchanged throughout his/her lifetime. *Sources:* Tables A.1, A.3, A.4.

As demonstrated in Table 2, economic convergence (measured by the standard deviation of the growth rates) increased within the LA6. Notably, all countries in the LA6 with the exception of Venezuela made significant gains in per capita income growth from the first to the second half of the century. The evident convergence within the LA6 was spearheaded by the rapid process of catch-up of the ‘late starters’ Brazil and Mexico to Argentina and Chile; these latter two led the region in per capita income terms at the beginning of the twentieth century. The LA13 saw intra-group convergence on the social front but a clear divergence in incomes from 1950 to 2000.

Table 2. *Growth rates (y) and instability (s) in Latin America*

| Country | 1900–1939 | | 1940–1980 | | 1981–2000 | |
|-----------|-----------|----------|------------------|------------------|-----------|----------|
| | <i>y</i> | <i>s</i> | <i>y</i> | <i>s</i> | <i>y</i> | <i>s</i> |
| Argentina | 1.0 | 5.0 | 1.7 | 4.7 | 0.6 | 5.2 |
| Brazil | 1.6 | 4.3 | 3.7 | 3.5 | 0.7 | 3.8 |
| Chile | 1.4 | 11.2 | 1.7 | 4.3 | 2.6 | 5.2 |
| Colombia | 0.3 | 3.0 | 2.1 | 2.2 | 0.7 | 4.2 |
| Mexico | 1.0 | 5.2 | 3.2 | 2.9 | 0.6 | 4.0 |
| Venezuela | 3.9 | 9.3 | 2.8 | 4.4 | −0.9 | 5.0 |
| LA6 | 1.3 | 3.5 | 2.7 | 2.0 | 0.6 | 2.4 |
| LA13 | ... | ... | 2.1 ^a | 1.4 ^a | −0.1 | 2.7 |

Notes: average annual compound growth rates; instability measured by the annual average standard deviation of growth rates. ^a refers to 1945–1980. Sources: Table A.1.

This paper will explore the trends in per capita income, literacy, and life expectancy in greater depth. Section 2 examines the periodisation of growth rates and volatility of per capita income between 1900 and 2000, and suggests Latin America’s long run development is characterised by clear ‘stages of growth’. The period from 1940–80, in particular, emerges as the most dynamic and the least volatile, in both social as well as economic terms. Section 3 complements the data on per capita income with wider indicators of welfare, namely life expectancy and literacy. Analysis of a composite welfare index of living standards, similar to that developed by the UNDP Human Development Office, supports the claim that the middle decades of the century saw the greatest progress of the century. The trends in Latin America’s living standards are placed in the context of the United States, Europe, and Asia in Section 4. This comparison reveals that Latin American incomes have failed to converge on US levels, and diverged from European levels. Furthermore, after significant relative improvement in the middle four decades of the century, the ratio of Latin American to Asian per capita income has fallen to pre WW2 levels. However, the ‘social gap’ with the United States in terms of life expectancy and literacy, has closed over the century. Section 5 concludes.

II. Long-run income trends in Latin America

An accurate assessment of living standards in Latin America during the twentieth century depends on reliable estimates of per capita income. Income, measured by gross domestic product (GDP), must be examined on a purchasing power parity (PPP) basis if this indicator is to be comparable between countries.⁶ In practice, the PPP conversion rate of the selected base year is applied to the index of GDP in constant local currency units at prices of the same base year, given that there is no feasible means of adjusting for purchasing power for earlier periods.⁷ The method for compiling and estimating per capita GDP in constant 1970 PPP dollars employed here is based on the adjustment factors for 1970 reported by ECLAC.⁸ These adjustment factors were chosen for two main reasons: first, they are the only ones specifically available for the Latin American region; and secondly, these conversion rates are the closest to the mid-century, which is crucial given the century-long focus of this paper.⁹

Figure 1 offers a long run view of per capita income in Latin America over the century. Average incomes in 1970 PPP (international) dollars in the LA6 grew by 402 per cent from 1900 to 2000, and in the LA13 by 102 per cent from 1945 to 2000. The pace of GDP per capita growth in the LA6 rose in the second half of the century, from 1.4 per cent to 1.9 per cent per annum. If the ratio of LA13 to LA6 growth rates in the two halves of the century is assumed constant, per capita growth in the LA13 rose from 0.9 per cent to 1.4 per cent in the second half of the century. This in turn implies that average per capita income in Latin America as a whole grew at some 1.5 per cent per annum over the twentieth century as a whole: 1.3 per cent in the first half and 1.7 per cent in the second.¹⁰

⁶ This is because exchange rates used to convert income are often misaligned (i.e. they are fixed or managed by the government, rather than being determined by free market forces), and because nontraded services must be revalued on an internationally comparable basis.

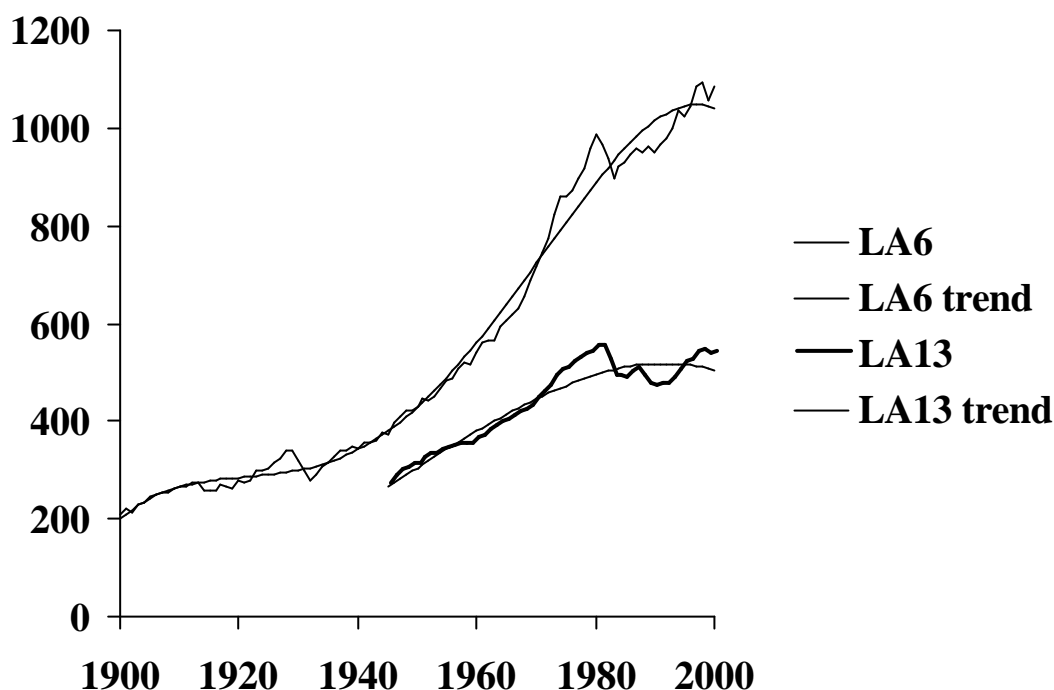
⁷ In principle of course, one would expect the discrepancy between PPP and market prices to diminish as an economy develops industrially and further integrates with the world economy. This would imply in turn that a single PPP adjustment factor as used here would probably underestimate past PPP income levels in Latin America, and thus overestimate both long-run growth rates and intra-regional convergence.

⁸ ECLAC (1978), p. 8; see also Table A.2.

⁹ It should also be noted that there are large disparities between different PPP sources. For instance, the ratio of per capita income in PPP\$ for Argentina to the US in 1990 is 19% according to Heston and Summers (1991), and 30% according to Maddison (1995); the latter is more than double our ECLAC-based ratio of 13%. Thus, the Heston and Summers and Maddison estimates of real GDP in PPP prices would generally be higher than ECLAC estimates.

¹⁰ These should be compared with 1.0% and 3.5% p.a. growth for Southern Europe over the same two periods; see Table A.1 in the Appendix.

Figure 1. *Per capita income in Latin America*



Notes: LA6 trendline: $y = -6E-05x^4 + 0.4788x^3 - 1397.2x^2 + 2E+06x - 9E+08$, $R^2 = 0.990$; LA13 trendline: $y = -0.0016x^3 + 9.6152x^2 - 18768x + 1E+07$, $R^2 = 0.909$.
Sources: Table A.1.

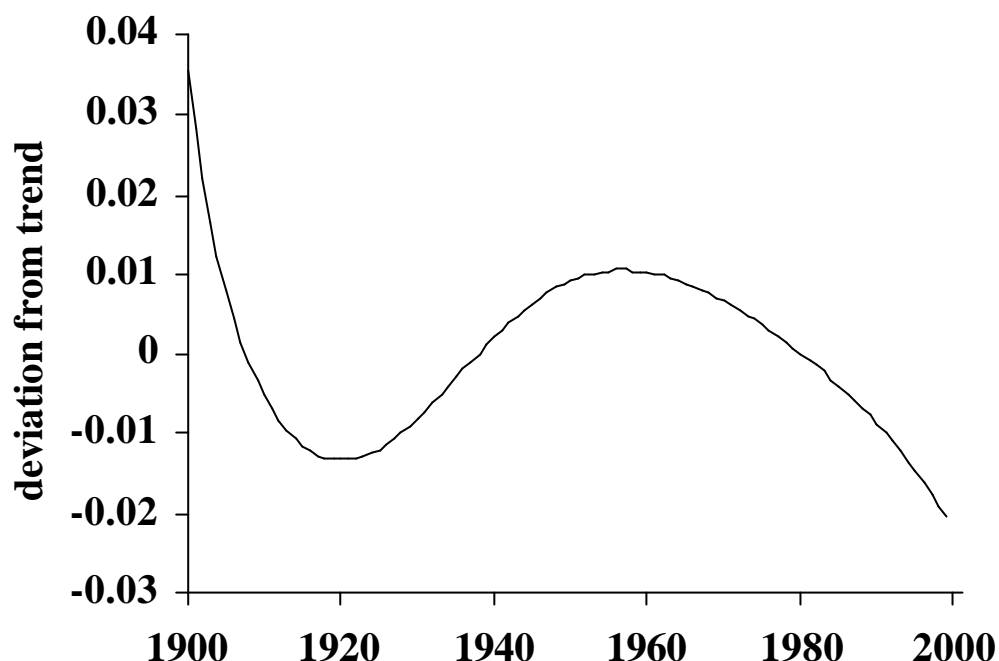
The sinusoidal pattern of economic growth for the LA6 during the twentieth century appears to suggest a periodisation of growth. The exact dating of these periods is complex and clearly differs by country.¹¹ However, if we fit a polynomial trend to the weighted mean of per capita income for the LA6, then the points at which the growth trend of the fitted series is equal to the mean growth trend for the whole period of the actual series will determine periodisation. As seen in Figure 2, this occurs at 1939 and 1980.¹²

The three distinct periods evident in Figures 1 and 2 above differ markedly in both average growth rates and volatility (as measured by the standard deviation). As evident in

¹¹ Technically, this can only be done satisfactorily by estimating a time-series econometric model for each country and testing for structural breaks in the parameters. This approach is taken in Astorga, Bergés and FitzGerald (forthcoming-b), which draws on the OxLAD database to test models of endogenous growth.

¹² A case could be made for extending the analysis backwards to the 1880s since the periodisation in Figure 2 indicates growth rates to 1908 were above the long-run average. However, the data are simply unavailable to permit such an analysis.

Figure 2. *Periodisation of per capita income*



Sources: calculated from Figure 1.

