Does Latin America lag behind due to shaper recessions and/or slower recoveries?

Perez Caldentey, Esteban and Pineda, Ramon

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Does Latin America lag behind due to shaper recessions and/or slower recoveries?

Esteban Pérez Caldentey and Ramón Pineda[1]

Abstract

Since the 1950's Latin America and the Caribbean have lost relative income share on a consistent basis in relation to the World and the developed countries on average. This paper presents a regional comparative statistical and econometric analysis for 1950-2007 for seven regions in the world, showing that for Latin America and the Caribbean convergence results mainly from weak expansions. Contractions have, as expected, a negative effect on the performance of Latin America and the Caribbean in historical perspective. At the same time in comparison to other regions, Latin America and the Caribbean recover quickly. Contrarily during expansions Latin America and the Caribbean tend to perform below the World and developing World regional average. Latin America and the Caribbean countries are, from a regional comparative perspective, 'good' at withstanding the negative effects of contractions and 'bad' at taking advantage of expansions to achieve convergence with the developed world. The paper argues that instead of viewing expansions through the lens of 'crisis management,' expansions should be seen and understood as an opportunity to grow and expand and promote greater levels of well-being, employment and equity in the region.

[1] Economic Commission for Latin America and the Caribbean (ECLAC, Santiago, Chile). The opinions here expressed are the authors' own and may not coincide with those of ECLAC. The names of the authors appear in alphabetical order,

Introduction

Latin American and Caribbean countries have, with a few exceptions, on average, lost relative income share in regard to the World and the developing World. The region has also lagged on a consistent and widening basis behind in GDP per capita levels with respect to developed economies. Currently Latin America and the Caribbean's GDP per capita is on average 39% below that of the World and between 70% to 75% below that of the United States and the Developed Countries. The absence of convergence is more glaring and generalized in the case of Latin America.

In general, the explanations for non-convergence have traditionally focused on structural factors including productive diversification and firm competitiveness. More recently a growing literature has emerged that, while not denying the importance of structural factors, puts its emphasis on the effect of contractions on long run economic activity. At the general level this literature sustains that shocks such as wars, natural disasters, financial crisis and in general contractions in economic activity can lead to income per capita divergence by causing permanent losses in trend output and lower long- run growth.

Within the logic of this approach governments and policy makers should focus on the creation of mechanisms including rules to cushion and buffer the impact of crises, recessions and in general those of external shocks. The accumulation of international reserves undertaken by several developing economies including those of Latin American and the Caribbean, in the pre-crisis period as a precautionary motive; the idea that countries should adopt a countercyclical approach to fiscal policy by saving in 'good times' to be able to spend in 'bad times' and the notion that in good times countries must consolidate their balance sheet positions in order to withstand the menace of future downturns respond to the logic of this approach.

This paper builds on the above cited literature by postulating on the basis of the Latin American and the Caribbean (LAC) experience that recovery processes can be as or even more important than contractions to understand the evolution of long-run output trends.

To this end, this paper characterizes the dynamics of per capita GDP (GDP_{pc} hereafter) in Latin American and Caribbean at the regional and country levels, using all episodes of output contractions and expansions registered for the period 1950-2007, and compares it to that of other developing regions and high income developed economies. We define contractions and expansions as negative and positive growth rates of GDP_{pc} levels respectively. A continuous series of negative (positive) GDP_{pc} levels until a positive (negative) rate of growth is reached is considered a single contraction (expansion) episode.

The paper identifies 1,369 and 1,335 episodes of output contraction and expansion for the entire set of regions included in the paper. Within this subset Latin America and the Caribbean experienced 284 contractions and 279 expansions. The paper

characterizes the behavior of expansions/contractions by computing the average (median) yearly duration of the contraction/expansion and their intensity measured in terms of average output losses/gains.

This paper shows that Latin American and Caribbean economies are prone to experiencing contractions. However, contractions in Latin America and the Caribbean are by no means more severe, longer or more frequent than in other developing economies regions. Indeed, Latin America and the Caribbean tend to recover quickly from contractions and regain the output lost.

However, while they also tend to experience frequent expansions, output recovery after a contraction tends to be weaker in LAC than for other developing economies. On average, Latin American and Caribbean economies exhibit the lowest average output recovery ratio among all the developing regions.[2] In other words, they are unable to maintain the momentum of the expansion and thus to sustain recovery processes over time.

One important implication is that LAC region's development process (Restuccia, 2008) is not associated to the negative effects of the different crisis episodes that the region has experienced, but responds rather to the region incapacity to take advantage of the recovery processes after the crises. It seems like the region inability to grow vigorously is causing more harm to relative-welfare than the output reductions induced by crises. As a result therefore, policy makers have to pay more attention to the removal of the factors that inhibit growth rather than to the countercyclical factors that avoid large output contractions.

The paper is divided into seven sections. The first section highlights the main stylized facts on the comparative evolution of Latin America and the Caribbean's GDP per capita on average and by income grouping from 1950 to 2007 with that of other developing regions including Sub Saharan Africa, Europe and Central Asia, the Middle East and North Africa, South-Asia, East Asia and the Pacific, and developed regions (OECD and North America). The second section describes the data and methods used to date and characterize expansions and contractions.

The third, fourth and fifth sections analyze the results using as a basis the average GDP per worker contraction and recovery for 1950-2007 by geographical region and by geographical region and lower and upper middle income grouping respectively. These sections show the total number of episodes of recovery/contraction, their average number, the average duration of the contraction/recovery episodes and the average output loss/recovery as a percentage of the minimum level. Also sections four and five show a convergence simulation exercise between Latin America and the Caribbean and East Asia and the Pacific and the OECD.

Section six rounds up the analysis with a data panel econometric exercise seeking to assess the statistical significance of contractions and expansions on the relative level of

[2] When comparing with respect the level reached at the end of the contraction process.

developing regions real GDP per capita in relation to that of the United States (i.e., on absolute convergence) and quantify their importance. The final reflections and conclusions and general policy recommendations are found in the last section.

The comparative evolution of GDP and its main stylized facts

A decadal analysis using available data from 1950 to 2007 by region and selected income grouping shows that Latin America and the Caribbean's level of GDP per capita has traditionally lagged behind that of developed countries on average. [3] The empirical evidence also indicates that the GDP gap has consistently widened over time. In the 1950-1960 decade, Latin America and the Caribbean's GDP per capita was equivalent to 28% that of the United states and close to half that of the OECD countries on average. Forty years later, Latin America and the Caribbean's GDP per capita represented 23% and 31% those of the United States and OECD countries respectively. This trend is even more salient for the Latin American countries (See Table 1 and Figure 1).

