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Globalizing Inequality: 'Centrifugal' and 'Centripetal' Forces at Work

José Gabriel Palma

Abstract

This paper reassesses national income inequalities in this era of globalization. The main conclusion is that two opposite forces are at work: one 'centrifugal' at the two extremes of the distribution—increasing the disparity of income shares appropriated by the top and by the bottom four deciles across countries; and the other 'centripetal' in the middle—increasing the uniformity of the share of income going to deciles 5 to 9. Therefore, globalization is creating a situation where virtually all the inter-country diversity of income distribution is the result of differences in what the rich and the poor get in each country.

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Comments should be addressed by email to the author.

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Globalizing Inequality: 'Centrifugal' and 'Centripetal' Forces at Work

José Gabriel Palma[1]

"For unto every one that hath shall be given,
and he shall have abundance;
but from him that hath not shall be taken away,
even that which he hath."

Matthew 25:29

One of the main stylized facts of the era of globalization is that a remarkable increase in the levels of international trade has been associated in most countries with a significant deterioration of income distribution. This trend towards greater inequality at a time of a generalized increase in trade is far from the predictions of Samuelson's 1950s trade-related factor-price-equalization theorem. For him, an increase in trade would improve both the national and international distributions of income. This should happen because export expansion would increase the relative income of the (cheap) abundant factor and reduce that of the (expensive) scarce factor in each country. In fact, of all Samuelson's economic hypotheses, there is probably none that influences the United States of America's foreign policy today as much as the one that postulates that increased trade between two countries should reduce the incentive for labour to move across frontiers. In the case of the US relationship with Mexico, for example, following the 1982 'debt crisis', the US—always frightened that worsening economic problems in Mexico could turn the flow of Mexican immigrants into a tidal wave—gave Mexican exports increasingly preferential access to its market, a process that led to the creation of the North American Free Trade Agreement (NAFTA).[2]

Therefore, the issues addressed by Samuelson as far back as the 1950s are still some of the most contested hypotheses in the debate on the effects that the globalization-induced increase in trade would have on national and international factor movements and income distribution.[3] As is well known, one major problem with this (or any other) debate on income distribution has been the difficulty of testing alternative hypotheses, especially time series formulations, due to the low quality of available income distribution data. However, household survey data have recently substantially improved allowing at least some robust testing of cross-sectional hypotheses. At the same time, some institutions—like the Organization for Economic Cooperation and Development (OECD) and the World Bank (WB)—have made sustained efforts to collect and process these surveys.[4] The relevant WB publication, for example, now provides a relatively homogeneous set of data

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1 This paper draws heavily on Palma (2002b; 2003). Tony Atkinson, Stephany Blankenburg, Rodrigo Caputo, Jayati Ghosh, Andrew Glyn, Daniel Hahn, Jomo KS, Richard Kozul-Wright, Ugo Pagano, Guillermo Paraje, Hashem Pesaran, Guy Standing, Fiona Tregenna, and especially Bob Sutcliffe made very useful suggestions. Participants at conferences and seminars in Bangkok, Chennai, Geneva, Kuala Lumpur, Santiago, Siena and Sydney also made helpful comments. The usual caveats apply.

2 At the time of the creation of NAFTA, there were already well over 10 million Mexicans living in the US.

3 For a comprehensive analysis of this literature, see Kanbur (2000). See also Sutcliffe (2004), Atkinson (1997), Aghion, Caroli and Garcia-Peñaloza (1999), IADB (1999) and UNCTAD (1996, 2002).

4 For the OECD's Luxembourg Income Study (LIS), see http://www.lis.ceps.lu. The World Bank's basic income distribution information is published regularly in its World Development Indicators (WDI). See also WIDER (2000).

on personal income distribution for 112 countries (World Bank, WDI, 2004). However, there are still some significant problems with the World Development Indicators data set. For example, although most data refer to income distribution, some still refer to consumption expenditure (particularly in Sub-Saharan Africa). This mix of data makes regional comparison more difficult, as the distribution of consumption tends to be more equal than the distribution of income (usually by a difference of about 3 percentage points on the Gini scale). The accuracy of these surveys is also still a problem.[5]

Another problem is that, rather surprisingly, the WDI data set still reports income (or consumption) distribution only in terms of quintiles; for deciles, it only reports the shares of deciles 1 and 10. Although this is a marked improvement over the WB's earlier Deininger and Squire (D/S) data set (Deininger and Squire, 1996)—which does not report data for a single income decile—it is clearly unsatisfactory. As will be discussed in detail below, crucial distributional information is lost when data are aggregated in quintiles (particularly in the top one). Meanwhile, the Research Department of the Inter-American Development Bank (IADB) has constructed a slightly more up-to-date income distribution data set for several Latin American countries; it uses the same methodology (primary household survey data) and data aggregation (quintiles and deciles 1 and 10) as the WDI (Székely and Hilgert, 1999b).

The main aim of this paper is to use these new WB and IADB data sets to take another look at national income inequalities in this era of globalization. Throughout this paper, unless otherwise stated, the IADB data set will be used for Latin America, and the WDI for the rest of the world. The total number of countries included in this study is 109.[6]

Inequality ranking

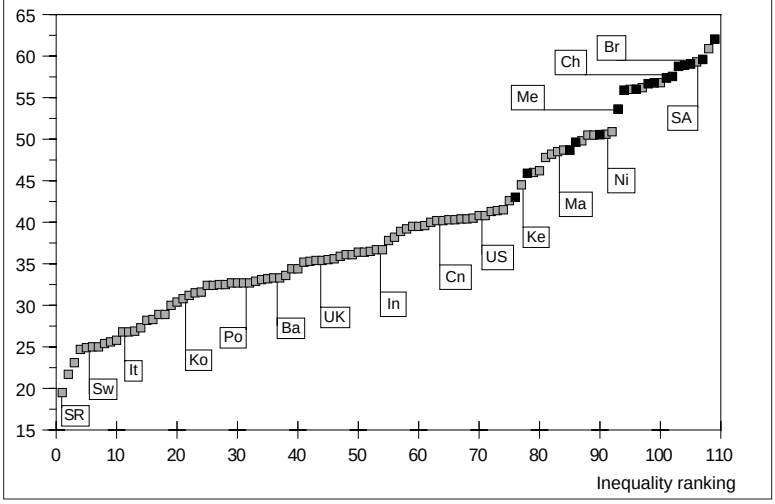
Figure 1 illustrates how these 109 countries are ranked according to their Gini indices of inequality in the second half of the 1990s. Of the many issues emerging from this graph, two stand out. First, in the second half of the 1990s, there was a particularly wide range of inequality across countries—from a very low Gini index of 19.5 per cent (Slovak Republic) to a high of 62.3 per cent (Paraguay). Second, all Latin American countries were clearly grouped at the very top end of the inequality ranking—with a median Gini of 56.7 per cent and mean of 54.7 per cent. The degree of inequality in Latin America was well over half as much again as the median value for the rest of the sample (92 countries), and more than 40 per cent higher than that for the 'non-Latin American' developing countries (51 countries, excluding OECD and transition economies). In addition, among the 109 countries studied, the median country-inequality ranking for the 17 Latin American countries was 100 (see also UNCTAD, 1996).

There also seemed to be an extraordinary difference between English-speaking and non-English-speaking OECD countries, with the latter including continental Europe and Japan—with median Ginis of 36.0 and 27.1, respectively. The same contrast was found between the ex-communist countries of the former Soviet Union and those of Central Europe—with median Ginis of 34.4 and 27.5, respectively.

5 The Sierra Leone survey, for example, undertaken in the midst of a rather brutal civil war, claims to have 'national' coverage! In the case of Latin America, a critical review of the quality of household surveys can be found in Székely and Hilgert (1999a).

6 Following advice from WB staff, data from Sierra Leone and the Central African Republic are excluded from the sample due to inconsistencies.

Figure 1:
Most recent data on Gini indices of personal income distribution of 109 countries

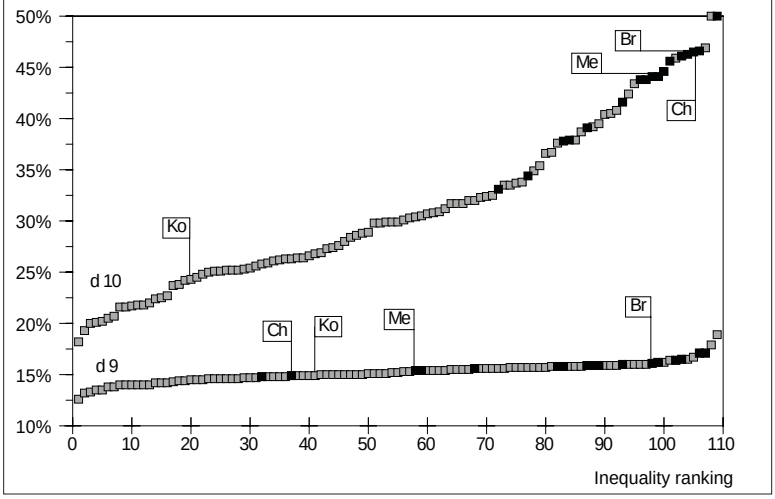


Source: World Bank, WDI, 2004.

Notes: Countries are ranked according to their degree of inequality (1 to 109); Latin American countries are shown in black (this will also be the case in similar graphs below). Throughout this paper, Gini indices are reported on a scale from 1 to 100.