Table 2, the first four decades are characterized by low growth rates and high volatility. Although the period is marked by two world trade recessions – in 1918 and 1929 – growth is quite slow and unstable even outside these exogenous shocks.

Mean per capita income in the LA6 grew by just 1.3 per cent per annum, with a standard deviation of 3.5. This is conventionally attributed to the reliance on primary exports as the main engine of growth in the region.¹³ In contrast, the rate of growth more than doubled to 2.7 per cent per annum in the second period (1940 and 1980), while volatility fell to 2.0. On the basis of this improved record, it is difficult to avoid the conclusion that greater reliance on the domestic market was a major source of growth during the so-called ‘import substitution’ phase of state-led industrialisation, despite critiques of this growth model on efficiency grounds (namely, its impact on fiscal insolvency and role in the debt crisis).¹⁴

The third period, between 1980 and 2000, is associated with sweeping economic reform in the region, including monetary stabilisation, trade opening, and privatisation. The results, however, have not been encouraging: at 0.6 per cent, growth rates are even lower than in the first period, and volatility is higher than in the second (2.4). This belies the optimism of reformers until comparatively recently, and sheds some light on the social pressures for change at the opening of the twenty-first century.

¹³ See Cárdenas, Ocampo and Thorp (2000a, 2000b).

¹⁴ See Dornbusch and Edwards (1991) and Thorp (2000).

The available data for the LA13 mirrors this process of deceleration and increased instability in the second half of the century, but more acutely. Income growth between 1945 and 1980 averaged 2.1 per cent per annum with a standard deviation of 1.4, but per capita incomes fell between 1981 and 2000 to -0.1 per cent per annum, while volatility nearly doubled to 2.7. Exactly why smaller economies should, in the main, display this inferior pattern of lower growth and greater volatility in all three periods (with some key exceptions, such as Costa Rica) may well be due to the inability of smaller domestic markets to act as a buffer for exogenous shocks.

Although the LA6 group exhibits a decline in growth dispersion over time, the differences between them remain substantial throughout the century. Argentina, Colombia, and Chile embarked on the century as the richest countries in the region, with the best social indicators. By the turn of the twentieth century, Chile had bumped Argentina from the top, and Colombia has been supplanted by Mexico. Indeed, Brazil and Venezuela, who started as the poorest of the LA6, performed the best over the century in terms of improved economic and social variables. Broadly speaking, this suggests that there is a ‘catching up’ process at work within the LA6. A similar process is also implied by the declining dispersion of income levels within the LA13 group between 1950 and 2000. In contrast, the mean income levels in the LA6 and LA13 *diverged* after 1950, with the ratio between the two groups rising from 1.4 in 1950 to 2.0 by 2000. There may be at best, therefore, ‘growth clubs’ in the region exhibiting conditional convergence.¹⁵

In the light of these results, the period from 1940 to 1980 would appear to merit a somewhat more positive assessment than has become conventional. In this period, growth was not only higher than in the rest of the century but also less volatile, which is a clear advantage. Without a valuation for collective risk aversion, it is not possible to quantify the relative utility of stability and growth. However, given that the periods of lower growth (1900–39 and 1981–2000) were associated with greater volatility, the 1940–80 period was unambiguously superior in welfare terms, whatever the degree of collective risk aversion.¹⁶ Although it is arguable that a continuation of the mid-century strategy would have continued to deliver stable growth, the record does suggest that the reforms of the last quarter of the century have failed to fulfil their promise.

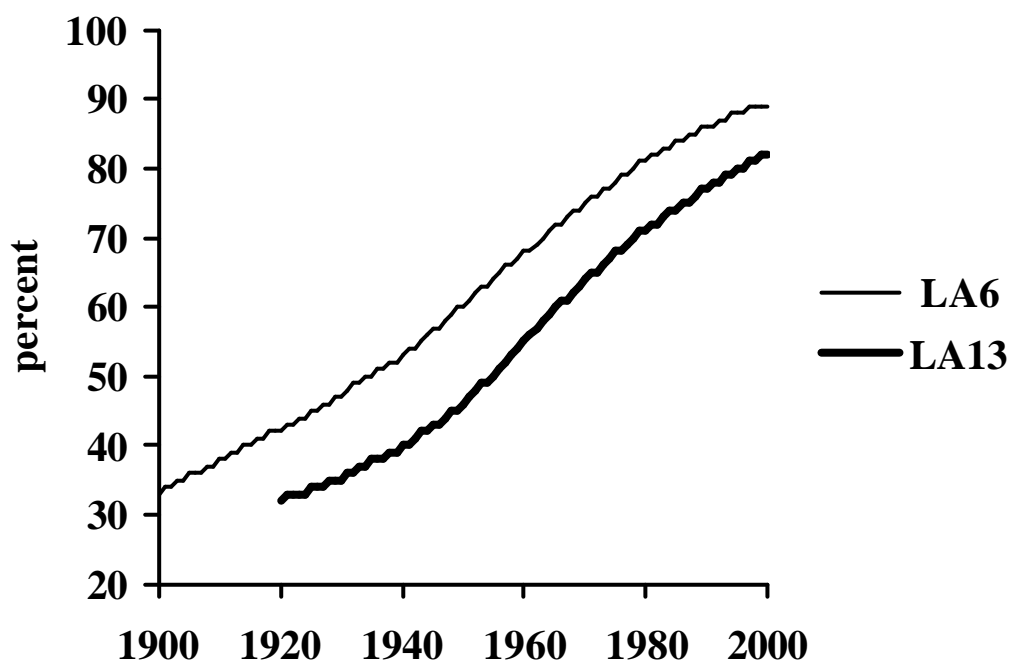
¹⁵ As suggested by Baumol (1986).

¹⁶ The lower welfare cost of a higher but volatile growth rate for per capita income as compared to a lower but steadier growth rate with the same mean is formally equivalent to the ‘proportionate risk premium’ that an investor would be willing to pay for a riskless portfolio with similar expected returns to his or her existing (risky) portfolio. This is given by $p = \frac{1}{2}f\sigma^2$ for a given coefficient of relative risk aversion, or CRRA (f), and standard deviation (σ) of the expected returns, see Elton, Gruber and Blake (1996a, 1996b). The logarithmic utility function for per capita income used by the UNDP in the Human Development Index (see discussion below) implies a CRRA of unity. Thus, a 5% growth rate in per capita income over a decade with a standard deviation of 2% would be equivalent in welfare terms to a steady annual growth rate of 3% over that decade.

III. Trends in social conditions and living standards

Latin America also made considerable progress during the century in our two ‘social’ indicators, literacy rates and life expectancy at birth, and there is evidence of a similar but less pronounced sinusoidal pattern over the century in both indicators. Both appear to have grown far steadier than per capita income, but it should be noted that, as stock variables, they cannot exhibit the same type of annual fluctuations that flow variables, such as income, would display.¹⁷

Figure 3. *Literacy in Latin America*



Sources: Table A.3.

Figures 3 and 4 illustrate the progress made in literacy and life expectancy. Whereas only 33 per cent of the LA6 population over 15 years of age was considered literate in 1900, the proportion almost doubled to 60 per cent by 1950, reaching 89 per cent by 2000. The LA6 appear to be approaching the natural asymptote characteristic of adult

¹⁷ A more accurate measure of educational attainment would be mean years of schooling, but sufficient data pre-1950 to permit a long-run study are simply not available.

literacy as the main alphabetisation campaigns took place in the earlier part of the century, with 1.2 per cent growth from 1900–39, 2.2 per cent from 1940–80, and 0.5 per cent from 1981–2000. The LA13 followed closely behind, rising from 32 per cent literacy in 1920 to 46 in 1950 and 82 per cent by 2000. The ‘big push’ period for literacy in the LA13 (3.0 per cent per annum) occurred between 1940–80. Public education played an important role in this progress, which was also reinforced by the process of urbanisation. As demonstrated in Table 1, both literacy levels and life expectancy in the region also converged over time.

Life expectancy in the LA6 more than doubled over the course of the twentieth century, rising from 29 to 48 to 70 years from 1900 to 1950, and from 1950 to 2000. As was the case with literacy, the three mid-century decades also saw the largest gains in life expectancy. From 1900 to 1940, life expectancy increased an average of three years per decade, rising to seven years per decade between 1940 and 1960, before returning to its previous rate of increase. This rapid increase in life expectancy in 1940–60 was mainly due to public investment in potable water and sanitation, and to wider availability of standard medical treatment (such as cheap antibiotics), as well as rising incomes and the urbanisation process.¹⁸ The main demographic factor in the recent increase in life expectancy appears to be the decline in infant mortality (24 percent per annum since 1960) rather than the evident increase in longevity of the elderly: infant mortality rates in the LA6 have fallen by 24 percent per annum since 1960, compared to a 5 percent per annum decline in death rates; health improvements in the LA13 lagged behind by comparison, with life expectancy rising from 46 years in 1950 to 67 by 2000.¹⁹

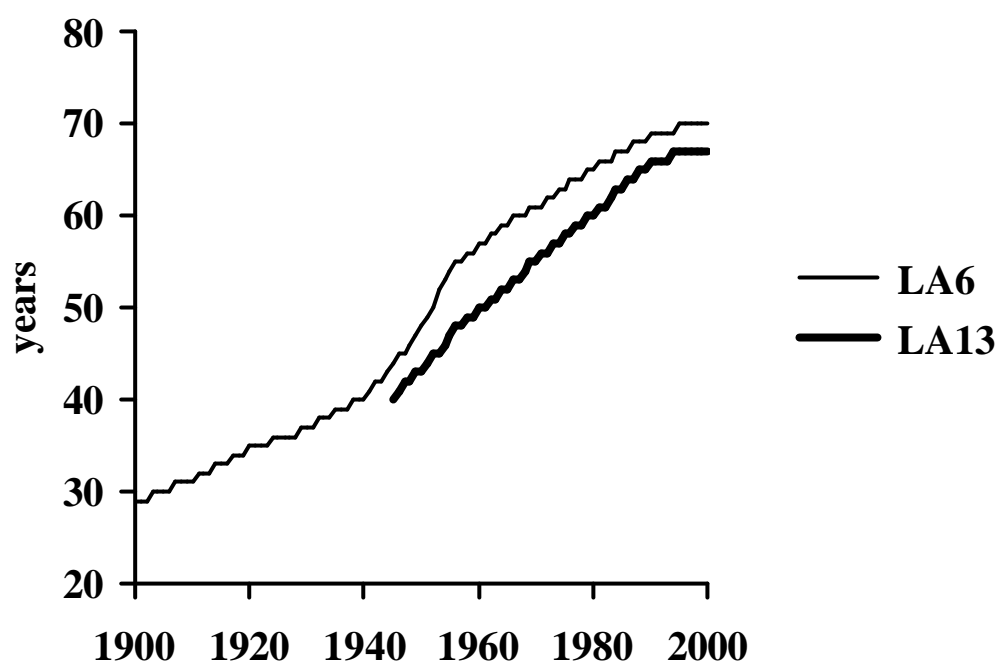
Although we have no similar indicator for the first half of the century, it is reasonable to suggest that in 1900 the mortality distribution was bipolar, and thus life expectancy was really a ‘death measure’ – in effect, an expression of the chances of dying in infancy – whereas by 2000 it had become essentially a measure of adult life expectancy.²⁰

¹⁸ See Thorp (1998).

¹⁹ See World Bank (2001, 2002).

²⁰ We are indebted to Avner Offer for this point.

Figure 4. *Life expectancy in Latin America*



Sources: Table A.4.