Table 1
Latin America and the Caribbean's GDP per capita (PPP$, 2005 constant prices) relative to that of other regions of the world 1950-2007

Regions	1950-1960	1960-1970	1970-1980	1980-1990	1990-2000	2000-2007
Latin America and the Caribbean/United States	0.28	0.28	0.28	0.26	0.23	0.23
Latin America and the Caribbean/OECD	0.47	0.43	0.39	0.35	0.33	0.31
Latin America and the Caribbean/World	1.28	1.21	0.66	0.75	0.81	0.78
Latin America and the Caribbean/Developing Countries	1.95	1.95	0.78	0.97	1.14	1.11
Latin America and the Caribbean/East Asia	2.99	1.77	0.65	0.65	0.66	0.66
Latin America/United States	0.25	0.25	0.25	0.22	0.19	0.18
Latin America/OECD	0.43	0.37	0.35	0.31	0.27	0.25
Latin America/World	1.16	1.05	0.60	0.65	0.66	0.62
Latin America/Developing Countries	1.77	1.70	0.70	0.84	0.94	0.89
Latin America/East Asia	2.72	1.53	0.59	0.57	0.55	0.53

Note: The set of countries included in each of the regional groupings is shown in the appendix Tables 14 and 15.
Source: On the basis of the Penn-World Tables 6.3 (2010).

A more detailed examination on a country-by-country basis shows that the greater majority of countries belonging to Latin America and the Caribbean (70% of the total) are non-convergers relative to the leading developed economy (the United States), that is, they have experienced over time a widening gap between the level of their GDP per capita and that of the United States between 1950-1960 and 2000-2007, on a more or less consistent basis. A similar result holds in relation to OECD economies.

In the case of Latin American countries (excluding the Caribbean) the proportion of non-convergers is even higher (84% of the total). The distinction between Latin American upper and lower middle income countries does not alter significantly the results. For upper and lower middle income countries, 75% and 100% of the total are found to be non-convergers.

[3] We used the chain-linked index of real GDP per capita measured in 2005 purchasing power parity dollars (PPP$) from the Penn-World Tables 6.3 (PWT). This version of the PWT provides information for 189 countries and covers the period 1950-2007.

Table 2
Percentage of countries within the developing world sub-regional groupings and by income level whose real GDP per capita converged and not converged to that of the United States between 1950-1960 and 2000-2007

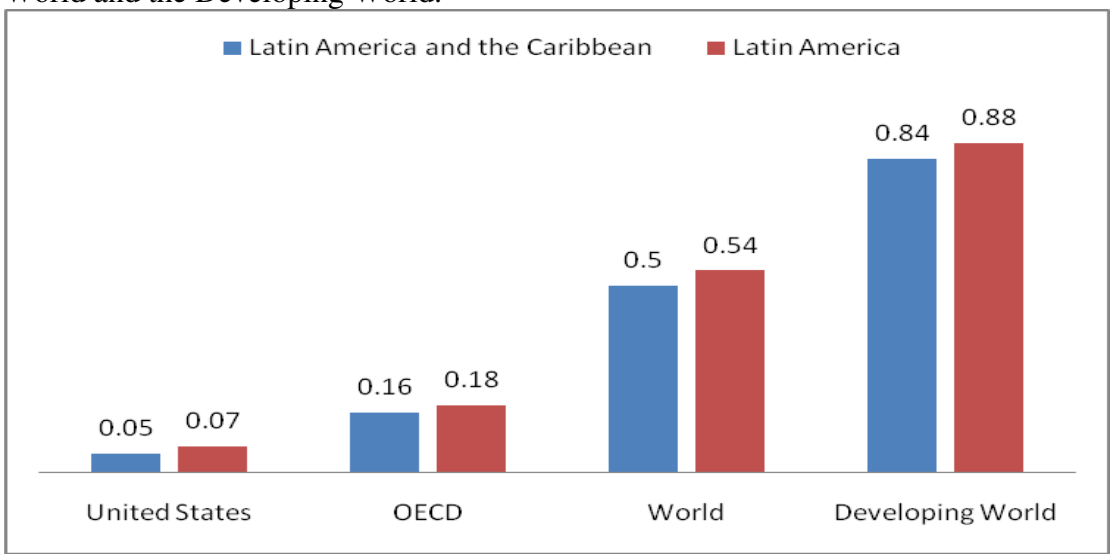
	Total			Upper Middle Income			Lower Middle Income	
Region	Convergers	Non-Convergers		Convergers	Non-Convergers		Convergers	Non-Convergers
Latin America and the Caribbean	24	70		39	61		11	89
Latin America	11	84		17	75		0	100
Caribbean	43	50		71	29		0	100
East Asia and the Pacific	39	48		33	67		39	62
East Asia	58	17		100	0		60	20
The Pacific	18	82		0	100		12	88
Europe and Central Asia	72	28		60	40		71	29
Europe	65	35		56	44		66	33
Central Asia	100	0		100	0		100	0
Middle East and North Africa	24	76		0	100		25	75
Middle East	7	83		0	100		0	100
North Africa	40	60		0	100		66	33
South Asia	63	25		n.a.	n.a.		100	0
Sub-Saharan Africa	15	76		29	71		22	78

Note: The countries included in the regional sub-groupings Latin America and the Caribbean, East Asia and the Pacific, Europe and Central Asia, the Middle East and North Africa, South Asia, Sub-Saharan Africa, and those classified as upper-middle and lower middle income followed the criteria adopted by the World Bank and the OECD. See Appendix, Table 14.
Source: On the basis of the Penn-World Tables 6.3 (2010) and World Development Indicators Database (2010).

These results for Latin America are in stark contrast with those found for other developing regions for the same comparative time periods, such as East Asia, Europe, the Middle East and North Africa and South Asia where the percentage of converger countries reaches or exceeds 60% of the total. More to the point a quick comparison between Latin America and other developing regions shows that the region has the highest number of non-converger countries (84% of the total) followed by the Middle East and SubSaharan Africa (83% and 76% of the total respectively).

But, Latin America and the Caribbean (and especially Latin America) has not only lost income share relative to the developed world, but also to the world on average and more importantly with respect to developing countries. Moreover, the loss in income share is greatest in relation to developing countries. As figure 2 shows the loss in relative income share between the period 1950-1960 and that of 200-2007 for Latin America and the Caribbean is 5% in relation to the United States, 16% in relation to the OECD countries, 50% in relation to the world and 84% in relation to the developing world. In other words, the loss in relative income share of Latin America in relation to the developing world dwarfs that registered in relation to the developed world (Figure 2 below).