Br = Brazil; Ch = Chile; Me = Mexico; SA = South Africa; Ni = Nigeria; Ma = Malaysia; Ke = Kenya; US = United States; Cn = China; In = India; UK = United Kingdom; Ba = Bangladesh; Po = Poland; Ko = Republic of Korea; It = Italy; Sw = Sweden; and SR = Slovak Republic.

Figure 2:
Most recent data on income share of deciles 9 and 10 in 109 countries



Source: World Bank, WDI, 2004.

Notes: Each ranking is made independently from the other. Unless otherwise stated, this will be the case for all similar graphs in this paper.

In this and other graphs below, the data for Brazil, Chile and Mexico will be highlighted, as these are the three Latin American countries that have the worst income distribution in terms of the relationship between income distribution and income per capita (see figure 16 below). Data for the Republic of Korea are shown for comparison.

Br = Brazil; Ch = Chile; Ko = Republic of Korea; Me = Mexico.

Figure 2 shows an equally important but surprisingly less well-known fact—the contrasting shares of deciles 9 and 10.[7] While the range for the income share of decile 9 in these 109 countries only extends across 5.6 percentage points (from 12.6 per cent in India to 18.8 per cent in South Africa), decile 10 has a range six times larger (from 18.2 per cent in the Slovak Republic to 50.8 per cent in Paraguay). This extraordinary difference between the dispersion of these two deciles is reflected in their standard deviations—while that of decile 9 is just 0.9 percentage points (around a mean of 15.2 per cent), that of decile 10 is 8.1 percentage points (with a mean of 31.4 per cent); hence, relative to their own means, the standard deviation of decile 10 is more than four times larger than that of decile 9.

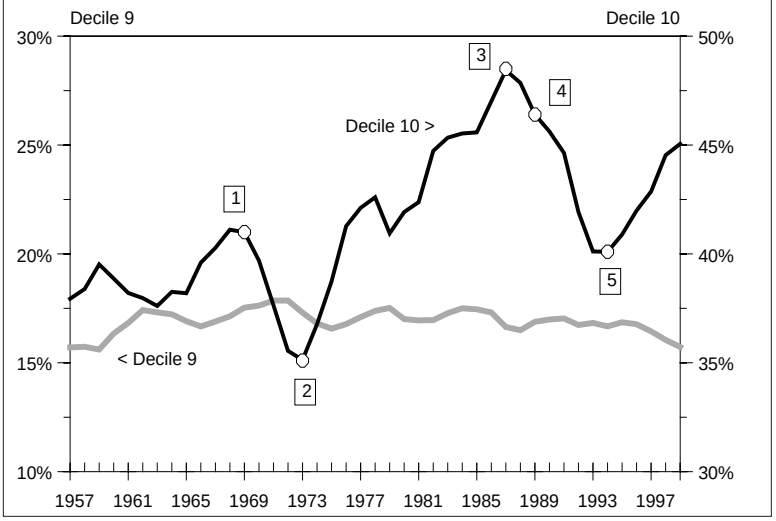
This phenomenon is also corroborated by the fact that while the median values for the share of decile 9 in the Latin American and non-Latin American groups are quite similar (15.9 per cent and 15.4 per cent,

7 This is just one of the many instances of loss of information when data is only available in terms of quintiles.

respectively), those for decile 10 are very different, with the Latin American share more than half as much again as the median value for the rest of the sample (44.1 per cent and 28.4 per cent, respectively). In other words, one of the key elements (if not the key one) needed to understand the effects of globalization on national income distribution is the impact it has on the share of decile 10.[8]

Figures 3 and 4 indicate that the key characteristic of the income distribution of most Latin American countries is its shift towards a 'winner takes all' pattern. In the case of Chile, for example, figure 2 already indicated that its decile 10 is ranked as the 104th most unequal among the 109 countries, while its decile 9 is

Figure 3:
Chile: Income shares of deciles 9 and 10, 1957-1999

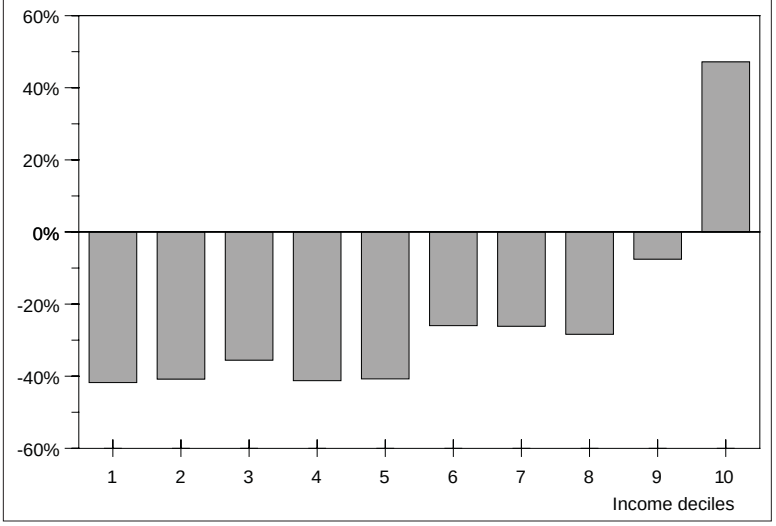


Source: Ruiz-Tagle (2000). Unless otherwise stated, this will be the source of all historical data for Chile.

Notes: Three-year moving averages.
[1] = election of President Allende; [2] = Augusto Pinochet's coup d'état; [3] = the year before President Pinochet's plebiscite (seeking a mandate to remain in power for another 8 years); [4] = first democratic government (centre-left coalition) after President Pinochet lost his plebiscite (and had to call for presidential elections);
[5] = second democratic government (same political coalition, but a return to 'market-led' distributed policies).

Chile is only one of a few developing countries for which there are relatively systematic income distribution data for a good length of time. See Ruiz-Tagle (2000) for a detailed discussion of the quality of the data (relating to 'Greater Santiago', all of which have the same source and methodology), and of the work by this author to improve their consistency.

Figure 4:
Chile: Changes in income shares (%), 1972-1987



Source: Constructed by author using data from Ruiz-Tagle (2000).

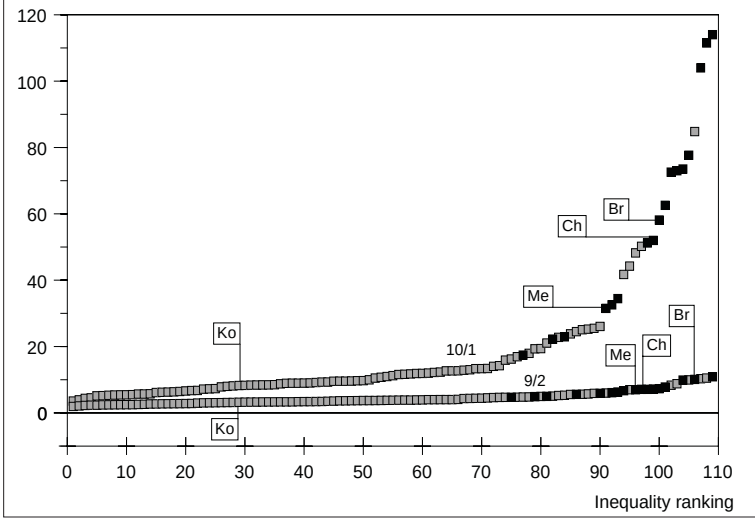
8 In fact, as discussed elsewhere, decile 10 also tended to have significant internal dispersion; and the real concentration of income is found within the first 5 percentiles of income recipients (see Palma, 2002a). This point is also clear from some country studies; see, for example, Ferreira and Litchfield (2000) for Brazil, Panuco (1988) for Mexico, and Paraje (2004) for Argentina. Consequently, one should focus on the effects of globalization on the income share of the top 5 per cent of the population; however, this is not possible with the available data.

only ranked 38th (its ranking is even better than South Korea's!). In turn, figures 3 and 4 illustrate the already-mentioned shift in its pattern of distribution towards a 'winner takes all' scenario: after the 1973 coup d'état (which also marked the beginning of trade liberalization and the rapid integration of Chile into the world economy), when income distribution had one of the fastest deteriorations ever recorded, only decile 10 benefited from it.

While the income share of decile 10 increased by nearly 50 per cent between 1972 and 1987 (from 34 per cent of national income to no less than 51 per cent), even that of decile 9 lost some relative ground.[9] As a result of this increasing polarization, one way to highlight the extreme inequality found in Latin America is to look at the ratio of the income shares of deciles 10 and 1.[10]

Figure 5 shows that there is a significant difference even between the ratios of deciles 10 to 1 and that of deciles 9 to 2. However, the huge difference is principally due to the last third of the sample—mainly comprising Latin American and Sub-Saharan African countries. The resulting ranges for both rankings are very different: while the ratio of deciles 10 to 1 ranges from 3.6 to 114, that of deciles 9 to 2 only extends from 1.9 to 10.9.[11]

Figure 5:
Ratio of income shares of deciles 10 to 1, and 9 to 2 in 109 countries



Sources: World Bank, WDI, 2004 and Székely and Hilgert, 1999b.

Note: Br = Brazil; Ch = Chile; Ko = Republic of Korea; Me = Mexico.