It is not entirely clear how to compare these social advances with the economic progress discussed above. Some development economists have adopted the use of composite indices of living standards to combine economic and social indicators and facilitate international comparison. The best known is the ‘Human Development Index’ (HDI) developed by the United Nations, which incorporates three indicators: per capita income; a weighted average of educational enrolment and literacy; and life expectancy.²¹ Composite indicators of this type are open to a number of methodological objections. For instance, the combination of a flow variable (per capita income) with stock variables (life expectancy and literacy), which are characterized by natural asymptotic limits at that, is technically undesirable as the first can vary considerably in the short run while the second and third can only change significantly in the longer term. The use of the marginal utility notion to scale per capita income cannot be anything other than arbitrary, although no more so than not scaling per capita income at all. The equal weighting for all three component indicators in the composite index is also arbitrary, and contains implicit

²¹ The United Nations HDI measures longevity by life expectancy at birth, educational attainment by a weighted average of adult literacy and combined primary, secondary and tertiary enrolment rates (weighted two-thirds and one-third respectively), and wealth by the logarithm of GDP per capita in PPP dollars. The ranges are themselves constrained: the range for life expectancy at birth is from 25 years to 85 years; from 0% to 100% for adult literacy rate and combined gross enrolment ratio; and from PPP\$100 to PPP\$40,000 for GDP per capita in international dollars, see UNDP (2002b).

judgements as to the value of life which may well be unacceptable.²² Despite these caveats, both economic historians and UNDP country offices are increasingly using this metric (and variations on this metric in the latter case) to incorporate other assessments of welfare change in addition to the standard, income/national accounts approach.²³

The ‘Historical Living Standard Index’ (HLSI) is similar to the HDI with two important differences: first, due to limited data availability and coverage on enrolment rates, literacy is the only indicator of education; and second, for purposes of long run comparison, the indicators are measured against a base year of 1950. The HLSI for country (*i*) is calculated as:

$$H_i = \frac{1}{3} \left[\left(\frac{\log y_i - \log 100}{\log 40,000 - \log 100} \right) + \left(\frac{life_i - 25}{85 - 25} \right) + \left(\frac{lit_i - 0}{100 - 0} \right) \right]$$

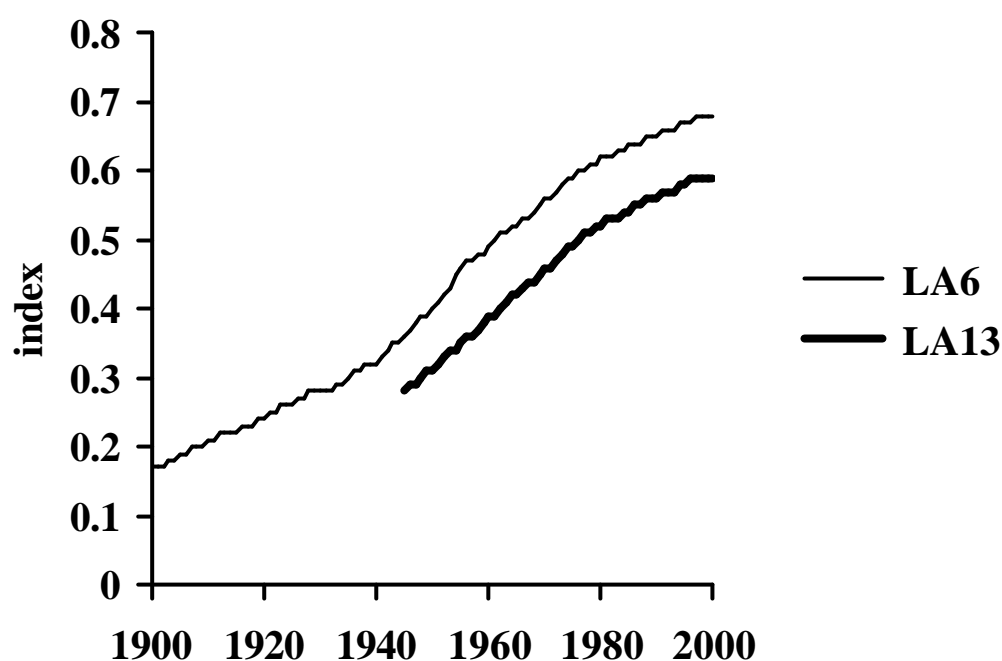
where y_i is per capita income in 1970 international dollars of country (*i*), $life_i$ is life expectancy at birth in country (*i*), and lit_i is the literacy rate in country (*i*). Note that the index compares the actual situation of country (*i*) to that of an ideal hypothetical target.

Figure 5 illustrates the overall movement of the HLSI from 1900 to 2000. This shows that the standard of living in the LA6 – our proxy for Latin America – increased four-fold over the century as a whole. However, although standards almost doubled from 0.17 in 1900 to 0.30 in 1935 and more than doubled to 0.62 by 1980, they rose to just 0.68 by the end of the century. The pace of growth of living standards for the LA13 stagnated after 1980 as well.

²² This arbitrary weighting has been defended by the UNDP on the grounds that there is no way of ascertaining the substitutability of any one variable for any other variable, see Jahan (2002). A more rigorous approach would be to establish how the economic values of longevity and education are set in practice, through evidence such as insurance valuations or private returns to investment in schooling, see Usher (1980). Unfortunately, such data are not available over time or on a comparable basis for Latin America. Moreover, the implicit substitutability between living standard indicators implies that even with scaling, the ‘value of life’ in poor countries is considerably lower than that of rich countries.

²³ See Offer (2000), UNDP (1997, 2002a), and various national development reports, for instance UNDP Bulgaria (2000).

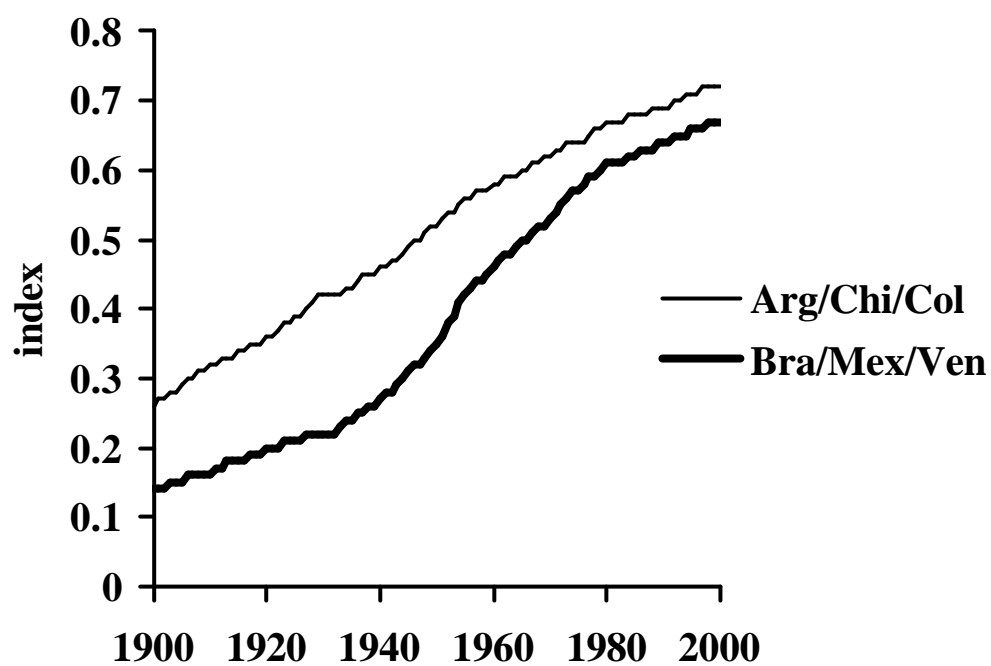
Figure 5. *Historical living standard index (HSLI)*



Sources: Table A.5.

The HSLI also allows us to shed some light on the convergence process within the LA6. As illustrated in Figure 6, there is strong evidence of a catch-up process within the LA6. The richest countries with the best social indicators in 1900 were Argentina, Colombia, and Chile, with living standards twice as high as those in Brazil, Mexico, and Venezuela. By 2000, however, Chile had knocked Argentina from the top to second place, and Mexico had pushed Colombia into third place. Brazil and Venezuela, which started out the poorest of the LA6, performed the best over the century with a 725 per cent and 975 per cent increase in income over the century, or cumulative annual average growth rates of 2.1 per cent and 2.4 per cent, respectively. The period between 1935 and 1980 was clearly crucial to the catch-up process; after 1980, the two sets of countries decelerate together.

Figure 6. *Convergence in living standards within the LA6*



Sources: Table A.5.

IV. Convergence in living standards

Living standards in Latin America during the twentieth century saw dramatic improvement, particularly during the period between 1940 and 1980. However, assessment of this apparent progress would be incomplete without comparison with other regions. This section sets Latin American living standards during the twentieth century against living standards in the United States, Europe – particularly Southern Europe as a more appropriate comparator in terms of industrialisation at the beginning of the century, – and Asia.²⁴

Broadly speaking, while life expectancy and literacy converged on US levels, incomes failed to follow suit. Per capita income in the LA6 fell from 15 per cent of the US level in 1900 to 13 per cent in 1950 and 12 per cent in 2000 (Table 3).²⁵ Per capita incomes in the LA13 diverged significantly from US levels in the second half of the century, falling from 10 per cent in 1950 to only 6 per cent in 2000.

Table 3. *Per capita income, adult literacy and life expectancy relative to the US*

| Country | 1900 | | | 1950 | | | 2000 | | |
|-----------|------|----------|------|------|----------|------|------|----------|------|
| | GDP | Literacy | Life | GDP | Literacy | Life | GDP | Literacy | Life |
| Argentina | 34 | 58 | 81 | 25 | 90 | 89 | 16 | 98 | 95 |
| Brazil | 8 | 39 | 61 | 7 | 51 | 63 | 10 | 86 | 88 |
| Chile | 19 | 49 | 60 | 13 | 81 | 71 | 18 | 97 | 98 |
| Colombia | 20 | 38 | 60 | 12 | 63 | 71 | 10 | 93 | 93 |
| Mexico | 16 | 27 | 52 | 15 | 62 | 70 | 15 | 92 | 94 |
| Venezuela | 6 | 31 | 58 | 21 | 52 | 75 | 11 | 94 | 95 |
| LA6 | 15 | 38 | 60 | 13 | 62 | 70 | 12 | 90 | 92 |
| LA13 | ... | ... | ... | 10 | 47 | 64 | 6 | 83 | 87 |

Notes: As for Table 1. *Sources:* Tables A.1, A.3, A.4.