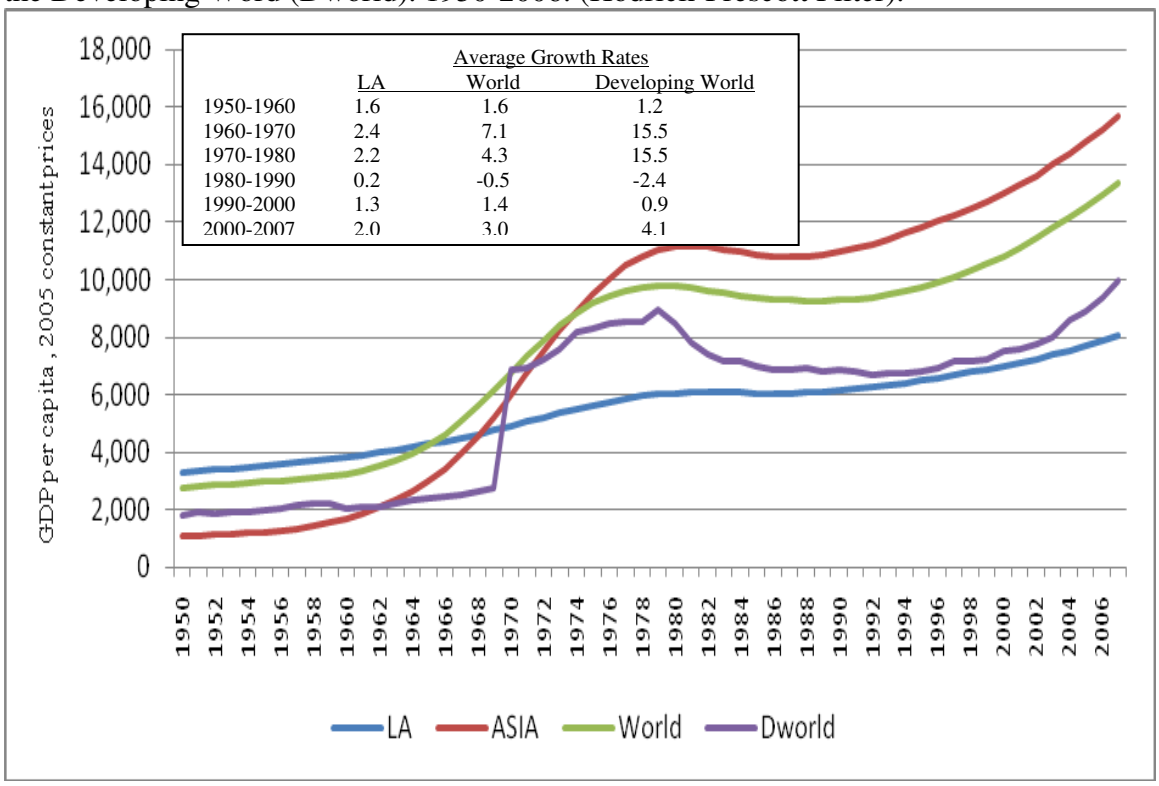
Figure 1: Loss in income share between 1950-1960 and 2000-2007 of Latin America and Latin America and the Caribbean in relation to the United States, the OECD, the World and the Developing World.



Source: On the basis of Penn World Tables 6.3 (2010).

These results reflect the fact that over time the expansion of the GDP trend of Latin America and the Caribbean has not kept the pace of that of other developing regions/subregions (such as for example Asia) or that of World and the Developing World. As shown in Figure 2, the GDP trend for Latin America was above that of East Asia, the World and the Developing Word (Dworld) for the period for the period 1950-1968. But thereafter the GDP trend of Latin America began to lag behind, and over time the gap widened.

Figure 2: GDP per capita trend for Latin America (LA), East Asia (ASIA), the World and the Developing Word (Dworld). 1950-2006. (Hodrick-Prescott Filter).



Source: On the basis of Penn World Tables 6.3 (2010).

More importantly, a comparison between decadal average trend growth rates between Latin America for the period 1950-2007, the World and the developing World shows that, in what are considered growth periods, such as the 1960', 1970's and the 2000's decades, Latin America underperforms consistently. In the 1960's the World and the Developing World grew at 7% and 16% respectively whereas Latin America expanded by a meager 2.4% in comparison. In the same vein, from 2000 to 2007, the World and the Developing World witnessed rates of growth of 3% and 4%; but Latin America's average trend growth rate equaled 2%.

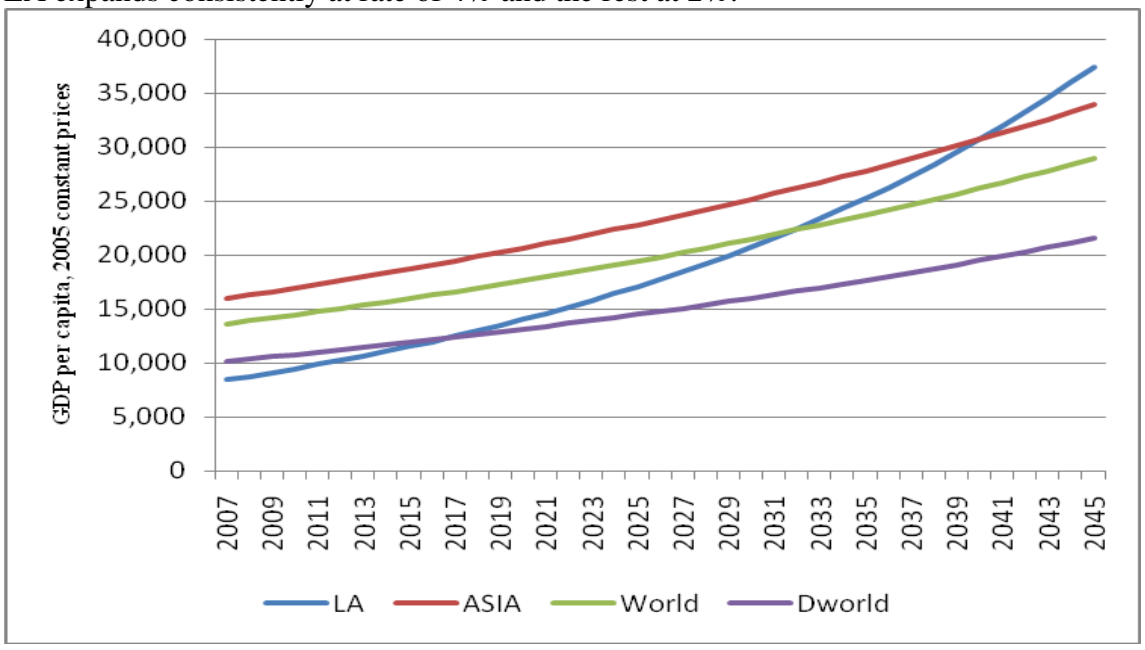
Contrarily, in what are considered, low-growth or contractionary periods, Latin America seems to fare better on average. The 1980's is an illustrative example. There is a prevailing consensus among academics, policy makers and international organizations which views the 1980's as a 'lost decade' for Latin America; and yet the region managed to grow at a higher rates than the World or the Developing World on average (0.2%, -0.5% and -2.4% for Latin America, the World and the Developing World respectively).