Of the more straightforward statistics for measuring inequality, this probably best reflects the degree of income inequality found in Latin America, and the extraordinary degree of income polarization in the region. At a median value of 58.1, the Latin American ratio is *4.7* times the median value for the 51 non-Latin Ameri-

9 Moreover, later on, when the second democratic Government in Chile (1994-1999) abandoned the progressive distributive policies of the first, and the income share of decile 10 recovered all the ground lost since 1989 (6 percentage points of national income), the share of decile 9 again dropped.

10 The broad range of income shares of decile 1 across countries is almost as remarkable as that found in decile 10—from 5.1 per cent in Belarus and the Slovak Republic (and 4.8 per cent in Japan), to just 0.5 per cent in Guinea-Bissau (and 0.6 per cent in Guatemala, and 0.7 per cent in Paraguay). Again, Latin American countries were at the unequal end of the ranking; while the median value of the income shares of decile 1 for all countries was 2.6 per cent, that for Latin America was just 0.8 per cent (only about a third that for the non-Latin American countries).

11 The range for the ratio of deciles 10 and 1 extends from 3.6 in the Slovak Republic (and 3.9 in Belarus, 4.4 in Austria, 4.5 in Japan and 5.1 in Finland), to no less than 114 in Bolivia (and 112 in Honduras and 104 in El Salvador).

Table 1:
Regional median values for different income ratios

	d10/d1	*d9/d2*	*q4/q2*	*q3/q2*
Latin America	58.1	7.0	2.7	1.6
Non-Latin American Developing Countries (51)	12.5	3.9	2.0	1.4
Sub-Saharan Africa	19.3	4.8	2.1	1.4
East Asia-2	15.9	5.1	2.3	1.5
Caribbean	13.8	4.3	2.1	1.4
OECD-2	11.8	4.0	2.0	1.4
North Africa	9.6	3.8	2.0	1.4
Ex-communist-2	9.6	3.7	1.9	1.4
South Asia	8.3	3.3	1.8	1.3
Ex-communist-1	8.4	3.3	1.8	1.3
East Asia-1	8.4	3.3	1.8	1.3
OECD-1	6.0	2.7	1.6	1.3
All	11.6	3.9	2.0	1.4
Developing countries	14.2	4.7	2.2	1.5

Sources: World Bank, WDI, 2004 and Székely and Hilgert, 1999b.

Notes: Regions as in appendix 1. d10/d1 = ratio of deciles 10 to 1; d9/d2 = ratio of deciles 9 to 2; q4/q2 = ratio of quintiles 4 to 2; and q3/q2 = ratio of quintiles 3 to 2.

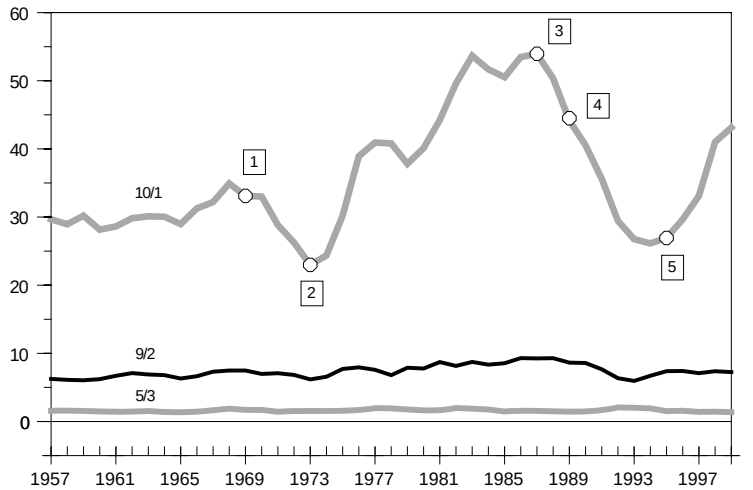
can developing countries, and more than 6 times the median value for the 92 non-Latin American countries in the sample (9.6). The statistics also differentiate most Latin American inequality from that of Sub-Saharan Africa (the latter's median value, at 19.3, is only one-third that for Latin America).

Latin America's greater inequality, vis-à-vis other regions of the world, decreases rapidly for income groups closer to the middle of the distribution, i.e., between deciles 8 and 3. Yet, many theories purporting to explain Latin America's greater inequality refer to phenomena in the middle of the distribution, e.g., the import-substituting, industrialization-related 'labour aristocracy' hypothesis of the 1960s, and the trade liberalization-related 'asymmetric demand for labour' proposition of the 1990s.

The first hypothesis, widely invoked during the 1960s and 1970s, particularly by those connected with the World Bank, argued that one of the main causes of inequality in Latin America during that period was the price distortions associated with import-substituting industrialization (ISI). These distorted the values of sectoral marginal productivities, causing artificially higher real wages in manufacturing, i.e., producing higher wage differentials than would otherwise exist in the economy (World Bank, 1987; Krueger, 1983). However, there was little then (as now) to differentiate Latin America from the rest of the world—developing and developed, ISI and non-ISI—in terms of the income distribution among groups that would include 'aristocratic' and non-'aristocratic' labour (say, quintiles 4 to 2, or 3 to 2).

The second proposition basically recycled the 'labour-aristocracy' hypothesis to explain the increased inequality in many Latin American countries following trade and financial liberalization. This increase in inequality, following greater integration into the world economy, contrasts not only with Samuelson's original expectations but also with the predictions of the 'Washington Consensus' before the implementation of these reforms (Lal, 1983). Hence, it is now argued that this previously unforeseen development took place because trade liberalization introduced new production techniques requiring more skilled workers, thus increasing

Figure 6:
Chile: ratio of income shares of deciles 10 to 1, 9 to 2, and 5 to 3, 1957-1999



Source: Ruiz-Tagle (2000).

Notes: Three-year moving averages. [1] = election of President Allende; [2] = Augusto Pinochet's coup d'état; [3] = the year before President Pinochet's plebiscite (seeking a mandate to remain in power for another 8 years); [4] = first democratic government (centre-left coalition) after President Pinochet lost his plebiscite (and had to call for proper presidential elections); [5] = second democratic government (same political coalition).

wage differentials.[12] However, as is obvious from the previous graphs and Table 1, Latin American income inequality has been distinguished at the poles of the income distribution—hardly where either skilled or unskilled members of the formal labour force are located. Therefore, even if trade liberalization introduced new production techniques with 'asymmetrical labour demand', it is unlikely that this would account for much of the region's increased income inequality; the case of Chile provides a good example of this.

Even though Chile implemented one of the most radical trade liberalization policies in the developing world, and in spite of the fact that this policy has now been in place for more than three decades, it seems to have had little effect on the relative income distribution between skilled and unskilled members of the formal labour force (proxied in figure 6 by the ratio of deciles 9 to 2 and 5 to 3). This graph suggests that massive political upheavals, radical economic reforms and greater integration into the world economy have had significant effects at the extreme ends of the income distribution, but little effect in between.

The Chilean experience also indicates that 'policy matters'. Income distribution did improve significantly with the progressive distribution policies of the first post-Pinochet democratic government (1989-1993), even though it continued the process of greater integration into the world economy. However, when the second democratic government (1993-1999), formed by the same political coalition, abandoned progressive distributional policies for more 'market-oriented' ones, the ratio of deciles 10 to 1 returned to what it had been when President Pinochet left in 1989.

Income inequality and income per capita

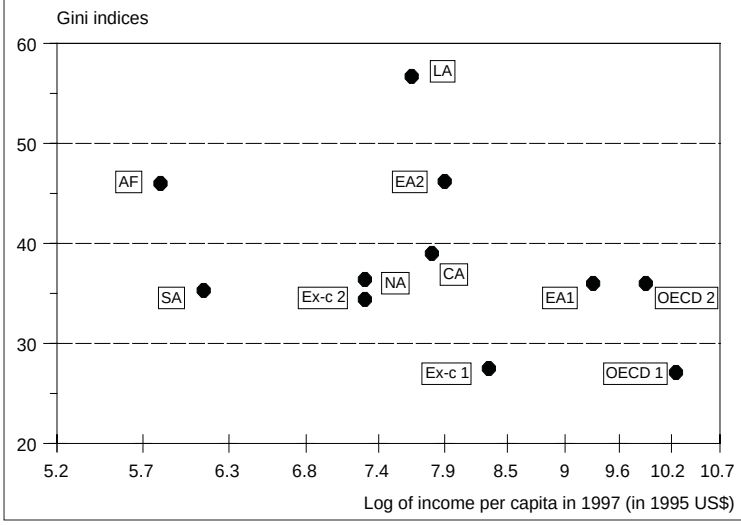
The most common way of comparing income distribution across countries has been in relation to the income per capita level. This approach was pioneered by Kuznets (1955) and has dominated distributional debates

12 See, for example, Juhn and Pierce (1993); Revenga (1995); Cline (1997; this book has a very useful survey of the literature); Haskel (1999); and Melendez (2001). For critiques of this literature, see Krugman and Lawrence (1993), Robbins (1996) and Atkinson (1997).

ever since. Figure 7 shows the regional averages for the whole sample.[13] The graph suggests four 'layers' of inequality across countries. First, a more equal layer containing the ex-communist countries of Central Europe and the non-Anglophone OECD; a second layer containing a great variety of regions, with more than three-quarters of the world's population; a third one including only Sub-Saharan Africa and the 'second-tier' newly industrialized countries (NICs) (East Asia '2'); and fourth, Latin America, with inequality well above every other region in the world, including those with similar income per capita, such as North Africa, East Asia '2' and the Caribbean.