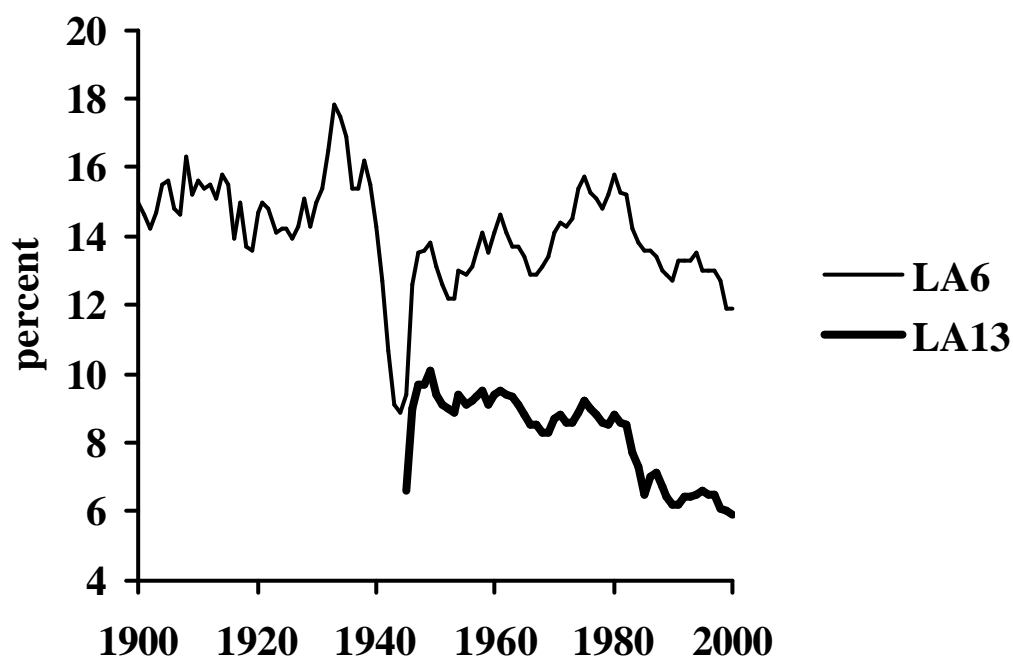
As seen in Figure 7, income per capita in the LA6 does not converge on the US average, and indeed diverges in the case of LA13 after 1980. Although there was some narrowing of the income gap in the 1930s, this was due to the unequal impact of the Great

²⁴ Although the United States enjoyed a considerable advantage over Latin America at the start of the century in terms of living standards, it is nevertheless an important comparator, given that it remains the benchmark used by many in the region and continues to wield major influence on the region's foreign trade and investment.

²⁵ Indeed, standard statistical tests indicate that the long-run trend in the ratio of per capita income in the LA6 and the US is stationary.

Depression in the two regions and its stronger effect on the US economy. The reappearance of the income gap and the ‘trend ratio’ in the 1940s indicates the extent to which Latin America had de-linked from the US economy during WWII. There are some signs of convergence in the postwar period until 1980, after which the divergence is marked. Interestingly, the countries with the best social indicators relative to the US at the outset (Argentina and Chile) diverged from US income levels, while those with the worst (Mexico and Brazil) converged, raising some interesting questions regarding the conventional assumptions of endogenous growth.²⁶

Figure 7. *GDP per capita relative to the US*

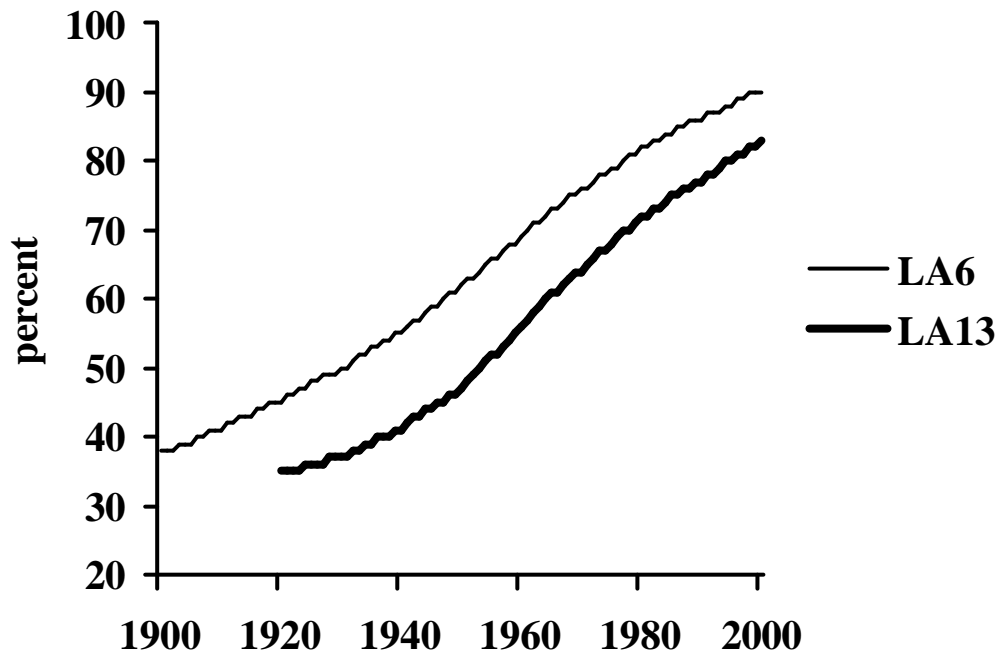


Sources: Table A.1.

²⁶ Patterns of long-run economic growth in the region are explored further in Astorga, Bergés, and FitzGerald (forthcoming-b).

The evident convergence in literacy rates shown in Figure 8 is notable but not entirely unexpected, with steady relative improvement over the century to 90 per cent of US literacy rates by 2000. The period following the 1940s, in particular, saw significant convergence in literacy rates both between the LA6 and the LA13, as well as with the US average.

Figure 8. *Literacy rates relative to the US*

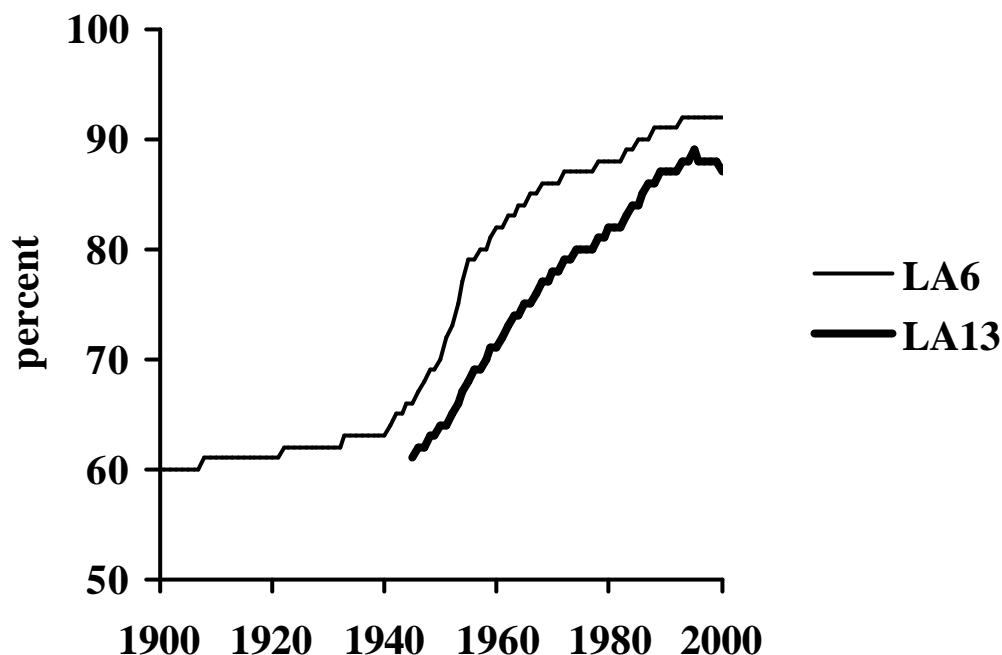


Sources: Table A.3.

By contrast, the LA6 demonstrated remarkable convergence on US life expectancy at birth (Figure 9), though concerns regarding the ‘quality’ of extended longevity, particularly in terms of geriatric health, should be noted.²⁷ Life expectancy at birth in the LA6 relative to the US remained stable until the 1940s, when it began to converge rapidly, reaching 80 per cent of the US average by 1955. By 2000, the LA6 had narrowed the gap from 19 years in 1900 to just seven years. By contrast, it took the LA13 until the early 1970s to converge on the US average.

²⁷ Still, it could equally be argued that family support for the old in Latin America provides a better ‘quality of life’ than geriatric hospital care in the US.

Figure 9. *Life expectancy at birth relative to the US*

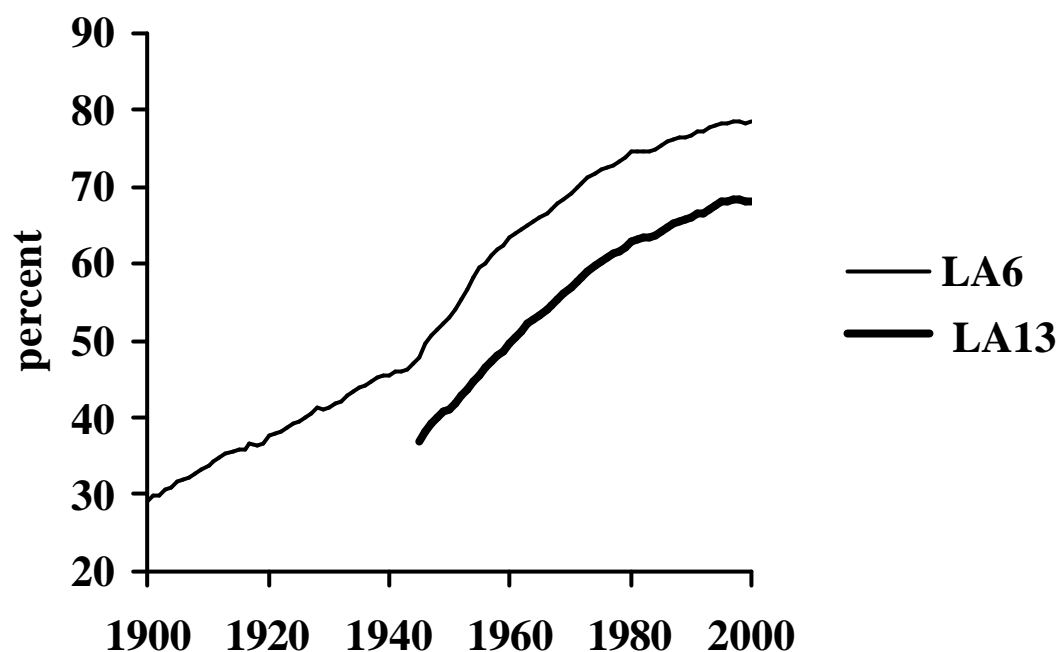


Sources: Table A.4.

This convergence of life expectancy, combined with the assumption as to the declining marginal utility of income, suggests that there has indeed been a slow convergence of living standards in the LA6 and the LA13 upon the standards in the USA (Figure 10).

Argentina is the main exception to this pattern of convergence. As seen in Table 4, Argentina began the century with the standard of living closest to that of the US (59 per cent) and far ahead of the rest of Latin America. However, its living standards grew by just 3.7 per cent per decade, compared to 10.4 and 10.7 per cent per decade in the LA6 and LA13, respectively, and well below Brazil and Venezuela at 11.4 per cent and 16 per cent per decade. Argentina's dismal performance is mainly attributable to the 55 per cent decline in relative income levels over the course of the twentieth century.

Figure 10. *Historical living standards relative to the US*



Sources: Table A.6.

Table 4. *Historical Living Standards Index relative to the US*

| | Argentina | Brazil | Chile | Colombia | Mexico | Venezuela | LA6 | LA13 |
|------|-----------|--------|-------|----------|--------|-----------|-----|------|
| 1900 | 59 | 25 | 39 | 34 | 23 | 18 | 29 | ... |
| 1910 | 68 | 27 | 45 | 35 | 28 | 20 | 34 | ... |
| 1920 | 70 | 28 | 48 | 36 | 36 | 24 | 38 | 24 |
| 1930 | 75 | 31 | 58 | 41 | 34 | 35 | 41 | 27 |
| 1940 | 78 | 35 | 57 | 46 | 42 | 41 | 46 | 36 |
| 1950 | 80 | 41 | 65 | 54 | 55 | 55 | 53 | 41 |
| 1960 | 84 | 56 | 72 | 63 | 64 | 67 | 63 | 50 |
| 1970 | 85 | 62 | 77 | 69 | 71 | 77 | 69 | 57 |
| 1980 | 85 | 69 | 81 | 74 | 77 | 79 | 75 | 63 |
| 1990 | 83 | 72 | 84 | 78 | 80 | 80 | 77 | 66 |
| 2000 | 85 | 74 | 87 | 79 | 82 | 81 | 78 | 68 |

Sources: Table A.6.