In order for Latin America and the Caribbean (and especially for Latin America) to catch-up and improve its standard of living and well-being a serious efforts must be undertaken to spur and sustain growth. Yet as shown above, the performance of the

region is found wanting when the opportunities to catch-up are greater, that is, during times of expansions.

The extent of the efforts required can be made clear through a simple comparative exercise for Latin America, East Asia, the World and the Developing World, using as a starting point the real per capita GDP level for 2007 and assuming a rate of growth of 2% for all regions/subregions and twice that rate (4%) for Latin America, which is also twice its peak historical rate. The ensuing computations show that if Latin America expanded at a trend growth rate twice that of the regions/subregions included in this exercise, it would take a decade, more than two decades and over three decades for the region to converge to the GDP real per capita level of the World, the Developing World and East Asia respectively (Figure 3).

Figure 3: Evolution of the real GDP per capita level for Latin America (LA), East Asia (ASIA),the World and the Developing World for 2007-2045 under the assumptions that LA expands consistently at rate of 4% and the rest at 2%.



Source: Authors' own computations on the basis of Penn World Tables 6.3 (2010).

Contractions and recoveries: data and methods

Our explanation of the stylized facts presented in the previous section takes its inspiration from a large body of recent literature that has tried to understand the evolution of GDP over time by focusing on the contraction and recovery (expansion) phases of the growth process (Cerra et al. (2009)). This requires an analysis that goes beyond that of simply focusing on the time trend.

As argued by Pritchett (2000, p.1) "a single time trend does not adequately characterize the evolution of GDP per capita in most developing countries. Instability in growth rates over time for a single country is great, relative to both the average level of growth and the variance across countries."

A critical issue in this literature is the operational definition of the phenomena under consideration, that is, contractions and expansions. The existing literature has mostly tended to focus on contractions and in particular on the most extreme form of contractions, that is on crises, brought about by different types of 'negative shocks' including macroeconomic and financial shocks, political disruptions, and natural disasters, although the general trend is to consider mainly macroeconomic and financial shocks.

Calvo, Izquierdo and Mejía (2008), Calvo, Izquierdo and Loo-Kung (2005), Calvo, Izquierdo and Talvi (2006) and Pineda, Pérez and Titelman (2009), consider a crisis as those episodes of output contraction that are associated to a particular economic process such as a sudden stop of capital inflows or a major turmoil in the international financial markets.[4] For their part, Rodrik (1999), Hausmann, Pritchett and Rodrik (2004) Hausmann, Rodriguez and Wagner (2006) and Reddy and Minoiu (2006) view crises as those periods of relatively large contractions of output independently of the possible origin of the disturbance. Another approach to the definition and conceptualization of crisis is provided by Kehoe and Prescott (2007). These authors study episodes of output contractions that imply long and protracted declines of economic activity.

Cerra et al. (2007, 2009) are among the few authors that focus on the opposite event, that of recoveries. They define recessions as 'years of negative growth' and recovery periods as "one or more years of positive growth after the trough." In turn, the trough is "a year of negative growth that is followed immediately by a year of positive growth."

Building on the existing literature we define contractions and expansions as negative and positive growth rates of GDP per capita respectively, regardless the origin, duration and magnitude of the contraction (recovery). For the purposes of the paper a continuous series of negative (positive) GDP per capita growth rate until a positive (negative) growth rate is reached is considered a single contraction (expansion) episode. The paper

[4] Sudden capital stops are defined in part of the literature as contractions in financial flows exceeding 5% of GDP. See for example Jeanne y Ranciere, (2006).

identifies 1,373 and 1,330 episodes of output contraction and expansion for the entire set of region included in the paper.

Once a contraction (expansion) is identified, this paper presents a characterization of the duration, frequency, and intensity of the contraction (expansion). The duration is measured from the year of the beginning of the contraction (expansion) until the growth rate changes signs. The intensity of the contraction (expansion) is measured by the percentage change of GDP per capita from peak-to-trough (trough-to-peak).

As in the section above, throughout the analysis we use the chain-linked index of real GDP per capita measured in 2005 purchasing power parity dollars (PPP$) from the Penn-World Tables 6.3 (PWT). This version of the PWT provides information for 189 countries and covers the period 1950-2007. As well for the regional analyses we generally follow the World Bank classification. Accordingly, countries were grouped into 8 geographical regions, (Sub-Saharan Africa, Europe and Central Asia, South Asia, East Asia and Pacific, Middle East and North Africa, Latin America and the Caribbean (LAC), OECD and North America).

The description and analysis of the main findings are presented first on a regional comparative basis and then on an income level basis. In the latter case, only developing countries were considered, and following the predominant income structure within Latin America and the Caribbean were divided, within the corresponding regions, into lower and upper middle income countries groupings.

Description and analysis of the main findings at the regional level

Tables 3 to 4 below show the episodes of GDP per worker contraction and recovery for the period under study classified by geographical region. All tables include the total number of episodes of recovery/contraction, their average number, the average duration of the contraction/recovery episodes and the average output loss/recovery as a percentage of the minimum level. In what follows, the main findings are described and analyzed on a geographical basis.

Latin America and the Caribbean is for the most part a region prone to contractions in economic activity at the regional and country levels. Latin America has witnessed 284 contractions. In comparison to other regions it is the greatest number of total output contractions of all regions considered with the exception of Sub-Saharan Africa, whose number of contractions reached 482.

More precisely, in relative terms to other regions Latin America has experienced during the period under consideration twice as many episodes of economic contraction as East Asia and the Pacific, the Middle East and North Africa and the high income OECD economies; and four times and five times as many as in Europe and Central Asia and South Asia.

In consonance with these results, Latin America exhibits one the highest number of average contractions per country (8 contractions per country) surpassed by the Middle East and North Africa and Sub-Saharan Africa (9 and 10 contractions per country respectively). Among developing regions, Europe and Central Asia and East Asia and the Pacific had the lowest number of output contractions per country of all regions considered (3 and 7 contractions per country on average respectively).

Yet, at the same time the empirical evidence shows that Latin America and the Caribbean also recover quickly from contractions. Indeed, the duration of contractions in Latin America and the Caribbean (18 months) is not any higher than the average for the developing world (18 months).

Also, the intensity of contractions, measured by the average percentage loss in output from peak to trough, is smaller for Latin America and the Caribbean than for other regions of the developing world. For Latin America and the Caribbean the average output loss equaled 6.6% whereas for Europe and Central Asia, the Middle East and North Africa, Sub-Saharan Africa and East Asia and the Pacific, it equaled 14%, 12%, 9% and 8.8% respectively.