However, as discussed above, it is also important to look 'inside' the Gini ratio. As might have been expected, figure 8 shows a particularly close correlation between regional Ginis and the income shares of decile 10. Of course, this strong correlation is the result of the way the Gini index is calculated.

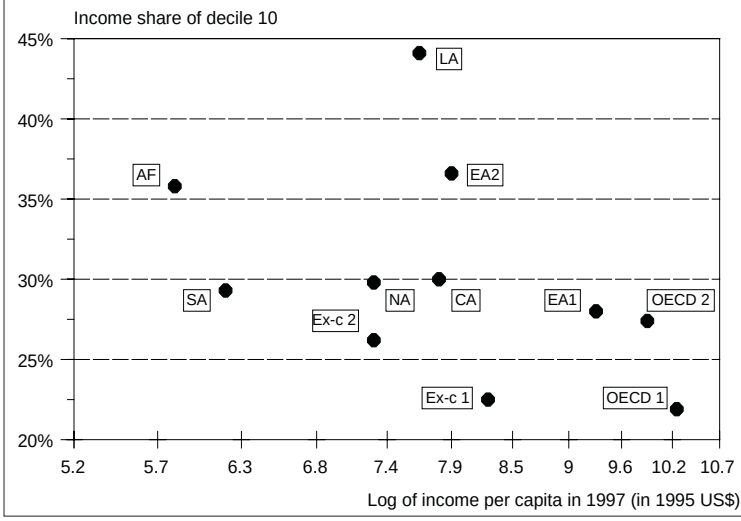
Figure 7:
Regional Gini indices and log of income per capita



Sources: World Bank, WBI, 2004. Income distribution as above; income per capita according to the World Bank's WDI data set (data are for 1997, in 1995 US$ terms). This will also be the case for the remaining graphs in this paper.

Notes: Regional figures are median values. LA = Latin America; AF = Sub-Saharan Africa; EA1 = 'first-tier' NICs; EA2 = 'second-tier' NICs; SA = large South Asia and low-income Southeast Asia; NA = North Africa; CA = Caribbean countries; OECD 1 = non-English-speaking OECD; OECD 2 = English-speaking OECD; Ex-c 1 = ex-communist countries of Central Europe; Ex-c 2 = ex-communist countries of the former Soviet Union. For countries within each region, see appendix 1.

Figure 8:
Regional income shares of decile 10 and log of income per capita



Source: World Bank, WDI, 2004.

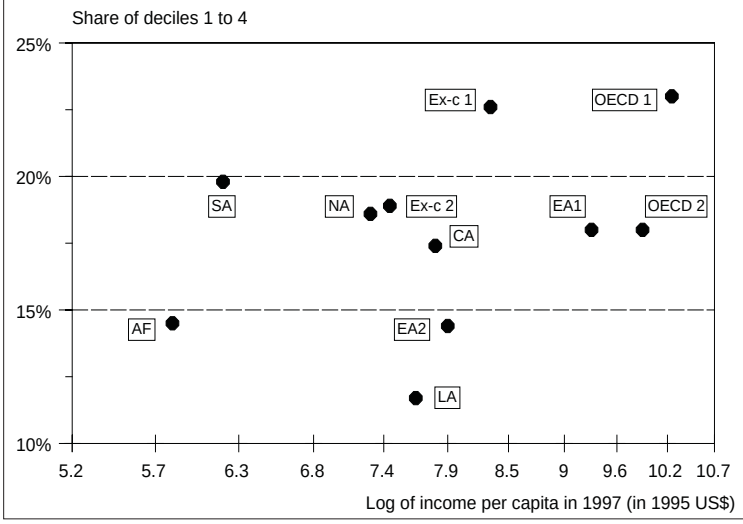
Notes: Regional figures are median values. Regions as in figure 7 and appendix 1.

13 In this section, data from Hong Kong SAR and Taiwan Province of China are added to that for South Korea to form an enlarged EA1. The data for these countries, not available in the WDI database, were obtained from Deininger and Squire (1996). However, these two countries are not included in the regressions of the fourth section, as the data there are from a different source.

Figure 9 shows the regional distribution pattern for deciles 1 to 4 mirroring that for decile 10. Therefore, the Ginis for regional inequality are reflected both at the very top and at the bottom of the distribution of income for the regions. However, when one looks in figure 10 at the remaining 50 per cent of the population—the 'middle classes' (sometimes also called the 'administrative classes' in institutional economics) located between deciles 5 to 9—the regional distributional picture changes from one of huge variation to remarkable similarity. This similarity is even more surprising for the 'upper middle' 30 per cent of the population (deciles 7, 8 and 9), as shown in figure 11.

Table 2 presents statistics for the whole sample, emphasizing the remarkable contrast between the distributional heterogeneity at the top and bottom of the income distribution and the homogeneity in the middle. Of all the statistics in table 2, the coefficient of variation best shows this distributional contrast—the figures for both decile 10 and deciles 1 to 4 are nearly four times greater than those for deciles 5 to 9. Fur-

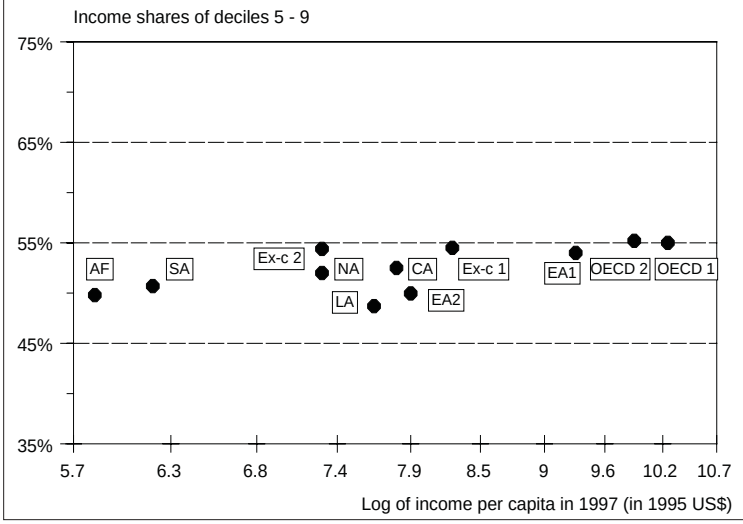
Figure 9:
Regional income shares of decile 1 to 4 and log of income per capita



Source: World Bank, WDI, 2004.

Notes: Regional figures are median values. Regions as in figure 7 and appendix 1.

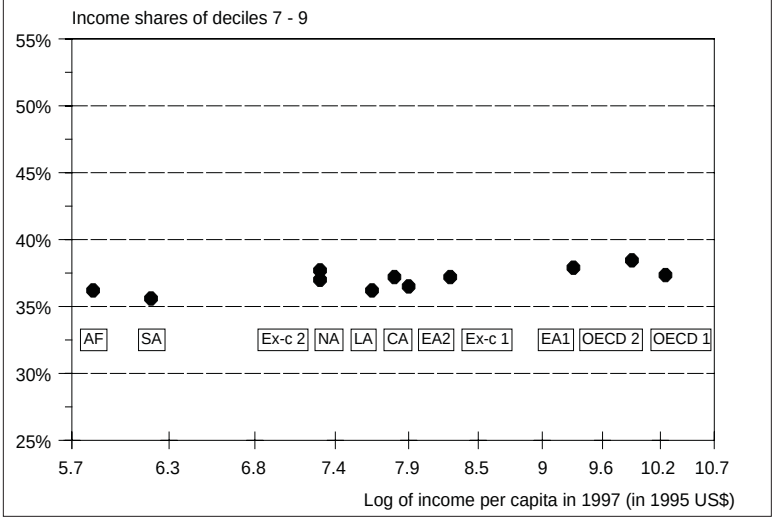
Figure 10:
Regional income shares of deciles 5 to 9 and log of income per capita



Source: World Bank, WDI, 2004.

Notes: Regional figures are median values. Regions as in figure 7 and appendix 1.

Figure 11:
Regional income shares of deciles 7 to 9 and log of income per capita



Source: World Bank, WDI, 2004.

Notes: Regional figures are median values. Regions as in figure 7 and appendix 1.

Table 2:
Measures of centrality and spread for income groups
(whole sample)

	range	*median*	*mean*	*variance*	*st dev*	*c of var*
d10	32.6	29.4	31.4	64.8	8.1	*26*
d1-d4	19.8	18.0	17.4	21.9	4.7	*27*
d5-d9	15.4	51.7	52.4	11.4	3.9	*7*
d7-d9	9.7	36.8	36.6	2.7	1.7	*4*

Source: World Bank, WDI, 2004.

Notes: st dev = standard deviation; c of var = coefficient of variation (figures shown are multiplied by 100); d10 = decile 10; d1–d4 = deciles 1 to 4; d5-d9 = deciles 5 to 9; and d7-d9 = deciles 7 to 9.

thermore, they are nearly *seven* times larger than for deciles 7 to 9. The 50 per cent of the population located between deciles 5 to 9 seems to be able to count on about half the national income. This suggests that 'middle classes' across the world, particularly the 'upper middle classes', seem to be able to benefit from a distributional 'safety net', i.e., regardless of the per capita income level of the country, the characteristics of the political regimes, the economic policies implemented, the structure of property rights, or whether or not they belong to countries that managed to get their prices 'right', their institutions 'right' or their social capital 'right'. In other words, regardless of the political institutional settlement, they are able to acquire a 'property right' on half the national income.