By contrast, some smaller countries in Latin America were able to make impressive gains on living standards relative to the US despite a growing divergence in per capita incomes. Uruguay, Costa Rica, and Cuba are three notable examples. Even as early as 1900, life expectancy at birth in Uruguay was actually higher than that of the US (Table 5). Although it fell behind slightly during the century, it remained within 4 per cent of US rates. Similarly, literacy in Uruguay rose from 67 per cent that of the US rate in 1900 to 85 per cent of US rates by 1940, and 99 per cent of US rates by 2000, at the same time that income declined from 27 per cent of US levels in 1940 to 16 per cent by 2000. Costa Rica was also able to close the living standards gap with the US: literacy rates more than doubled to 92 per cent of the US value in 1980, reaching 97 per cent in 2000; by 2000, life expectancy in Costa Rica was within 1 per cent of that in the US. Similarly, literacy in Cuba was well within 10 per cent of the US level by 1980 with a life expectancy equal to that in the US.

Table 5. *Historical Living Standards Index relative to the US*

| | Literacy | | | Life Expectancy at birth | | |
|------|----------|------------|------|--------------------------|------------|------|
| | Uruguay | Costa Rica | Cuba | Uruguay | Costa Rica | Cuba |
| 1900 | 67 | 40 | 52 | 102 | 66 | 67 |
| 1940 | 85 | 76 | 80 | 91 | 76 | 70 |
| 1980 | 95 | 92 | 93 | 95 | 98 | 100 |
| 2000 | 99 | 97 | 98 | 97 | 99 | 99 |

Sources: Tables A.3, A.4.

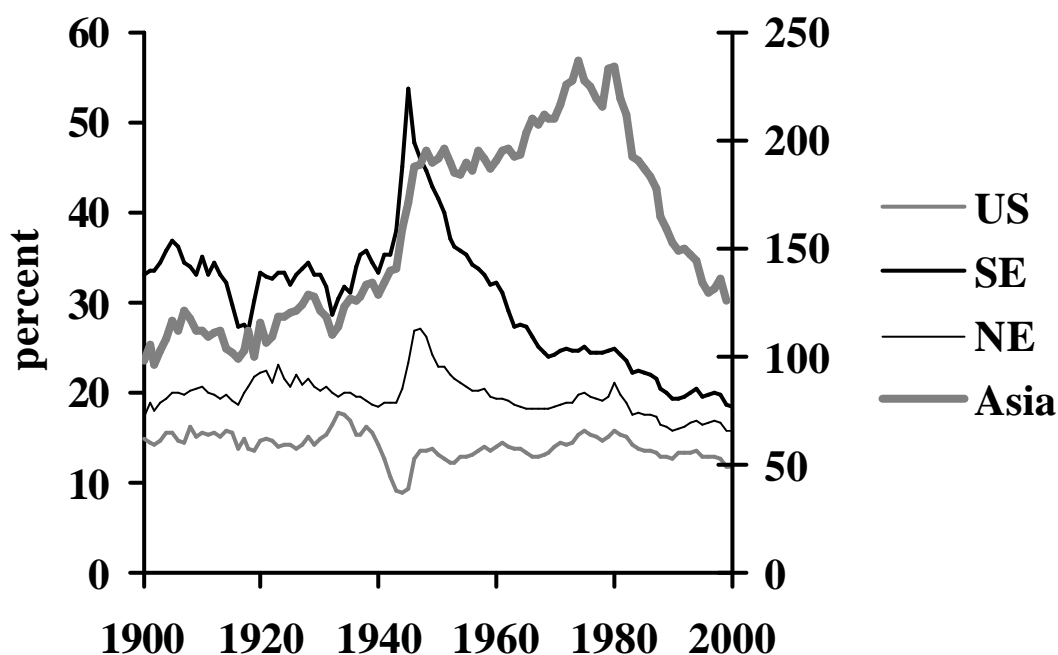
Nevertheless, the evidence on social convergence must be qualified on a few counts. The extremely unequal income distribution in Latin America implies that only the richest 5 per cent reached per capita income levels comparable with the average US citizen in 1970 (85 per cent); median incomes were less than 9 per cent of the US average (Table 2). The evidence on social convergence should also be qualified with reference to the quality of health and education in Latin America. In the 1990s, public education expenditure as a proportion of GDP in the US was roughly twice that in the LA6; public health expenditure was more than double.²⁸ Adjusting for relative GDP in PPP dollars, the ratio of per capita expenditure on health and education in the LA6 to the US in the 1990s was just 6 per cent and 5 per cent, respectively.²⁹

²⁸ Calculated with figures from World Bank (2001).

²⁹ Calculated with figures from UNDP (2002b).

Placing Latin America's per capita income performance during the twentieth century in international context is particularly revealing (Figure 11). Not only has there been no sustained economic convergence with the Northern European countries of England, France, and Germany, but Latin America also fell behind the countries of Southern Europe (Spain and Italy). Average LA6 incomes ranged from 25 to 30 per cent of those in Southern Europe between 1900 and 1930. The gap narrowed during the next two decades due to the impact of the depression and war in Europe, as well as Latin America's stronger growth performance so that by 1945 the LA6 had reached 54 per cent of Southern European levels. Nevertheless, the second half of the century saw the original gap restored by 1960. High returns on human capital investment coupled with the process of economic integration prompted an acceleration of Southern Europe's growth rate; the spread of the welfare states raised longevity.

Figure 11. *LA6 GDP per capita relative to Northern and Southern Europe, Asia, and the US*



Notes: Average income per capita relative to Asia lies on the secondary axis. Sources: Table A.1.

The Argentine case offers a clear illustration of this catch-up/fall-behind phenomenon. In 1900, Argentine per capita income was comparable to that of Southern Europe (\$487 versus \$632) at 77 per cent, averaging 86 percent of Southern European income levels during the 1940s. Since then, however, Argentina's per capita income has since fallen steadily to just 24 per cent of Southern European levels by 2000.

Asia (India, Indonesia, and South Korea) offers an interesting comparison.³⁰ The ratio of LA6 GDP per capita to Asian levels averaged 115 from 1900 to 1939, but then grew by 3.0 per cent per annum from 1940–80 to peak at 233.8 in 1980. The impact of the debt crisis can be seen clearly in the dramatic reversal of the 1980s and 1990s, with the 3.0 per cent per annum fall in the ratio to levels not seen since the 1930s.

It should be further noted that whatever successes have been achieved in some Latin America states they are not representative of the whole region. Indeed, the extremely unequal income distribution in Latin America means that average income levels (i.e. the mean) far exceed the income of the average person (i.e. the median). In 1970, only the richest 5 per cent of the regional population reached per capita income levels anywhere near the US average (56 per cent). Table 6 documents the worsening trend in income distribution since 1970.³¹

³⁰ These countries are chosen because their data coverage permits analysis for the whole period from 1900 to 2000.

³¹ The incidence of poverty in Latin American households rose by 6% during the 1980s to reach 41% in 1990. Although poverty rates had fallen back down to 36% by 1997, many countries in the region saw an increase in poverty in the years leading up to 2000; ECLAC estimates that some 224 million people in Latin America and the Caribbean were living in poverty at the turn of the century, see ECLAC (2000).

Table 6. *Per capita income distribution in Latin America relative to US average*

| Year | Latin America ^a | Richest 5% | Richest 15% | Richest 20% | Poorest 40% | Poorest 20% | US |
|---|----------------------------|------------|-------------------|-------------|------------------|-------------|-------|
| <i>GDP per capita (1970 PPP\$)</i> | | | | | | | |
| 1970 | 470 | 2819 | 940 | 1,410 | 286 ^b | 82 | 5,070 |
| 1985 | 605 | ... | ... | 1,638 | 191 | 132 | 6,836 |
| 1990 | 595 | ... | ... | 1,754 | 135 | 84 | 7,623 |
| 1997 | 693 | ... | 2690 ^c | 2,110 | ... | 96 | 8,321 |
| <i>Relative to the US (%)</i> | | | | | | | |
| 1970 | 9.3 | 55.6 | 18.5 | 27.8 | 5.6 ^b | 1.6 | 100.0 |
| 1985 | 8.9 | ... | ... | 24.0 | 2.8 | 1.9 | 100.0 |
| 1990 | 7.8 | ... | ... | 23.0 | 1.8 | 1.1 | 100.0 |
| 1997 | 8.3 | ... | 32.3 ^c | 25.4 | ... | 1.2 | 100.0 |

Notes:

The mean for Latin America is weighted by population.

- ^a 1970 refers to Argentina, Brazil, Colombia, Chile, Mexico, and Venezuela;
1985 refers to the average of 1984–1986 for Mexico (1984), Peru (1985/86), and Venezuela (1985/86) weighted by country population;
1990 refers to the average of 1989–1991 for Bolivia (1990/91), Brazil (1989), Colombia (1991), Costa Rica (1989), and Panama (1989) weighted by country population;
1997 refers to the average of 1996, 1998 for Brazil (1998), Chile (1998), Colombia (1996), Mexico (1998), and Venezuela (1996) weighted by country population.

^b refers to the middle 60 per cent.

^c refers to the richest 10 per cent.

Sources:

Table A.1; income distribution data for 1970 from Bulmer-Thomas (1994), p. 314;

Table 9.6, for 1985 and 1990 from Ramos (1996), p. 143;

Table 2, for 1997 from World Bank (2002).

V. Conclusions

This paper has made use of a new long run inter-country comparable data set for Latin America to examine the evolution of living standards in the region from 1900 to 2000. While tentative, the analytical results seem to lead to two main conclusions.

Firstly, the main sub-period of development in Latin America during the twentieth century occurred between 1940 and 1980 when there was an unprecedented surge in economic growth and social improvement. That this coincided with the so-called ‘import substitution’ process is not surprising insofar as public investment and state-led basic education and health initiatives were associated with the rise in growth rates and the improvement in health, despite the inefficiencies and distortions generated by forced industrialisation.³² Urbanisation and the creation of an industrial working class may well have played important roles as well. It seems clear that this period saw the greatest structural change in the Latin American economy, and was marked by sustained and relatively stable growth and social improvement. In stark contrast, the periods from 1900 to 1940 and from 1980 to 2000 saw lower economic growth and far more instability.³³

Poor economic growth and greater volatility appear to be related to exposure to exogenous primary export shocks in the first four decades of the century, and by the debt crisis and the subsequent process of macroeconomic stabilisation and trade liberalisation. It could be argued that frustration with the development experience to 1940 precipitated the prioritisation of deepening domestic markets and industrialisation to 1980, while that experience, or at least the associated fiscal imbalances, in turn spurred a shift in focus towards the macroeconomic stability and trade liberalisation that characterized the 1980s and 1990s.³⁴ In this light, the three sub-periods in Latin America’s economic and social development should not be considered to be discrete, but rather continuous and contingent, events. It should nevertheless be noted that the four decades in the middle of the century stand out for the outstanding progress made by nearly every country in the region, and that, given the negative picture painted in recent economic literature of the period, a reappraisal would be in order.

Secondly, social convergence occurred in the absence of economic convergence. It is far from clear why there has been virtually no economic convergence between Latin America and the US over the twentieth century, or why per capita incomes within Latin America have diverged. Even when evident differences in the quality of life are taken into account, the convergence of life expectancy between Latin America and the US is difficult to explain in the context of the enormous disparities in median income and so-

³² See Thorp (1998).