The fact that Latin America and the Caribbean experiences contractions on a frequent basis but that these do not last on average longer than in the case of other developing regions and that their intensity is milder implies by correspondence that they also witness expansions frequently.

Indeed the data shown in Table 4 (above) indicate that Latin America and the Caribbean countries register the greatest average number of recoveries (279 for the period under consideration), with the exception of Sub Saharan Africa (466 recorded episodes). In fact, Latin America and the Caribbean has experienced twice as many recoveries as in the cases of East Asia and the Pacific, and the Middle East and North Africa; four and five times as many as in the cases of Europe and Central Asia and South Asia. A similar result is obtained when the episodes of output recovery are computed on a country level basis.

In spite of the fact that Latin American and Caribbean economies recover quickly from contractions and record a high number of recoveries at the regional and country level, their ability to sustain the momentum of the recovery appears to be limited. The average duration of the recovery for Latin America and the Caribbean is roughly three years and eight months, below that recorded for Europe and Central Asia (five years and four months), South Asia and East Asia and Pacific (four years and two-three months and four years respectively), and obviously below that recorded for OECS economies (six years and eight months).

Table 3
Episodes of per capita GDP contraction per geographical regions

Region	Episodes of Output Contraction		Average duration of the contraction		Average Output Loss	Median Output Loss
	Total	Average per country	(Years)		(Peak - to - Trough)	(Peak - to - Trough)
East Asia & Pacific	141	7	1.9		-8.8	-5.2
Europe & Central Asia	59	3	2.2		-14.1	-10.5
Latin America & the Caribbean	284	8	1.8		-6.6	-3.9
Middle East & North Africa	154	9	2.0		-12.0	-6.3
North America	5	5	1.6		-5.0	-5.4
South Asia	65	8	1.5		-5.0	-2.5
Sub-Saharan Africa	482	10	1.9		-9.0	-6.0
OECD	179	5	1.5		-4.0	-2.7
Total	1,369	7	1.8		-8.2	-4.8

Source: On the basis of Penn World Tables 6.3 (2010).

Table 4
Episodes of per capita GDP recovery per geographical regions

Region	Episodes of Output recovery		Average duration of the recovery		Average Output Gain	Median Output Gain
	Total	Average per country	(Years)		(Trough - to - peak)	(Trough - to - peak)
East Asia & Pacific	137	7	4.0		37.6	12.6
Europe & Central Asia	58	3	5.4		50.1	25.6
Latin America & the Caribbean	279	8	3.8		20.3	11.3
Middle East & North Africa	148	8	2.8		23.5	12.7
North America	5	5	5.0		18.4	16.5
South Asia	64	8	4.3		25.4	11.6
Sub-Saharan Africa	466	10	2.7		20.7	7.8
OECD	178	5	6.8		37.9	20.9
Total	1335	7	3.8		26.4	11.3

Source: On the basis of Penn World Tables 6.3 (2010).

Moreover, the recovery path for Latin America and the Caribbean is less pronounced and intense than for other developing regions. For the period under consideration Latin America and the Caribbean have registered during recoveries the smallest output gain (expressed as the accumulated rise in output from trough-to-peak as a percentage of the trough value) of any developing region, on average.

The output gain for Latin America and the Caribbean is 20%, which in comparison to other developing regions, is at one end of the spectrum 4 and 5 percentage points below that for South Asia and the Middle East and North Africa, and at the other end of the spectrum 17 and 30 percentage points below that registered for Europe and Central Asia and East Asia and the Pacific respectively.

In line with these results, Latin America and the Caribbean is also the developing region that has the lowest average recovery ratio in episodes of full recovery (1.20). In these episodes the recovery of GDP per capita is 20% above the level prevailing before the contraction (or downturn). For East Asia and the Pacific, Europe and Central Asia, the Middle East and North Africa, South Asia and Sub-Saharan Africa, the recovery of GDP per capita is 47%, 43%, 22%, 26% and 22% above that prevailing before the contraction (See Tables 11-13 in the appendix).

Note that as shown in Tables 3 and 4 above, Europe and Central Asia and East Asia and the Pacific which have the longest average duration of recoveries (4.0 and 5.4 years respectively) and the largest output gains (37.6% and 50.1%) are among the regions which register the greater number of converger countries (see Table 2 above and the explanation provided for the term converge countries' in the previous section). This finding strengthens the support for the hypothesis that convergence can be partly explained by the nature and stylized facts of recovery processes rather than by solely focusing on the characteristics of contractionary episodes.

A simulation exercise of a contractions and expansions at the regional level for Latin America and the Caribbean, East Asia and the Pacific and the OECD

The above hypothesis is exemplified through a simulation exercise shown in Figure 4. The simulation exercise starts by computing the average level of the real GDP per capita for the period 1970-2000 for the OECD, East Asia and the Pacific and Latin America and the Caribbean.

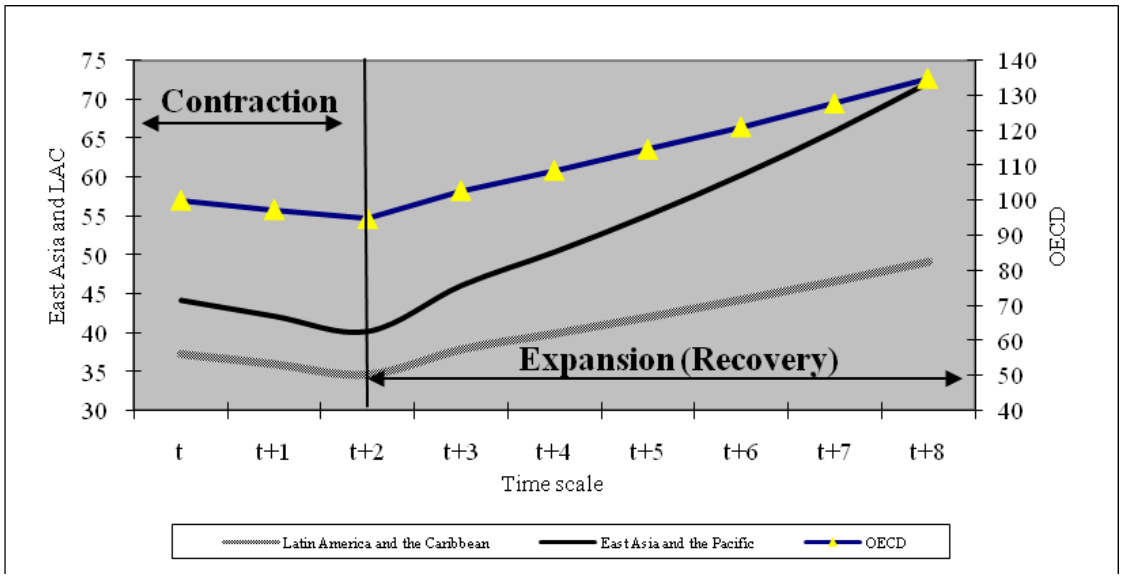
The GDP per capita of the OECD is set equal to 100 and that of East Asia and the Pacific and Latin America and the Caribbean equals their corresponding percentage share of that of the OECD GDP (35% and 44% respectively). These are the corresponding GDP indices at the time period t.