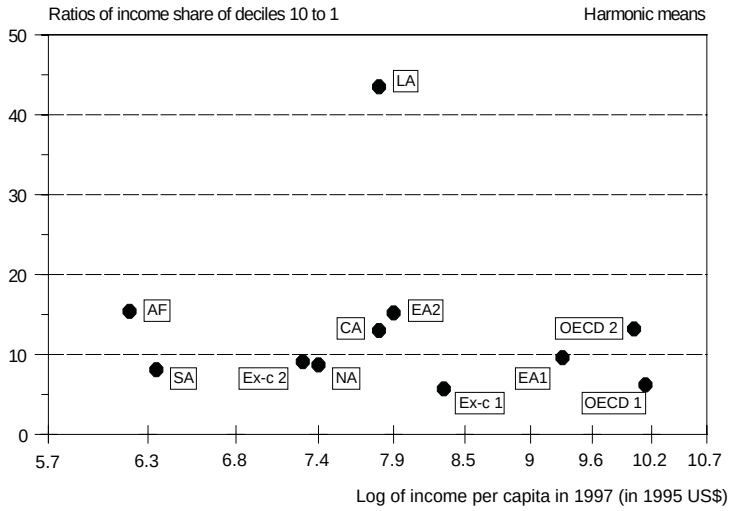
The bottom 40 per cent of the population has no such luck. For them, such policy and institutional variations make the difference between getting as much as one-quarter of national income (as in the non-English speaking OECD or the ex-communist countries of Central Europe), or as little as 10 per cent (as in Latin America). As far as the top income decile is concerned, the sky is (almost) the limit.

In other words, the regional distributional pattern suggested by the Gini index only reflects the income disparities of *half* the world's population, i.e., those at the very top and at the bottom of the distribution, and does not reflect the distributional homogeneity of the other half. This is a rather important phenomenon from a statistical point of view, raising serious questions about the usefulness of the Gini index as

an indicator of overall income inequality. Analytically, economic reforms, trade and financial liberalization, globalization, changing property rights, as well as other recent economic and political developments, seem to have been associated with two very different distributional dynamics across regions in the world: a (better known) 'centrifugal' one in the income shares of the top and bottom deciles (decile 10 and deciles 1 to 4), and a (lesser known) 'centripetal' movement in the income shares of deciles 5 to 9.

Regional distributional homogeneity in the middle (especially upper-middle) of the distribution casts doubts on the 'human capital' theory of income distribution. According to this theory, the level of education is a crucial—if not *the* most crucial—variable in the determination of income inequality (Neal and Rosen, 2000). However, in all regions of the world (developed and developing, Latin American and non-Latin American), the top income decile is made up of individuals with relatively advanced levels of education, while those in the bottom four deciles have relatively low levels of formal education—either relatively little schooling, or (in the more advanced countries), schooling of rather doubtful quality. So why do these two relatively homogeneously educated groups have such great distributional diversity? In turn, if significant educational diversity is found among the population in deciles 5 to 9—e.g., in terms of the share of the population with secondary and (especially) tertiary education—why does one find such extraordinary *similarity* in the shares of national income of this educationally highly *heterogeneous* group?

Figure 12:
Regional ratios of deciles 10 to 1 and log of income per capita



Sources: World Bank, WDI, 2004 and Székely and Hilgert, 1999b.

Notes: Regional figures are harmonic means for the ratios of the income share of deciles 10 to 1, and arithmetic means for the log of income per capita. Regions as in figure 7 and appendix 1.

Obviously, more research needs to be done on the forces shaping the national income shares of different deciles along such different paths (particularly in such opposite 'centrifugal' and 'centripetal' directions). Remarkably, this simple observation does not seem to have been emphasized before. Also, it seems odd that much of the recent literature on income 'polarization' has produced indices to emphasize distributional changes around the *middle* of the distribution, where there has, in fact, been far greater distributional homogeneity.[14] In fact, the higher degree of heterogeneity at the very top and bottom of the income distribution makes income ratios, such as those of deciles 10 to 1, highly sensitive statistical indicators of distributional disparities across the world, particularly highlighting Latin America's greater income polarization. From this perspective, figure 12 shows that Latin America seems to be living in a distributional world of its own—as if on a different planet!

14 Wolfson (1994), for example, started the recent 'polarization' literature by developing an index that cuts the Lorenz curve right in the middle! For a discussion of this point, see Palma (2002b).

Testing for regional effects in a cross-section framework

As is well known, the Kuznets 'inverted U' framework is the most commonly used hypothesis for testing the relationship between income inequality and income per capita, both in a time series and in a cross-section framework. However, in doing so, one has to distinguish crucially between two factors: first, whether there is a statistical relationship of this kind between these two variables, and second, how to interpret this relationship analytically; i.e., if the test shows a significant relationship of this kind, the Kuznets 'structural change' hypothesis is just one of several possible interpretations of the nature of this relationship.

Here, I am going to use the traditional econometric specification test for regional effects among these variables, though evidence of a statistically significant relationship between them will not be interpreted as evidence of a Kuznets-type relationship proper, due to the already extensive and persuasive literature arguing against this (Kanbur, 2000). In view of the above finding (of a homogeneous 'middle' versus heterogeneous 'poles'), I shall not test this relationship using the Gini 'average' as a dependent inequality variable, as this statistic aggregates two very different distributional worlds. Therefore, the 'inverted U' hypothesis will be tested using the income shares of different income groups as dependent variables, with the right-hand side variables being an intercept, the log of income per capita, and the square of the same variable. Also, as discussed in detail elsewhere (Palma, 2002c), for statistical and analytical reasons, one should not yet include the ex-communist countries of Central Europe and the former Soviet Union in the sample to be tested for regional distributional effects. Hence, the sample used only contains 90 countries. Figure 13 shows the results of such a test for the income shares of the top decile.[15]

Figure 13 indicates that there are no less than five statistically significant regional dummies—one dummy, Latin America, is significant at the 1 per cent level, and the other four at the 5 per cent level; all other parameters and the F test are significant at the 1 per cent level. The adjusted R^2 is 74 per cent. In fact, the only regions where the dummies were not significant at the 5 per cent level were East Asia, the Caribbean and the English-speaking OECD (14 countries in all); therefore, these countries are included in the base regression together with the eight countries not classified in any of these regions (see appendix 1).

Figure 14 shows again the converse relationship between the share of the top decile and that of the bottom four deciles. This regression is also highly significant, with all eight parameters (including all five dummies) and the F test significant at the 1 per cent level. The R^2 is 64 per cent.

However, not surprisingly, the regionally homogeneous 'middle' (deciles 5 to 9) shows no significant regional effects for this half of the population. Finally, strong regional effects are again found when an 'inverted U' specification is tested with the ratio of deciles 10 to 1 as the dependent variable, as in figure 15.

15 For a discussion of the econometric issues raised by cross-section regressions like these, see Pesaran, Haque and Sharma (2000); see also Palma (2002c). In particular, one has to understand that these regressions are simply a cross-sectional *description* of cross-country inequality differences, categorized by income per capita; i.e., they should not be interpreted as 'predictive', because there are a number of difficulties with a curve estimated from a single cross-section—especially regarding the homogeneity restrictions that are required to hold. This is one reason why the use of regional dummies is so important, because they bring us closer to the required homogeneity restrictions for prediction. Nevertheless, there is no obvious way of knowing if we are close enough to be able to predict with reasonable confidence. The jury is, therefore, still out regarding the predictive capacity of such regressions. Moreover, in any classification of this type, there is a 'pre-testing' danger, as there are many ways to define regions.

Source: World Bank, WDI, 2004.

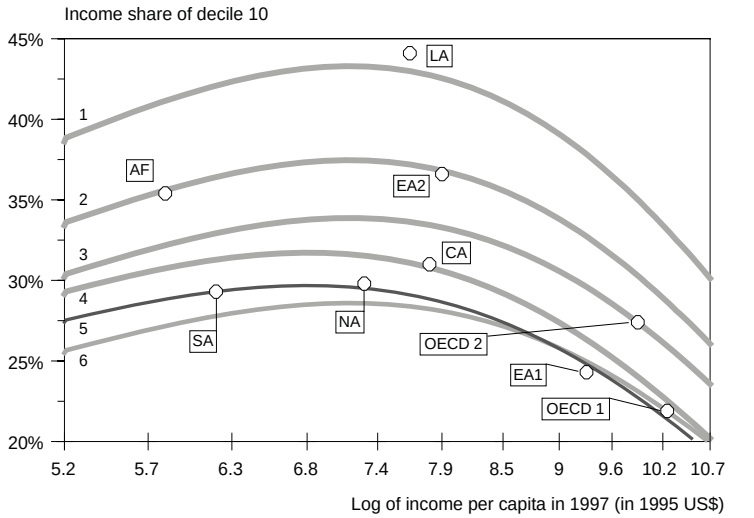
Notes: 1 = the regression with an intercept-dummy for Latin America; 2 = with an intercept-dummy for Sub-Saharan Africa; 3 = base regression; 4 = with a dummy in the square of income per capita variable for the non-English-speaking OECD; 5 = with a dummy on the income per capita variable for South Asia and low-income South-east Asia; and 6 = with an intercept-dummy for North Africa.