³³ The analysis of trends in sectoral labour productivity and total factor productivity growth should shed some light on this process; see Astorga, Bergés and FitzGerald (forthcoming-a).

³⁴ See FitzGerald (2001).

cial expenditure. Per capita income, literacy, and longevity appear to move together between 1900 and 1940 in the LA6, with income growing faster initially and then more slowly thereafter, while poor economic performance since the 1980s in the LA13 did not forestall continued progress on the social front. Although the divergence between per capita income on the one hand and longevity and literacy on the other partly reflects the inherent ‘inertia’ of the latter two as stock variables, it also implies that classifying a particular decade as a ‘success’ or ‘failure’ while subsuming the social with the economic may be misguided. Nevertheless, these patterns of growth and convergence raise some interesting questions regarding the relationship between economic growth and social progress, and suggest that the more simplistic endogenous growth models may need some rethinking.³⁵

³⁵ We will address these issues and attempt to distinguish exogenous from endogenous factors in Astorga, Bergés and FitzGerald (forthcoming-b).

VI. References

- Astorga, P., A. R. Bergés and E. V. K. FitzGerald. 2003. ‘The Oxford Latin American economic history database’, The Latin American Centre at Oxford University, <http://oxlad.qeh.ox.ac.uk/>.
- Astorga, P., A. R. Bergés and E. V. K. FitzGerald. forthcoming-a. “Productivity in Latin America during the Twentieth Century”.
- . forthcoming-b. “Endogenous Growth and Exogenous Shocks in Latin America during the Twentieth Century.”
- Ballesteros, M., and T. Davis. 1963. “The Growth of Output and Employment in Basic Sectors of the Chilean Economy, 1908–1957”, *Economic Development and Cultural Change* 12: 152–176.
- Baumol, W. J. 1986. “Productivity Growth, Convergence, and Welfare: What the Long Run Data Show”, *American Economic Review* 76(5): 1072–1085.
- Brundenius, C. 1984. *Revolutionary Cuba: The Challenge of Economic Growth with Equity*. Boulder, Westview Press.
- Bulmer-Thomas, V. 1987. *The Political Economy of Central America since 1920*. Cambridge, Cambridge University Press.
- . 1994. *The Economic History of Latin America since Independence*. Cambridge, Cambridge University Press.
- Cárdenas, E., J. A. Ocampo and R. Thorp (eds.) 2000a. *The Export Age: The Latin American Economies in the Nineteenth and Early Twentieth Centuries*, An Economic History of Twentieth-Century Latin America, 1. Basingstoke, Palgrave Macmillan in association with St Antony’s College.
- (eds.) 2000b. *Industrialization and the State in Latin America: The Postwar Years*, An Economic History of Twentieth-Century Latin America, 3. Basingstoke, Palgrave Macmillan in association with St Antony’s College.
- Dornbusch, R., and S. Edwards (eds.) 1991. *The Macroeconomics of Populism in Latin America*. Chicago, University of Chicago Press.
- Economic Commission for Latin America and the Caribbean (ECLAC CE). 1978. *Series Históricas del Crecimiento de América Latina*, Cuadernos Estadísticos de la CEPAL, 3. Santiago de Chile, Economic Commission for Latin America and the Caribbean.
- Economic Commission for Latin America and the Caribbean (ECLAC). 2000. *The Equity Gap: A Second Assessment*. Santiago de Chile, Economic Commission for Latin America and the Caribbean.

- Economic Commission for Latin America and the Caribbean (ECLAC SYLA). Various years. *Statistical Yearbook for Latin America*. New York, United Nations.
- Elton, E. J., M. J. Gruber and C. R. Blake. 1996a. “The Persistence of Risk-Adjusted Mutual Fund Performance”, *Journal of Business* 69(2): 133–157.
- . 1996b. “Survivorship Bias and Mutual Fund Performance”, *Review of Financial Studies* 9(4): 1097–1120.
- FitzGerald, E. V. K. 2000. “ECLA and the Theory of Import-Substituting Industrialisation in Latin America”, in Cárdenas, Ocampo and Thorp (eds), *Industrialisation and the State in Latin America*, An Economic History of Twentieth-Century Latin America, 3. Basingstoke, Palgrave Macmillan in association with St Antony’s College: 58–97.
- Heston, A. W., and R. Summers. 1991. “The Penn World Table (Mark 5): An Expanded Set of International Comparisons, 1950–1988”, *Quarterly Journal of Economics* 106(2): 327–368.
- Hofman, A. 2000. *The Economic Development of Latin America in the Twentieth Century*. Cheltenham, Edward Elgar.
- International Monetary Fund. 2002. *International Financial Statistics CD-ROM*. Washington, DC, International Monetary Fund.
- Jahan, S. 2002. “Measuring Living Standard and Poverty: Human Development Index as an Alternate Measure”, University of Massachusetts Political Economy Research Institute.
URL: http://www.umass.edu/peri/pdfs/glw_jahan.pdf
- Maddison, A. 1995. *Monitoring the World Economy, 1920–1992*. Paris, Organisation for Economic Co-operation and Development.
- Mesa-Lago, C. 1981. *The Economy of Socialist Cuba: A Two-Decade Appraisal*. Albuquerque, University of New Mexico Press.
- . 2000. *Market, Socialist, and Mixed Economies*. London, John Hopkins University Press.
- Offer, A. 2000. “Economic Welfare Measurements and Human Well-Being”, Discussion Papers in Economic and Social History No. 34. URL: <http://www.nuff.ox.ac.uk/Economics/History/Paper34/offer34.pdf>.
- Oficina Nacional de Estadísticas de Cuba. 2000. “Anuario Estadístico de Cuba”, Oficina Nacional de Estadísticas de Cuba.
URL: <http://www.camaracuba.cubaweb.cu/TPHabana/Estadisticas2000/estadisticas2000.htm>.
- Ramos, J. R. 1996. “Poverty and Inequality in Latin America: A Neostructural Perspec-

- tive”, *Journal of Interamerican Studies and World Affairs* 38(2/3): 141–58.
- Thorp, R. 1998. *Progress, Poverty, and Exclusion: An Economic History of Latin America in the 20th Century*. Baltimore, Inter-American Development Bank, distributed by John Hopkins University Press.
- (ed.) 2000. *Latin America in the 1930s: The Role of the Periphery in World Crisis*, An Economic History of Twentieth-Century Latin America, 2. Basingstoke, Palgrave Macmillan in association with St Antony’s College.
- UNDP Bulgaria. 2000. “Human Development Report: The Municipal Mosaic”, UN National Human Development Office of Bulgaria. URL: http://www.undp.bg/en/publications/national_human_development_reports/nhdr_2000.pdf.
- United Nations Development Programme (UNDP). 1997. *Human Development Report 1997: Human Development to Eradicate Poverty*. New York, United Nations Development Programme.
- . 2002a. “Adult Literacy Rate (% Age 15 and above), 2000”, United Nations Human Development Index.
URL: http://www.undp.org/hdr2002/indicator/indic_277_1_1.html
- . 2002b. *Human Development Report 2002: Deepening Democracy in a Fragmented World*. New York, United Nations Development Programme.
- Usher, D. 1980. *The Measurement of Economic Growth*. Oxford, Blackwell.
- World Bank. 2001. *World Development Indicators CD-ROM*. Washington, The World Bank.
- . 2002. “World Development Indicators Data Query”, World Bank. URL: <http://devdata.worldbank.org/data-query/>.

VII. Appendix

The discussion of long-run trends in Latin American per capita income, literacy, and life expectancy generally focuses on two country groupings: 'LA6' comprised of Argentina, Brazil, Chile, Colombia, Mexico and Venezuela; and 'LA13' consisting of the remaining countries in the region excluding Cuba. These country groupings weigh the values of the variables for each country by the respective population size to obtain the mean.

The complete data set with accompanying sources and methodological notes may be downloaded from <http://oxlad.qeh.ox.ac.uk/>.

Table A.1 *GDP per capita, 3-yr average*

| PPP\$ | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|-------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Argentina | 497 | 658 | 586 | 695 | 723 | 827 | 941 | 1,206 | 1,333 | 1,116 | 1,460 |
| Bolivia | ... | ... | ... | ... | ... | 236 | 189 | 270 | 337 | 289 | 329 |
| Brazil | 114 | 132 | 155 | 171 | 198 | 235 | 339 | 471 | 801 | 829 | 874 |
| Chile | 284 | 344 | 318 | 502 | 484 | 577 | 679 | 862 | 958 | 1,096 | 1,602 |
| Colombia | 290 | 266 | 236 | 272 | 330 | 383 | 440 | 545 | 770 | 863 | 925 |
| Costa Rica | ... | ... | 370 | 554 | 524 | 370 | 469 | 655 | 887 | 860 | 998 |
| Dom. Rep. | ... | ... | ... | ... | ... | 234 | 299 | 376 | 549 | 508 | 685 |
| Ecuador | ... | ... | ... | ... | 169 | 244 | 290 | 358 | 522 | 513 | 507 |
| El Salvador | ... | ... | 109 | 178 | 190 | 273 | 329 | 407 | 426 | 367 | 475 |
| Guatemala | ... | ... | 169 | 266 | 413 | 342 | 364 | 453 | 588 | 507 | 583 |
| Haiti | ... | ... | ... | ... | ... | 118 | 128 | 122 | 159 | 126 | 91 |
| Honduras | ... | ... | 145 | 265 | 195 | 227 | 250 | 285 | 316 | 317 | 317 |
| Mexico | 240 | 289 | 330 | 311 | 352 | 507 | 628 | 877 | 1,138 | 1,125 | 1,284 |
| Nicaragua | ... | ... | 115 | 200 | 186 | 219 | 288 | 428 | 299 | 181 | 186 |
| Panama | ... | ... | ... | ... | ... | 462 | 570 | 890 | 1,053 | 981 | 1,255 |
| Paraguay | ... | ... | ... | ... | 304 | 296 | 302 | 352 | 575 | 585 | 560 |
| Peru | ... | ... | ... | ... | ... | 331 | 420 | 526 | 622 | 462 | 560 |
| Uruguay | ... | ... | ... | ... | 664 | 864 | 902 | 963 | 1,148 | 1,131 | 1,457 |
| Venezuela | 94 | 104 | 128 | 364 | 418 | 695 | 961 | 1,198 | 1,230 | 1,024 | 1,015 |
| LA6 | 216 | 264 | 272 | 319 | 348 | 432 | 538 | 716 | 970 | 959 | 1,078 |
| LA13 | ... | ... | 240 | 261 | 333 | 313 | 357 | 441 | 544 | 469 | 538 |
| US | 1,478 | 1,712 | 1,886 | 2,142 | 2,481 | 3,284 | 3,826 | 5,125 | 6,295 | 7,398 | 8,867 |

Notes: Three-year averages except for 1900, 2000: 1900–2, 1998–2000, respectively; and 1920 for LA13: 1920–2. GDP figures in constant local currency units rescaled to 1970 prices before conversion to PPP prices using 1970 adjustment factors reported in Table A.2. LA13 for 1920, 1930: Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua only; 1940: LA13 excluding Bolivia, Dominican Republic, Haiti, Panama, and Peru. GDP in 1970 PPP prices for US calculated by applying index of GDP volume in constant PPP prices to US GDP in 1970; for Europe and Asia calculated by first applying the ratio of country GDP in 1990 PPP prices and US GDP in 1990 PPP prices to US GDP in 1970 to derive GDP in 1970 PPP prices for 1970, and then applying index of GDP volume in constant PPP prices. *Sources:* Latin America from OxlAD; population data for the US, Europe, and Asia are from Maddison (1995) for 1900–94; for US and Europe from IMF (2002), and for Asia from World Bank (2001) thereafter; GDP data for the US and Europe are from Maddison (1995), for 1900–94 and from IMF (2002) thereafter; for Asia from Maddison (1995), for 1900–94, World Bank (2001) thereafter. Data for Asia converted PPP rates from World Bank (2001).