Thereafter, using the results presented in Tables 3 and 4 above, the simulation exercise traces, from time period t until t+8, the effects for all regions considered on GDP

per capital of the loss and gain in output of contractions and expansions weighted by their respective average duration.

Finally, the resulting expansion paths of GDP per capita for all regions here considered allow a comparative analysis of the extent to which contractions and expansions contribute to the convergence/divergence of Latin America and the Caribbean and East Asia and the Pacific to/from the OECD country grouping.

Figure 4: A simulation exercise showing the impact of contractions and expansions on absolute convergence between Latin America and the Caribbean and East Asia and the Pacific and the OECD.



Source: Authors' own computations based on the estimations presented in tables 2 and 3 above.

As can be ascertained from eye inspection of Figure 4, the contraction is short for all regions. The contraction lasts for 1.8, 1.9 and 1.5 years for Latin America and the Caribbean, East Asia and the Pacific and the OECD respectively and it is represented on the time-scale X axis as t+1 and t+2 (Figure 4 above).

In line of the empirical estimates presented in table 3 above, the contraction widens the divergence between the GDP per capita of the OECD and those of Latin America and the Caribbean and East Asia and the Pacific. Also consistently with the estimates of table 4, the ratio of Latin America and the Caribbean's GDP per capita to that of the OECD drops from 35% at time t to 34% at time t+2. That of East Asia and the Pacific declines from 44% to 40% (figure 4 above).

For its part, the expansion phase, respecting the results obtained in tables 3 and 4 lasts longer than the contraction for all regions and is longest for the OECD. Its duration equals 3.8, 4.0 and 6.8 years for Latin America and the Caribbean, East Asia and the Pacific and the OECD country respectively. In this simulation exercise, for expository

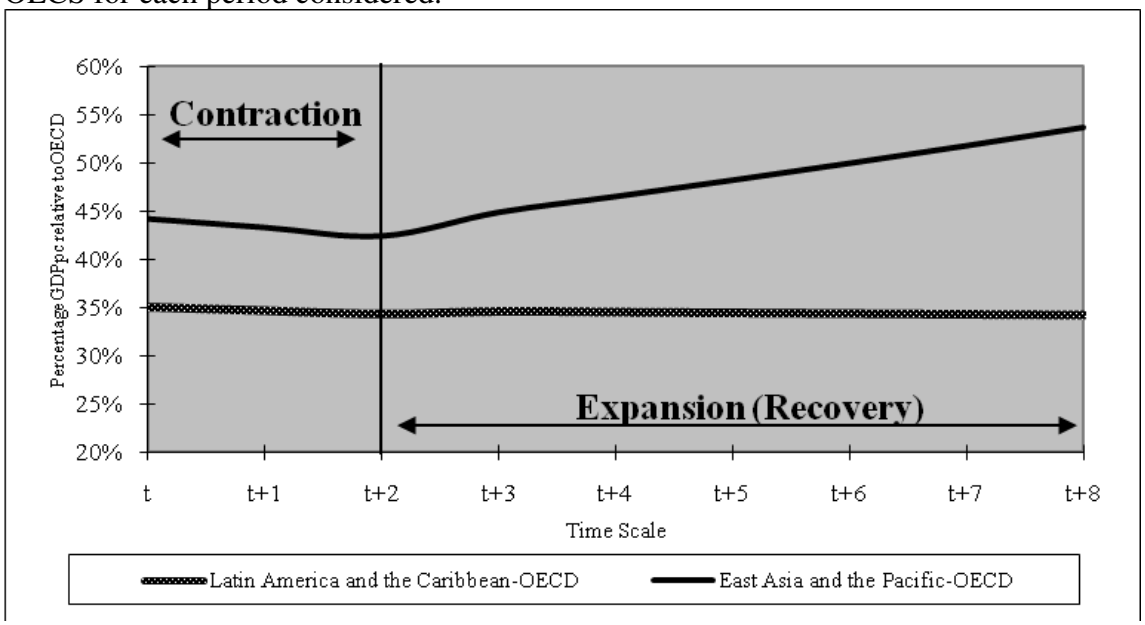
purposes, it is assumed that all regions expand evenly for six time periods (from t+2 to t+8).

As with the contraction phase the effects of expansion on the convergence/divergence with the OECD are also asymmetric. It is clearly seen that from the start of the recovery phase (from t+2 to t+3), East Asia and the Pacific manages to recover quicker as its GDP per capita rises at a faster rate than that of Latin America and the Caribbean and that of the OECD. The end result over time is that East Asia and the Pacific stays above that for Latin America and the Caribbean and tends to converge towards the OECD GDP per capita level.

More precisely, the simulation shows that between t+3 and t+8 the ratio of East and the Pacific's real GDP relative to that of the OECD narrows from 0.45 to 0.53. For its part Latin America and the Caribbean is unable to offset and reverse the divergent effect of the contraction and by the time period t+8, its GDP per capita remains roughly stagnant at 0.35 that of the OECD for each time period considered

This is shown in Figure 5 below which computes, on the basis of the results used for figure 4, the relative ratios of the GDP per capita of Latin America and the Caribbean and East Asia and the Pacific to that of the OECD for each period considered, that is from t until t+8.

Figure 5: Simulation exercise showing the evolution of the ratio of GDP per capita of Latin America and the Caribbean and East Asia and the Pacific relative to that of the OECS for each period considered.



Note: The computations are based on those obtained for figure 4 above.
Source: Authors' own computations based on the estimations presented in tables 2 and 3 above.

Description and analysis of the main findings by region and income grouping

The replication of the above analysis for the same period by separating countries of the different regions into lower and upper middle income categories reinforces the above results (See Tables 5-8 below).

These indicate that for Latin America and the Caribbean contractions and expansions are frequent. Latin America and the Caribbean experience contractions on a relatively frequent basis with independence of the income levels of its constituent countries. Latin America and the Caribbean registers the second to highest and the highest number of contractions when compared to other developing regions in the lower and upper middle income strata respectively.

A similar result obtains when comparing Latin America and the Caribbean lower middle income countries to other developing regions on an average per country basis. Lower middle income countries in the Latin American region experience on average 10 contractions per year similar to the results obtained for the Middle East and North Africa but higher than those for Europe and Central Asia (2), East Asia and the Pacific (8), South Asia (8) and Sub-Saharan Africa (8).