Dummies for each region were selected according to the Akaike Information Criterion. The same dummies were used in the regressions below.

For the summary statistics of the regressions, see appendix 2.

Regional figures are median values. Regions as in figure 7 and appendix 1.

Figure 13:
Income shares of decile 10 and log of income per capita



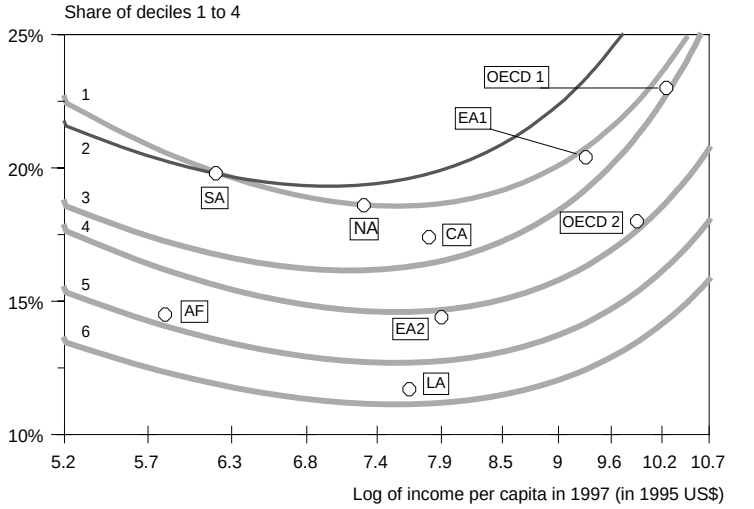
Source: World Bank, WDI, 2004.

Notes: 1 = the regression with a dummy for North Africa; 2 = with a dummy for South Asia and low-income South-east Asia; 3 = with a dummy for the non-English-speaking OECD; 4 = base regression; 5 = with a dummy for Sub-Saharan Africa; and 6 = with a dummy for Latin America.

For the summary statistics of the regressions, see appendix 2.

Regional figures are median values. Regions as in figure 7 and appendix 1.

Figure 14:
Income shares of deciles 1 to 4 and log of income per capita



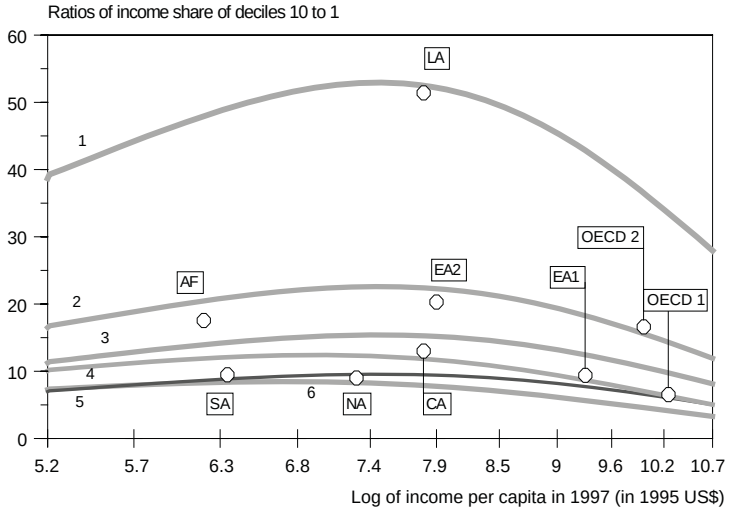
Sources: World Bank, WDI, 2004 and Székely and Hilgert, 1999b.

Notes: 1 = the regression with a dummy for Latin America; 2 = with a dummy for Sub-Saharan Africa; 3 = base regression; 4 = with a dummy for the non-English-speaking OECD; 5 = with a dummy for South Asia and low-income South-east Asia; and 6 = with a dummy for North Africa.

For the summary statistics of the regressions, see appendix 2.

Regional averages in this graph are geometric means for the ratios of the income shares of deciles 10 to 1, and arithmetic means for the log of income per capita. Regions as in figure 7 and appendix 1.

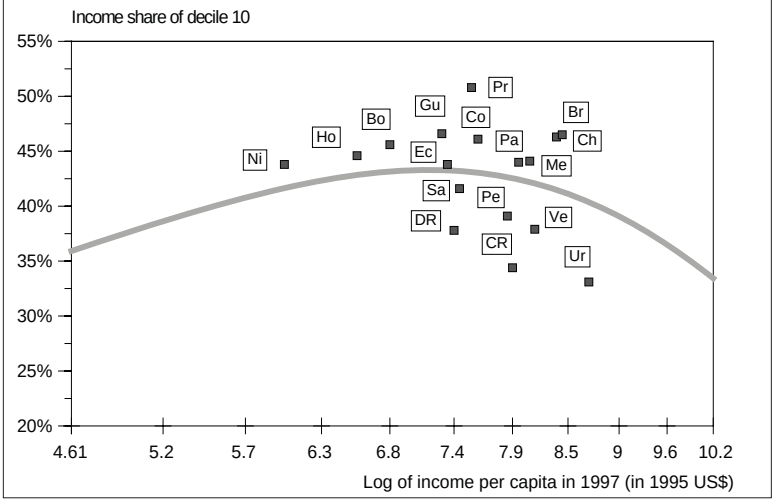
Figure 15:
Income ratios of deciles 10 to 1 and log of income per capita



Again, this regression is highly significant; four of the dummies are significant at a 1 per cent level, and all other parameters (except for the intercept) are significant at 5 per cent. The R^2 is 71 per cent. This is the specification of the regional distributional effects, in which the 'excess' degree of Latin American inequality is shown in more extreme form. In general, the Latin American intercept dummies are significant at the 1 per cent level in all three specifications of the dependent variable (decile 10, deciles 1 to 4, and the ratio of deciles 10 to 1). There seems to be particularly strong statistical evidence that towards the end of the 1990s, Latin American countries developed a higher degree of inequality vis-à-vis their middle-income level.[16]

However, as there is no Latin American country with high income per capita, this sample provides no information as to what could happen to this higher inequality as such countries reach higher income levels.[17] Furthermore, as figure 16 shows, towards the end of the 1990s, as per capita income increased in Latin America, the distributional dispersion among countries in the region also increased rapidly.

Figure 16:
Latin America (17): income share of decile 10 and log of income per capita



Source: World Bank, WDI, 2004.

Notes: Ni = Nicaragua; Ho = Honduras; Bo = Bolivia; Gu = Guatemala; Pr = Paraguay; Ec = Ecuador; Sa = El Salvador; Co = Colombia; Pa = Panama; Br = Brazil; Ch = Chile; DR = Dominican Republic; Pe = Peru; Me = Mexico; Ve = Venezuela; CR = Costa Rica; and Ur = Uruguay.

The regression for Latin America is as in figure 13. For summary statistics of this regression, see appendix 2.

The five countries with the highest per capita incomes in the region—Uruguay, Chile, Brazil, Venezuela and Mexico—have a large range of income shares for decile 10. In fact, the two countries with the highest income per capita, Uruguay and Brazil, have the lowest and the second highest income shares for this decile: 33.1 per cent and 46.5 per cent, respectively. Also, at the end of the 1990s, in Brazil, Chile and Mexico, income inequality was actually growing as per capita income increased, moving, therefore, in the opposite direction shown by the 'inverted U' curve.

The Mexican experience

A brief analysis of Mexico could help us understand why increased integration into the world economy, after economic reform in general and trade and financial liberalization in particular, has increased the gap between

16 This statement can be confirmed, for example, by testing the Latin American dummy vis-à-vis the Sub-Saharan African one; in all four specifications, the null hypothesis that both are not significantly different is easily rejected at the 1 per cent level.

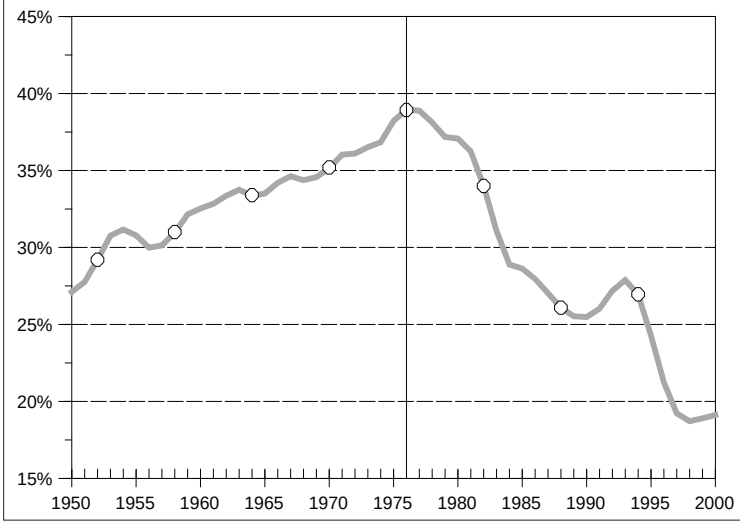
17 In any case, as discussed above, even if there were such information, in order to be able to use regressions like these for prediction purposes, one would require strong 'homogeneity restrictions' to hold.