Table A.2 *PPP adjustment of GDP per capita, 1970*

| | <i>GDP per capita, 1970</i> | | <i>Conversion rates, 1970</i> | |
|----------------|-----------------------------|----------------------------|-------------------------------|---------------------------|
| | US\$ (1) | PPP\$ (2) | OER (3) | PPPR (4) |
| Argentina | 940 | 1,208 | 3.79 | 2.95 |
| Bolivia | 206 | 272 | 11.90 | 9.03 |
| Brazil | 418 | 464 | 4.59 | 4.14 |
| Chile | 819 | 850 | 11.28 | 10.87 |
| Colombia | 316 | 546 | 18.44 | 10.68 |
| Costa Rica | 506 | 659 | 6.63 | 5.09 |
| Cuba | ... | ... | ... | ... |
| Dominican Rep. | 326 | 375 | 1.00 | 0.87 |
| Ecuador | 244 | 359 | 20.64 | 14.00 |
| El Salvador | 276 | 406 | 2.50 | 1.70 |
| Guatemala | 338 | 450 | 1.00 | 0.75 |
| Haiti | 97 | 121 | 5.00 | 3.99 |
| Honduras | 244 | 279 | 2.00 | 1.75 |
| Mexico | 630 | 886 | 12.49 | 8.88 |
| Nicaragua | 389 | 424 | 7.00 | 6.41 |
| Panama | 673 | 885 | 1.00 | 0.76 |
| Paraguay | 240 | 353 | 126.00 | 85.41 |
| Peru | 420 | 529 | 38.70 | 30.72 |
| Uruguay | 779 | 980 | 250.00 | 198.68 |
| Venezuela | 1,078 | 1,212 | 4.45 | 3.96 |
| US | 5,070 | 5,070 | 1.00 | 1.00 |

Notes:

Col. 1, GDP per capita in US dollars at current prices for 1970;

Col. 2, GDP per capita in constant 1970 PPP dollars for 1970;

Col. 3, official nominal exchange rate for 1970, in local currency units per US dollar;

Col. 4, PPP-adjusted exchange rate for 1970.

Sources: col. 1 and col. 2, as for Table A.1; col. 3, OxLAD; col. 4, ECLAC (1978), p. 8.

Table A.3 *Literacy rates*

| | % | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|-------------|-----|------|------|------|------|------|------|------|------|------|------|------|
| Argentina | 51 | 60 | 68 | 75 | 82 | 88 | 91 | 93 | 94 | 96 | 97 | 97 |
| Bolivia | 19 | 20 | 23 | 25 | 28 | 32 | 44 | 58 | 69 | 78 | 86 | 86 |
| Brazil | 35 | 35 | 35 | 40 | 44 | 49 | 60 | 68 | 76 | 81 | 85 | 85 |
| Chile | 44 | 53 | 63 | 75 | 73 | 79 | 84 | 88 | 92 | 94 | 96 | 96 |
| Colombia | 34 | 39 | 44 | 52 | 57 | 62 | 70 | 78 | 84 | 89 | 92 | 92 |
| Costa Rica | 36 | 47 | 58 | 67 | 73 | 79 | 83 | 88 | 92 | 94 | 96 | 96 |
| Cuba | 46 | 57 | 64 | 71 | 76 | 78 | 79 | 89 | 93 | 95 | 97 | 97 |
| Dom. Rep. | ... | ... | 29 | 26 | 30 | 43 | 65 | 67 | 74 | 79 | 84 | 84 |
| Ecuador | 33 | 38 | 42 | 46 | 51 | 56 | 66 | 74 | 82 | 87 | 92 | 92 |
| El Salvador | 26 | 27 | 27 | 28 | 35 | 42 | 48 | 58 | 66 | 73 | 79 | 79 |
| Guatemala | 12 | 13 | 15 | 19 | 24 | 29 | 36 | 45 | 53 | 61 | 69 | 69 |
| Haiti | 8 | 8 | 8 | 9 | 9 | 11 | 16 | 22 | 31 | 40 | 50 | 50 |
| Honduras | 28 | 30 | 32 | 34 | 35 | 40 | 45 | 53 | 62 | 69 | 75 | 75 |
| Mexico | 24 | 30 | 35 | 36 | 46 | 61 | 65 | 75 | 82 | 88 | 91 | 91 |
| Nicaragua | ... | ... | 39 | 39 | 39 | 38 | 47 | 57 | 61 | 65 | 67 | 67 |
| Panama | 17 | 27 | 42 | 46 | 59 | 67 | 73 | 79 | 85 | 89 | 92 | 92 |
| Paraguay | 31 | 38 | 45 | 52 | 59 | 66 | 73 | 80 | 86 | 90 | 93 | 93 |
| Peru | 24 | 29 | 33 | 37 | 42 | 51 | 60 | 72 | 80 | 86 | 90 | 90 |
| Uruguay | 51 | 60 | 68 | 75 | 82 | 88 | 90 | 93 | 95 | 97 | 98 | 98 |
| Venezuela | 28 | 29 | 32 | 36 | 42 | 51 | 62 | 77 | 84 | 89 | 93 | 93 |
| LA6 | 33 | 38 | 42 | 47 | 53 | 60 | 68 | 75 | 81 | 86 | 89 | 89 |
| LA13 | 25 | 28 | 32 | 35 | 40 | 46 | 55 | 64 | 71 | 77 | 82 | 82 |
| US | 89 | 92 | 94 | 95 | 96 | 97 | 98 | 99 | 100 | 100 | 99 | 99 |

Notes: The illiteracy rate is defined as the percentage of the population of or above a certain age (usually 15) who cannot read and write a simple statement about everyday life. In practice, however, the illiteracy rate can sometimes refer to the percentage of the population of or above a certain age (usually 15) with less than two years of primary school enrolment, or may be self-defined. Reported figures come from census data, interpolations between census years. LA13 for 1900, 1910 exclude Dominican Republic and Nicaragua.

Sources: Latin America from OxLAD; US rates from 'The human condition in Latin America, 1900–95', consultancy report by Shane Hunt for Thorp (1998) for 1900–60, from World Bank (2001) for 1970–90, and from UNDP (2002a) thereafter.

Table A.4 *Life Expectancy at birth*

| Years | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|-------------|------|------|------|------|------|------|------|------|------|------|------|
| Argentina | 39 | 44 | 49 | 53 | 56 | 61 | 65 | 67 | 70 | 72 | 73 |
| Bolivia | 26 | 28 | 31 | 33 | 36 | 40 | 43 | 46 | 52 | 58 | 62 |
| Brazil | 29 | 31 | 32 | 34 | 37 | 43 | 55 | 59 | 63 | 66 | 68 |
| Chile | 29 | 30 | 31 | 35 | 38 | 49 | 57 | 62 | 69 | 74 | 75 |
| Colombia | 29 | 31 | 32 | 34 | 38 | 49 | 57 | 61 | 66 | 69 | 71 |
| Costa Rica | 32 | 33 | 37 | 42 | 49 | 56 | 62 | 67 | 72 | 76 | 76 |
| Cuba | 32 | 36 | 39 | 42 | 45 | 56 | 64 | 70 | 74 | 74 | 76 |
| Dom. Rep | ... | ... | ... | 26 | 34 | 44 | 52 | 58 | 64 | 69 | 67 |
| Ecuador | ... | ... | ... | ... | ... | 48 | 53 | 58 | 63 | 68 | 70 |
| El Salvador | ... | ... | 28 | 29 | 36 | 44 | 50 | 57 | 57 | 66 | 70 |
| Guatemala | 24 | 24 | 25 | 25 | 29 | 38 | 46 | 52 | 58 | 63 | 65 |
| Haiti | ... | ... | ... | ... | ... | 36 | 42 | 47 | 52 | 56 | 53 |
| Honduras | ... | ... | 29 | 34 | 36 | 39 | 46 | 53 | 60 | 67 | 66 |
| Mexico | 25 | 28 | 34 | 34 | 39 | 48 | 57 | 61 | 67 | 71 | 73 |
| Nicaragua | ... | ... | 24 | 28 | 34 | 39 | 47 | 54 | 59 | 64 | 68 |
| Panama | ... | ... | ... | 36 | 42 | 50 | 61 | 65 | 70 | 72 | 74 |
| Paraguay | 25 | 29 | 33 | 38 | 42 | 48 | 55 | 61 | 67 | 69 | 70 |
| Peru | ... | ... | ... | ... | 37 | 40 | 48 | 54 | 60 | 66 | 69 |
| Uruguay | 49 | 52 | 52 | 50 | 58 | 66 | 68 | 69 | 70 | 72 | 74 |
| Venezuela | 28 | 29 | 31 | 32 | 38 | 51 | 60 | 65 | 68 | 71 | 73 |
| LA6 | 29 | 31 | 35 | 37 | 40 | 48 | 57 | 61 | 65 | 69 | 70 |
| LA13 | 31 | 33 | 33 | 34 | 38 | 43 | 50 | 55 | 60 | 66 | 67 |
| US | 48 | 52 | 57 | 59 | 64 | 68 | 70 | 71 | 74 | 75 | 77 |

Notes: Life expectancy at birth is defined as the number of years a newborn infant would live if prevailing patterns of mortality at the time of birth remained unchanged throughout his/her lifetime. To complete the series for the aggregate of Latin America in 1945, Ecuador and Haiti figures in this year are obtained by subtracting one year from the figure of 1950. LA13 for 1900: Bolivia, Costa Rica, Guatemala, Paraguay, and Uruguay only; 1920: Bolivia, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, and Uruguay only; 1930: Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, Panama, and Uruguay only; 1940: Bolivia, Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Nicaragua, Paraguay, Panama, Peru, and Uruguay only. *Sources:* Latin America from OxLAD; US data from 'The human condition in Latin America, 1900–95', consultancy report by Shane Hunt for Thorp (1998) for 1900–90 and from UNDP (2002b) thereafter.