In the case of the upper middle income economy strata, the average number of contractions in Latin America and the Caribbean tends to conform to that of the rest of the regions with the exception of Europe and Central Asia.

The comparative analysis of recovery episodes also shows that as in the case of contractions these are frequent in number and on an average country basis. The lower and upper middle income countries of Latin America and the Caribbean register either the greatest or one of the greatest numbers of output contraction episodes in total or on a country basis.

Moreover, the evidence presented shows that contractions and expansions are of average duration, or above average, in the case of expansions for upper middle income economies.

Latin American countries tend to experience contractions of an average or below average duration when compared to other developing regions. The lower middle income countries of Latin America and the Caribbean register an average (1.9 years) similar to that of the majority of other regions (1.8, 1.9, 1.8, and 2.0 for East Asia and the Pacific, Europe and Central Asia, Middle East and North Africa, South Asia and Sub-Saharan Africa). For their part the upper middle income economies of Latin America and the Caribbean tend to have a below average duration of contractions (1.6 for Latin America and 1.9 on average) (Tables 5-8 below).

Table 5
Episodes of per capita GDP contraction per geographical regions: Lower-Middle income economies

Region	Episodes of Output Contraction		Average duration of the contraction		Average Output Loss	Median Output Loss
	Total	Average per country	(Years)		(Peak - to - Trough)	(Peak - to - Trough)
East Asia & Pacific	98	8	1.8		-8.1	-5.3
Europe & Central Asia	14	2	1.9		-16.8	-12.6
Latin America & the Caribbean	89	10	1.9		-6.9	-3.7
Middle East & North Africa	78	10	1.8		-10.1	-5.1
South Asia	38	8	1.3		-2.9	-1.7
Sub-Saharan Africa	84	8	2.0		-9.7	-6.1
Total	401	8	1.8		-8.4	-4.7

Source: On the basis of Penn World Tables 6.3 (2010).

Table 6
Episodes of per capita GDP contraction per geographical regions: Upper-Middle income economies

Region	Episodes of Output Contraction		Average duration of the contraction		Average Output Loss	Median Output Loss
	Total	Average per country	(Years)		(Peak - to - Trough)	(Peak - to - Trough)
East Asia & Pacific	25	8	1.8		-9.78	-4.7
Europe & Central Asia	32	3	2.1		-12.7	-10.3
Latin America & the Caribbean	150	8	1.6		-6.2	-3.6
Middle East & North Africa	27	9	2.0		-16.9	-11.9
South Asia	-	-	-		-	-
Sub-Saharan Africa	53	9	1.6		-6.6	-4.7
Total	287	6	1.9		-9.0	-5.9

Source: On the basis of Penn World Tables 6.3 (2010).

Table 7
Episodes of per capita GDP Recovery per geographical regions: Lower-Middle income economies

Region	Episodes of Output Recovery		Average duration of the Recovery		Average Output Gain	Median Output Gain
	Total	Average per country	(Years)		(Peak - to - Trough)	(Peak - to - Trough)
East Asia & Pacific	95	7	3.7		38.0	10.63
Europe & Central Asia	13	2	5.3		71.0	32.6
Latin America & the Caribbean	87	10	3.3		14.3	6.99
Middle East & North Africa	75	9	3.0		22.4	13.82
South Asia	37	7	5.2		32.2	20.25
Sub-Saharan Africa	80	8	3.2		23.7	14.1
Total	387	7	2.5		14.4	12.16

Source: On the basis of Penn World Tables 6.3 (2010).

Table 8
Episodes of per capita GDP Recovery per geographical regions: Upper-Middle income economies

Region	Episodes of Output Recovery		Average duration of the Recovery		Average Output Gain	Median Output Gain
	Total	Average per country	(Years)		(Peak - to - Trough)	(Peak - to - Trough)
East Asia & Pacific	24	8	3.8		28.6	14.08
Europe & Central Asia	32	3	5.3		45.1	21.26
Latin America & the Caribbean	148	8	4.1		22.3	14.17
Middle East & North Africa	27	9	2.4		23.0	9.97
South Asia	-	-	-		-	-
Sub-Saharan Africa	53	9	3.8		26.5	10.34
Total	284	6	4.0		26.2	13.67

Source: On the basis of Penn World Tables 6.3 (2010).

For its part, the duration of the recovery either conforms to the developing country regional average as for lower middle income economies or to its upper bound as in the case of upper middle income economy. Lastly the average output gain is the smallest for both lower and upper middle income Latin American economies.

Finally and most important, for Latin America and the Caribbean, contractions and expansions produce output losses and gains below those of other regions for both income strata.

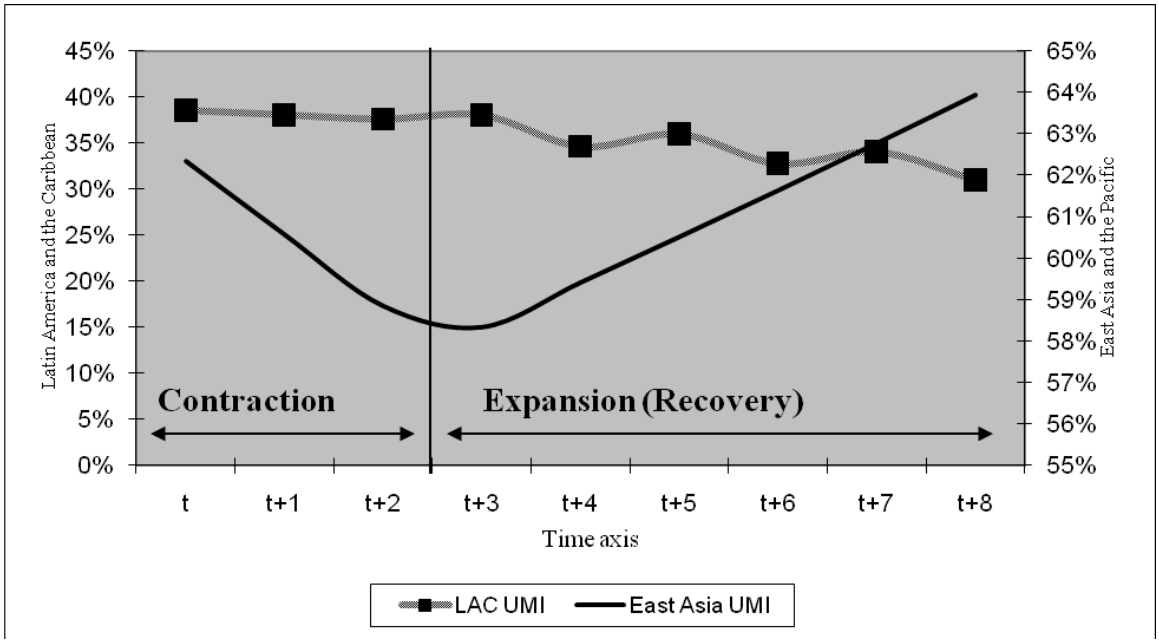
The intensity of the contraction, proxied by the peak to trough output loss as a percentage of the peak output level, is less severe for Latin American and the Caribbean lower middle income economies (6.6%) than for any other regional group with the same income level with the exception of South Asia (2.9%). In the case of upper middle incomes, Latin America and the Caribbean register without exception the smallest output loss. Expansions produce relative small gains in output which is compatible with the evidence at the overall regional level. (See Tables 5-8 below).