the top and the bottom of the distribution. Although political reform began in Mexico during the presidency of Lopez Portillo (1976-1982), trade liberalization began with President de la Madrid, who took office in the midst of the 1982 debt crisis. Mexico has never looked back in terms of growth of manufacturing exports—in constant US dollar terms, manufactured exports (including those from so-called 'maquila' enterprises) grew from US$8 billion in 1981 to US$150 billion in 2004 (in 2000 US$ values)—a figure similar to South Korea's manufacturing exports. This 19-fold increase (equivalent to an average annual growth rate of 14 per cent) increased the share of manufactures in the country's total goods exports to 80 per cent from less than 10 per cent in 1981.[18]

Even though Mexican history shows that proximity to the US is a mixed blessing at best, as far as goods exports are concerned, few developing countries have such a geographical advantage, augmented by preferential access to the US market (via NAFTA).[19] Nevertheless, even considering the help provided by the related flood of foreign direct investment (FDI),[20] the growth of Mexican manufactured exports in this period has been truly exceptional. Yet, this export expansion has had a far more complex, and weaker, impact than expected on the Mexican economy as a whole, especially on growth, investment, productivity and wages. In particular, it has been associated with both a collapse of the export multiplier and the de-linking of the export sector from the rest of the economy; this has produced a situation in which increasing export competitiveness has had little effect on growth and living standards.[21]

Figure 17 shows the trademark of the 'liberalization package' in Mexico (as in the rest of Latin America): a fall in the share of wages and salaries in gross domestic product (GDP). In Mexico, over just two six-year presidential terms (1976-1982, 1982-1988) and one economic crisis, the share of wages and salaries in GDP fell by no less than 14 percentage points. In the last presidency of the 1990s (which saw yet another

Figure 17:
Mexico: wages as a share of GDP, 1950-2000



Source: Palma (2005).

Notes: Wages, salaries and employers' contributions. Intervals between circles correspond to presidential periods.

18 In 2000, Mexico's manufacturing exports were 3.5 times greater than those of Argentina and Brazil taken together. In terms of overall merchandise exports, Mexico's share in the Latin American total doubled from just under one-quarter to about one-half.

19 As Mexicans like to say, their country is doubly cursed—so far from God, but so close to the US.

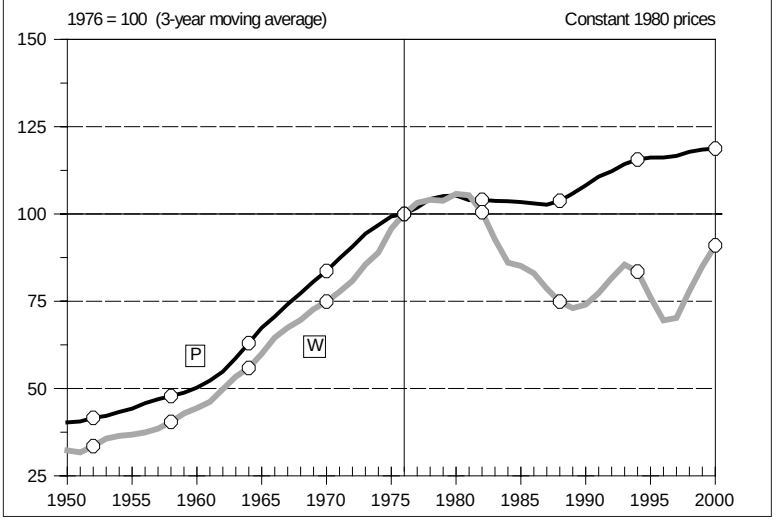
20 In US$ of 2000 value, between 1982 and 2000, Mexico received US$200 billion in net inflows of FDI (see Palma, 2005).

21 For a detailed analysis of the Mexican economy after trade liberalization, see Palma (2005).

economic crisis), the share of wages in GDP fell by a further 8 percentage points. In all, the share of wages fell from 40 per cent of GDP in 1976 to just 18.9 per cent in 2000.

Figure 18 shows the root cause of this fall in the share of wages in GDP: the emergence of a new 'scissors' effect between wages and productivity after political and economic reforms. One can identify three distinct periods over the second half of the 20th century. First, up to the Echeverría Government (1970-1976), one can see the essential characteristic of the traditional Partido Revolucionario Institucional (PRI) distributive policy: wages were able to grow at a pace similar to productivity growth, i.e., increased bargaining power in a corporatist environment enabled labour to gain the 'property right' to share in the benefits of economic growth.

Figure 18:
Mexico: average real wages and productivity, 1950-2000



Source: Palma (2005).

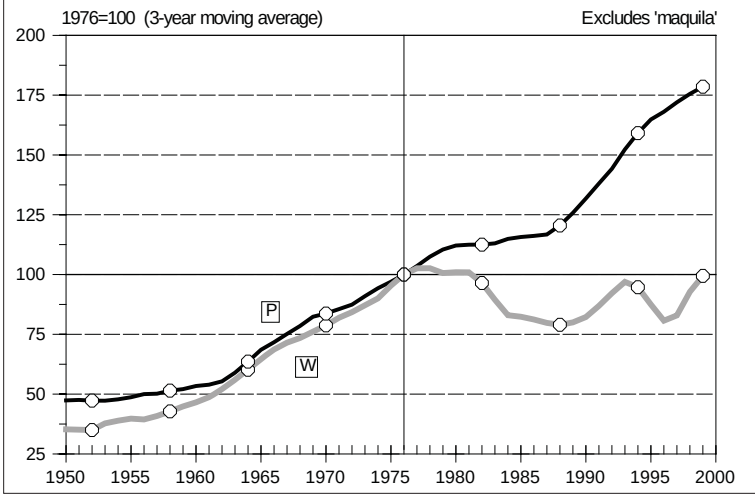
Notes: [P] = average productivity; and [W] = average real wages, salaries and employers' contributions.

In the second period, during Lopez Portillo's term of office (between 1976 and 1982), marking the beginning of political-ideological change in Mexico, economic policy led to progressive stagnation of wages, despite massive new oil riches.[22] Then, when economic crisis struck Mexico in 1982, and with the ascendance to power of President de la Madrid and his economic reform team, a third period started, characterized by a rapidly growing gap between productivity and wages. By 2000, two presidents and another economic crisis later, this gap had reached approximately 30 percentage points. Figures 19 and 20 show that the gap between productivity and wages took a different form for manufacturing than for non-tradables.

Prior to 1976, there was a relatively stable relationship between productivity growth and wage growth in manufacturing; this pattern subsequently changed due to a sharp break in the trend of wage growth. In fact, by the end of the 1990s, the average wage was only just recovering to its 1976 level, while productivity had increased by about 80 per cent in the meantime—a clear case of a shift towards a new 'winner takes all' pattern of distribution with greatly increased profit margins.

22 Wages stagnated at a time of economic euphoria in Mexico, with the new oil industry coming on stream at a time of particularly high oil prices. This mania reached such heights that the previous President had declared at the end of his term in office that from then on, 'economic policy in Mexico was no longer an issue of allocation of scarce resources among multiple needs, but one of the distribution of abundance'. This 'abundance' clearly did not reach wages!

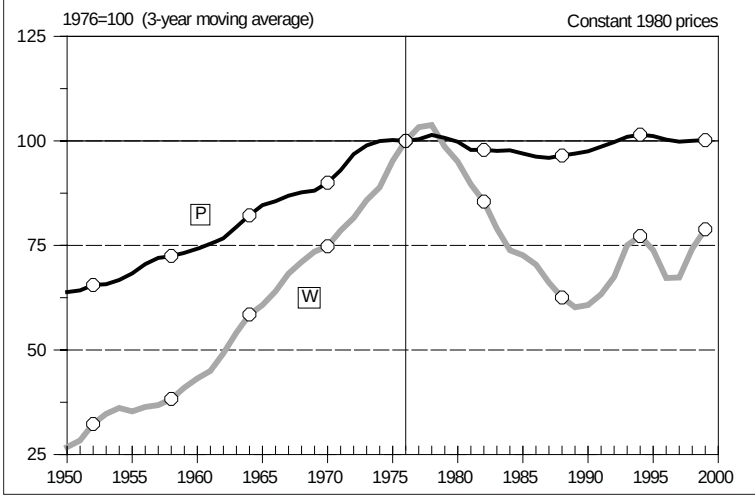
Figure 19:
Mexico: wages and productivity in the manufacturing sector, 1950-1999



Source: Palma (2005).

Notes: [P] = average productivity; and [W] = average real wages, salaries and employers' contributions.

Figure 20:
Mexico: wages and productivity in the non-tradable sector, 1950-1999



Source: Palma (2005).

Notes: [P] = average productivity; and [W] = average real wages, salaries and employers' contributions.

As Kalecki would have predicted, the two crises (1982 and 1994) also contributed to the new distributional environment, by drastically weakening the bargaining power of labour. However, as Prebisch and Singer would have predicted, as soon as manufacturing became export-oriented—particularly with capital increasingly mobile and labour relatively immobile—it began to behave as if it were a traditional primary commodity sector: wages immediately stagnated, and all productivity growth was either captured by capital or transferred to consumers in the North (in this case, to the US) via lower prices. In fact, wages were not able to grow in any significant way even in the motorcar industry—which was the most successful activity within manufacturing during this period—despite a 330 per cent productivity growth (Palma, 2005). Mexico's experience, in this respect, is certainly closer to the predictions of Prebisch and Singer than to those based on Samuelson's theorem of trade-related wage equalization across the world.