Table A.5 *Historical living standard index (HLSI)*

| Index | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|----------------|------|------|------|------|------|------|------|------|------|------|------|
| Argentina | 0.34 | 0.41 | 0.46 | 0.51 | 0.56 | 0.61 | 0.65 | 0.68 | 0.71 | 0.71 | 0.74 |
| Bolivia | ... | ... | ... | ... | ... | 0.24 | 0.28 | 0.36 | 0.45 | 0.50 | 0.56 |
| Brazil | 0.14 | 0.16 | 0.18 | 0.21 | 0.25 | 0.31 | 0.43 | 0.50 | 0.58 | 0.61 | 0.64 |
| Chile | 0.22 | 0.28 | 0.31 | 0.40 | 0.40 | 0.49 | 0.56 | 0.62 | 0.68 | 0.72 | 0.75 |
| Colombia | 0.19 | 0.22 | 0.23 | 0.28 | 0.33 | 0.41 | 0.49 | 0.55 | 0.62 | 0.66 | 0.68 |
| Costa Rica | ... | ... | 0.35 | 0.41 | 0.46 | 0.51 | 0.57 | 0.63 | 0.69 | 0.72 | 0.73 |
| Cuba | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Dominican Rep. | ... | ... | ... | ... | ... | 0.30 | 0.43 | 0.48 | 0.56 | 0.60 | 0.62 |
| Ecuador | ... | ... | ... | ... | ... | 0.36 | 0.43 | 0.50 | 0.58 | 0.62 | 0.64 |
| El Salvador | ... | ... | 0.13 | 0.15 | 0.22 | 0.30 | 0.37 | 0.45 | 0.48 | 0.54 | 0.60 |
| Guatemala | ... | ... | ... | 0.12 | 0.18 | 0.24 | 0.30 | 0.38 | 0.46 | 0.51 | 0.55 |
| Haiti | ... | ... | ... | ... | ... | 0.11 | 0.16 | 0.21 | 0.28 | 0.32 | 0.31 |
| Honduras | ... | ... | 0.17 | 0.22 | 0.21 | 0.26 | 0.32 | 0.39 | 0.46 | 0.52 | 0.54 |
| Mexico | 0.13 | 0.17 | 0.23 | 0.23 | 0.30 | 0.42 | 0.50 | 0.57 | 0.64 | 0.68 | 0.71 |
| Nicaragua | ... | ... | ... | 0.18 | 0.21 | 0.25 | 0.34 | 0.43 | 0.45 | 0.47 | 0.50 |
| Panama | ... | ... | ... | ... | ... | 0.45 | 0.54 | 0.61 | 0.66 | 0.69 | 0.72 |
| Paraguay | ... | ... | ... | ... | 0.35 | 0.41 | 0.47 | 0.53 | 0.62 | 0.65 | 0.66 |
| Peru | ... | ... | ... | ... | ... | 0.32 | 0.41 | 0.49 | 0.56 | 0.59 | 0.64 |
| Uruguay | ... | ... | ... | ... | 0.56 | 0.63 | 0.66 | 0.68 | 0.70 | 0.72 | 0.75 |
| Venezuela | 0.11 | 0.12 | 0.16 | 0.23 | 0.29 | 0.42 | 0.52 | 0.62 | 0.66 | 0.68 | 0.70 |
| LA6 | 0.17 | 0.21 | 0.24 | 0.28 | 0.32 | 0.40 | 0.49 | 0.56 | 0.62 | 0.65 | 0.68 |
| LA13 | ... | ... | ... | 0.18 | 0.31 | 0.31 | 0.39 | 0.46 | 0.52 | 0.56 | 0.59 |
| US | 0.57 | 0.61 | 0.65 | 0.68 | 0.71 | 0.76 | 0.78 | 0.80 | 0.83 | 0.85 | 0.87 |

Notes: LA13 for 1920, 1930: Costa Rica, El Salvador, Guatemala, Honduras, and Nicaragua only. *Sources:* as for Tables A.1, A.3, and A.4.

Table A.6 *Historical living standard index (HSLI) relative to the US*

| % | 1900 | 1910 | 1920 | 1930 | 1940 | 1950 | 1960 | 1970 | 1980 | 1990 | 2000 |
|---------------------------|------|------|------|------|------|------|------|------|------|------|------|
| Argentina | 59 | 68 | 70 | 75 | 78 | 80 | 84 | 85 | 85 | 83 | 85 |
| Bolivia | ... | ... | ... | ... | ... | 31 | 36 | 45 | 54 | 59 | 64 |
| Brazil | 25 | 27 | 28 | 31 | 35 | 41 | 56 | 62 | 69 | 72 | 74 |
| Chile | 39 | 45 | 48 | 58 | 57 | 65 | 72 | 77 | 81 | 84 | 87 |
| Colombia | 34 | 35 | 36 | 41 | 46 | 54 | 63 | 69 | 74 | 78 | 79 |
| Costa Rica | ... | ... | 54 | 61 | 65 | 67 | 73 | 79 | 83 | 84 | 84 |
| Cuba | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| Dom Rep. | ... | ... | ... | ... | ... | 39 | 55 | 60 | 67 | 70 | 72 |
| Ecuador | ... | ... | ... | ... | ... | 48 | 56 | 62 | 69 | 73 | 74 |
| El Salvador | ... | ... | 20 | 22 | 30 | 40 | 47 | 56 | 58 | 63 | 69 |
| Guatemala | ... | ... | ... | 18 | 26 | 31 | 39 | 48 | 55 | 60 | 63 |
| Haiti | ... | ... | ... | ... | ... | 14 | 21 | 26 | 33 | 37 | 36 |
| Honduras | ... | ... | 27 | 32 | 30 | 34 | 41 | 48 | 55 | 61 | 62 |
| Mexico | 23 | 28 | 36 | 34 | 42 | 55 | 64 | 71 | 77 | 80 | 82 |
| Nicaragua | ... | ... | ... | 27 | 30 | 33 | 43 | 53 | 54 | 55 | 57 |
| Panama | ... | ... | ... | ... | ... | 59 | 69 | 76 | 80 | 81 | 83 |
| Paraguay | ... | ... | ... | ... | 49 | 54 | 60 | 67 | 74 | 76 | 75 |
| Peru | ... | ... | ... | ... | ... | 42 | 52 | 61 | 67 | 70 | 74 |
| Uruguay | ... | ... | ... | ... | 79 | 83 | 85 | 85 | 85 | 84 | 86 |
| Venezuela | 18 | 20 | 24 | 35 | 41 | 55 | 67 | 77 | 79 | 80 | 81 |
| LA6 | 29 | 34 | 38 | 41 | 46 | 53 | 63 | 69 | 75 | 77 | 78 |
| LA13 | ... | ... | ... | 27 | 44 | 41 | 50 | 57 | 63 | 66 | 68 |
| Standard deviation | | | | | | | | | | | |
| LA6 | | 0.7 | 1.0 | 1.4 | 0.8 | 1.0 | 0.9 | 0.4 | 0.4 | 0.2 | 0.1 |
| LA13 | | | | 0.6 | 1.8 | 0.9 | 1.1 | 0.7 | 0.7 | 0.4 | 0.3 |

Notes: Annual average standard deviation of growth rates. *Sources:* as for Table A.5.

[Continued from inside front cover]

- 18 Dan H. Andersen and Hans-Joachim Voth, *The Grapes of War: Neutrality and Mediterranean Shipping under the Danish Flag, 1750–1802* (Sept. 1997)
- 19 Liam Brunt, *Nature or Nurture? Explaining English Wheat Yields in the Agricultural Revolution* (Oct. 1997)
- 20 Paul A. David, *Path Dependence and the Quest for Historical Economics: One More Chorus of the Ballad of QWERTY* (Nov. 1997)
- 21 Hans-Joachim Voth, *Time and Work in Eighteenth-Century London* (Dec. 1997)

- 22 Tim Leunig, *New Answers to Old Questions: Transport Costs and The Slow Adoption of Ring Spinning in Lancashire* (Feb. 1998)
- 23 Paul A. David, *From Keeping 'Nature's Secrets' to the Institutionalization of 'Open Science'* (July 2001)
- 24 Federico Varese and Meir Yaish, *Altruism: The Importance of Being Asked. The Rescue of Jews in Nazi Europe* (May 1998)
- 25 Avner Offer, *Epidemics of Abundance: Overeating and Slimming in the USA and Britain since the 1950s* (Nov. 1998)
- 26 David Stead, *An Arduous and Unprofitable Undertaking: The Enclosure of Stanton Harcourt, Oxfordshire* (November 1998)
- 27 Oliver Grant, *The Diffusion of the Herringbone Parlour: A Case Study in the History of Agricultural Technology* (December 1998)
- 28 Antonia Taddei, *London Clubs in the Late Nineteenth Century* (April 1999)
- 29 Liam Brunt, *Estimating English Wheat Production in the Industrial Revolution* (June 1999)
- 30 Matthew Braham, *Volunteers for Development: A Test of the Post-Materialism Hypothesis in Britain, c.1965–1987* (June 1999)
- 31 Paul A. David and Gavin Wright, *General Purpose Technologies and Surges in Productivity: Historical Reflections on the Future of the ICT Revolution* (September 1999)
- 32 Liam Brunt, *An Arbitrage Model of Crop Rotation* (September 1999)
- 33 Paul A. David and Gavin Wright, *Early Twentieth Century Productivity Growth Dynamics: An Inquiry into the Economic History of 'Our Ignorance'* (October 1999)
- 34 Avner Offer, *Economic Welfare Measurements and Human Well-Being* (January 2000). Rev. version, March 2000.
- 35 Liam Brunt, *'Where there's Muck, There's Brass'. The Market for Manure in the Industrial Revolution* (February 2000).
- 36 Alasdair Crockett, *Variations in Churchgoing Rates in England in 1851: Supply-Side Deficiency or Demand-Led Decline?* (August 2000).
- 37 Martin West, *State Intervention in English Education, 1833–1891: A Public Goods and Agency Approach* (October 2000).
- 38 George Speight, *Who Bought the Inter-War Semi? The Socio-Economic Characteristics of New-House Buyers in the 1930s* (December 2000)
- 39 Peter Temin, *A Market Economy in the Early Roman Empire* (March 2001)
- 40 Michael Biggs, *Positive Feedback in Collective Mobilization: The American Strike Wave of 1886* (April 2001)
- 41 Charles H. Feinstein and Mark Thomas, *A Plea for Errors* (July 2001)
- 42 Walter Eltis, *Lord Overstone and the Establishment of British Nineteenth-Century Monetary Orthodoxy* (December 2001)
- 43 A. B. Atkinson, *Top Incomes in the United Kingdom over the Twentieth Century* (February 2002)

- 44 Avner Offer, *Why has the Public Sector Grown so Large in Market Societies? The Political Economy of Prudence in the UK, c.1870–2000* (March 2002)
- 45 Natàlia Mora Sitjà, *Labour and Wages in Pre-Industrial Catalonia* (May 2002)
- 46 Elaine S. Tan, *'The Bull is Half the Herd': Property Rights and Enclosures in England, 1750–1850* (June 2002)
- 47 Oliver Wavell Grant, *Productivity in German Agriculture: Estimates of Agricultural Productivity from Regional Accounts for 21 German Regions: 1880/4, 1893/7 and 1905/9* (August 2002)
- 48 Oliver Wavell Grant, *Does industrialization push up inequality? New evidence on the Kuznets cure from nineteenth century Prussian tax statistics* (September 2002)
- 49 Alexandre Debs, *The source of Walras's idealist bias: a review of Koppl's solution to the Walras paradox* (January 2003)
- 50 Robert Dryburgh, *'Individual, illegal, and unjust purposes': Overseers, incentives, and the Old Poor Law in Bolton, 1820–1837* (March 2003)
- 51 David R. Stead, *Risk and risk management in English agriculture, c.1750–1850* (October 2003)
52. Pablo Astorga, Ame R. Bergés, and Valpy FitzGerald, *Productivity growth in Latin America during the twentieth century* (December 2003)
53. Teresa da Silva Lopes, *Evolution of Corporate Governance in Global Industries: The Case of Multinationals in Alcoholic Beverages* (February 2004)
- 54 Pablo Astorga, Ame R. Bergés, and Valpy FitzGerald, *The Standard of Living in Latin America during the Twentieth Century* (March 2004)

**University of Oxford
Discussion Papers in
Economic and Social History**

are edited by:

Robert Allen
Nuffield College, Oxford, OX1 1NF

Jane Humphries
All Souls College, Oxford, OX1 4AL

Siobhan McAndrew
Nuffield College, Oxford, OX1 1NF

Avner Offer
All Souls College, Oxford, OX1 4AL

*Papers may be downloaded from
<http://www.nuff.ox.ac.uk/Economics/History/>*