What about the relationship between wages and productivity in a sector unable to deliver productivity growth? Figure 20 indicates a similar gap between productivity growth and wage growth in non-tradables, but one moving in a different direction—i.e., a similar 'scissors' pattern, but this time with a downward trend. Here, given productivity stagnation, wages had to fall substantially for the gap to emerge and for profit margins to increase as in the rest of the economy.

This decline in wages in non-tradable sectors (services, utilities and construction, accounting for about two-thirds of GDP) contrasts sharply with the situation before 1976, when there was another gap (then in favour of labour), with wages growing *faster* than productivity. This was one characteristic of the previous 'corporatist' structure of property rights in the labour market: wages in *manufacturing* (which grew at a rate roughly similar to productivity growth) set the pace for wage growth in the non-manufacturing sector of the economy, even in sectors where productivity growth was slower than in manufacturing.

In this way, a new pattern of accumulation emerged with economic reform in Mexico (as in the rest of Latin America). If there is productivity growth, the new pattern is one of a shift towards a 'winner takes all' scenario (increasing profit margins à la Prebisch-Singer); if there is none, capital can still increase its profit margins, via the contraction of wages (à la Arthur Lewis, because institutional changes in the labour market allow capital to squeeze wages towards their subsistence level).[23] In this way, even if productivity growth is disappointing (mainly as a result of particularly poor investment effort), the stagnation of wages in some activities, and their decline in others, have proved to be an effective compensatory mechanism for capital to increase profit margins in this era of globalization.

Conclusions

Although the ('average') Gini picture of the income distribution for different regions of the world clearly shows four 'layers' of distribution across the world, this phenomenon only reflects what happens to half the world's population—those at the very top and those at the bottom of the distribution. The other half—in the middle and upper-middle deciles (5 to 9) of the distribution—offers a rather different picture, of extraordinary homogeneity. This is a truly remarkable fact that has not been properly emphasized in the literature so far. Clearly, more research is needed on the forces behind these opposite 'centrifugal' and 'centripetal' movements.

The similar income shares of the middle and upper-middle deciles across regions raise some doubts about distributional theories that give pride of place either to education or to trade-related wage differentials as the main determinants of income distribution. Groups with the highest degree of heterogeneity in distributional terms are more likely to have higher degrees of homogeneity in educational terms, and vice versa. Looking at trade-related wage differentials, there does not seem to be much distributional variance in the middle part of the distribution where 'skilled' and 'unskilled' labour are most likely to be found. In general, political-institutional factors seem to have greater influence on the determination of income distribution than purely economic ones.[24]

23 This 'centrifugal' force was so powerful that in real terms, if the level of the minimum wage is set at 100 in (the peak year of) 1976, by 1994, it had fallen to just one-third of that value, and by 2000, to a remarkable low of one-fifth! See Palma (2005).

24 This issue is discussed in more detail in the Latin American context in another paper (Palma, 2002a). See also Krugman and Lawrence (1993).

The sample also shows a significant distributional difference between English-speaking and non-English-speaking OECD countries; the same phenomenon is found among the ex-communist countries (the difference between those countries that used to belong to the Soviet Union and those in Central, formerly Eastern, Europe).

Finally, in terms of the relationship between income distribution and income per capita in the era of globalization—and taking into account all the necessary econometric caveats on cross-sectional regressions of this nature, problems with the quality of the data, and the fact that, in many countries (especially in Sub-Saharan Africa), the data refer to expenditure, not income—the relevant regressions seem to support the following three hypotheses:

- first, statistically, the 'inverted U' and 'U' cross-section relationship still applies in the case of the distributional diversity at the very top and at the bottom of the income distribution;
- second (and in analytical terms, far more important), within these relationships, (much more homogeneous) regional effects clearly dominate; and
- third, Latin America has, so far, had the largest 'excess' inequality of any region in the world vis-à-vis its income per capita.

In fact, Latin America seems to be in a distributional league of its own.[25] While political oligarchies all over the Third World would be very happy to appropriate such high shares of national income, the question remains why only in Latin America they manage to get away with it!

25 Brazil, Chile or Mexico may be characterized as middle-income countries, but the top 10 per cent are able to live the equivalent of a modern European lifestyle, thanks mainly to the fact that the bottom 40 per cent are still living the equivalent of a medieval European lifestyle.

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Appendix 1

- LA (Latin America) = Bolivia, Brazil, Chile, Colombia, Costa Rica, Dominican Republic, Ecuador, El Salvador, Guatemala, Honduras, Mexico, Nicaragua, Panama, Paraguay, Peru, Uruguay and Venezuela.
- AF (Sub-Saharan Africa) = Burkina Faso, Burundi, Cote d'Ivoire, The Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Madagascar, Mali, Mauritania, Mozambique, Niger, Nigeria, Rwanda, Senegal, South Africa, Swaziland, Tanzania, Uganda, Zambia and Zimbabwe.
- EA1 ('first-tier' NICs) = The Republic of Korea.[a]
- EA2 ('second-tier' NICs) = Malaysia, Philippines and Thailand.
- SA (large South Asia and low-income Southeast Asia) = Bangladesh, China, India, Indonesia, Lao PDR, Pakistan, Sri Lanka and Viet Nam.
- NA (North Africa) = Algeria, Egypt, Jordan, Morocco and Tunisia.
- CA (Caribbean countries) = Guyana, Jamaica, St. Lucia and Trinidad and Tobago.
- OECD1 (non-English-speaking OECD) = Austria, Belgium, Denmark, Finland, France, Germany, Greece, Italy, Japan, Luxembourg, Netherlands, Norway, Portugal, Spain and Sweden.
- OECD2 (English-speaking OECD) = Australia, Canada, Ireland, New Zealand, United Kingdom and United States.
- Ex-C1 (ex-communist countries of Central Europe) = Bulgaria, Croatia, Czech Republic, Hungary, Poland, Romania, Slovak Republic and Slovenia.
- Ex-C2 (ex-communist countries of the former Soviet Union) = Belarus, Estonia, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Moldova, Russian Federation, Turkmenistan, Ukraine and Uzbekistan.
- Not classified = Cambodia, Ethiopia, Israel, Mongolia, Nepal, Papua New Guinea, Turkey, Switzerland and Yemen.

Appendix 2

	Parameters' point estimation		
	Reg. d10	*Reg. d1-d4*	*Reg. d10/d1*
Intersect	2.0484	4.8866	-0.6353
Ln Y pc	0.4222	-0.5541	0.9062
Ln Y pc sq	-0.0288	0.0354	-0.0610
LA dummy	0.2462	-0.3118	1.2329
AF dummy	0.1016	-0.2317	0.3822
SA dummy	-0.0196	0.0286	-0.0846
NA dummy	-0.1717	0.1963	-0.4801
OECD1 dummy	-0.0013	0.0019	-0.0041

Notes: The first regression corresponds to figure 13; the second, to figure 14; and the third, to figure 15. Ln Y pc = log of income per capita; Ln Y pc sq = square of the log of income per capita; for dummy specifications, see figure 13.

a As mentioned above, in graphs where regional averages are shown, data from Hong Kong SAR and Taiwan Province of China were added to that for South Korea to form an enlarged EA1. However, these two countries are not included in the regressions of the third section, as their data are from a different source (Deininger and Squire, 1996).

	't' values		
	Reg. d10	*Reg. d1-d4*	*Reg. d10/d1*
Intersect	5.05	7.95	-0.46
Ln Y pc	3.74	-3.50	2.48
Ln Y pc sq	-3.99	3.61	-2.63
LA dummy	5.17	-4.87	7.45
AF dummy	2.07	-2.89	2.22
SA dummy	-2.02	3.37	-4.73
NA dummy	-2.45	2.97	-2.98
OECD1 dummy	-2.32	3.92	-3.22

Notes: 't' statistics (and the 'p' values below) are based on 'White's heteroscedasticity adjusted standard errors'. Ln Y pc = log of income per capita; Ln Y pc sq = square of the log of income per capita; for dummy specifications, see figure 13.

	'p' values		
	Reg. d10	*Reg. d1-d4*	*Reg. d10/d1*
Intersect	0.000	0.000	0.650
Ln Y pc	0.000	0.001	0.015
Ln Y pc sq	0.000	0.001	0.010
LA dummy	0.000	0.000	0.000
AF dummy	0.042	0.005	0.029
SA dummy	0.047	0.001	0.000
NA dummy	0.016	0.004	0.004
OECD1 dummy	0.022	0.000	0.002

Notes: 't' statistics (and the 'p' values below) are based on 'White's heteroscedasticity adjusted standard errors'. Ln Y pc = log of income per capita; Ln Y pc sq = square of the log of income per capita; for dummy specifications, see figure 13.

	Regression statistics		
	Reg. d10	*Reg. d1-d4*	*Reg. d10/d1*
R-bar-sq	0.74	0.64	0.71
se y	0.13	0.19	0.47
F	32.7	20.5	28.2
'p' of F	0.000	0.000	0.000

Notes: R-bar-sq is the adjusted coefficient of determination; se y = the standard error for the 'y' estimate; F = the F statistic; and 'p' of F = the 'p' value of F.