Hence, while lower output losses relative to other regions during contractions, enhances the potential for convergence, lower output gains have the opposite effect. Hence the absence of convergence reflects the fact that expansions do not provide the required linchpin for Latin America and the Caribbean to catch-up to the income level of developed economies.

The implications and consequences are pictured in Figures 6 and 7 below. These show using the parameters of tables 5-8 a simulation of the effects of the contractionary and expansionary phases on convergence with OECD high income countries for the upper and lower middle income countries of Latin America and the Caribbean and East Asia and the Pacific respectively. In terms of the former income category, Figure 6 shows a sharper effect of contractions on East Asia's convergence ratio than on Latin America. At the same time it portrays a much sharper rebound and a definite decline in the expansion phase.

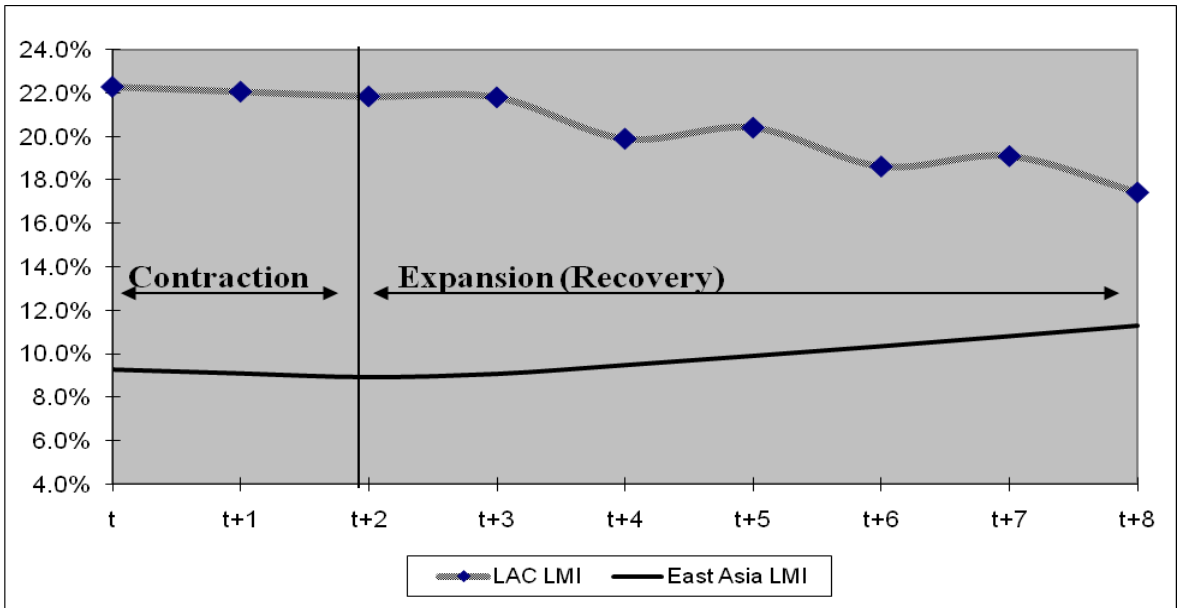
A similar pattern is followed by the lower middle income strata for both regions. Contrarily to the upper middle income case, in the lower middle income case East Asia and the Pacific starts at lower level of convergence (due to its lower level of income) but during the expansion tends to improve its converge ratio and eventually will catch-up to that of Latin America and the Caribbean, due in greater part to the fact that the lower middle income countries of Latin America and the Caribbean lose income share relative to the OECD countries. During the expansion phase, the lower middle income countries of East Asia and the Pacific increase their relative income share by 2 percentage points but Latin America and the Caribbean countries experience a 4 percentage point relative income share loss (Figure 7).

Figure 6: A simulation exercise showing the impact of contractions and expansions on the ratio of GDP per capita of Latin America and the Caribbean and East Asia and the Pacific upper middle income economies relative to that of the OECD for each period considered.



Source: Authors' own computations based on the estimations presented in tables 5 to 8.

Figure 7: A simulation exercise showing the impact of contractions and expansions on the ratio of GDP per capita of Latin America and the Caribbean and East Asia and the Pacific lower middle income economies relative to that of the OECD for each period considered.



Source: Authors' own computations based on the estimations presented in tables 5 to 8.

The effects on contractions and expansion on the relative level of GDP per capita of developing regions relative to that of the United States: An econometric analysis

The above analysis is completed with an econometric analysis using panel data seeking to assess the statistical significance of contractions and expansions on the relative level of developing regions real GDP per capita in relation to that of the United States (US) (i.e., on absolute convergence) and quantify their importance. [5] To this end, the following basic model was estimated:

$$(1)\quad rel\_growth_i = \alpha + \beta_1 Initial + \beta_2 rel\_loss_i + \beta_3 rel\_gain_i + \beta_4 regional_i + \varepsilon_i$$

Where,

rel_growth represents the relative growth rate experienced by each individual economy compared with that of the leading economy, the US economy, for each decade. An increase in this variable indicates that growth for that particular economy was greater for that economy in question in that decade than for the US economy. If this is the case, that particular economy managed to reduce its output gap with respect to the US economy, during that decade.

rel_loss (***rel_gain***) represents the ratio of the decadal mean of the PIB_{pc} gain (loss) and the mean duration of the recovery (contraction) episodes during the decade. Here we expected that both variables mean gain and mean losses to have highly significant correlation coefficients with the dependent variable. Thus, consistently with the arguments put forward in the paper we expect $ß_2<0$ and $ß_2>0$.

Initial indicates the relative initial condition of each country during that decade, in terms of the relative initial condition of the US economy. By relative initial condition we mean the difference the PIB_{pc} at the beginning of the decade and the mean value of the PIB_{pc} during that decade. A large value of this variable indicates that this particular economy's PIB_{pc} was relatively far away from the mean value (medium term value) of its PIB_{pc}. As in the case of the dependent variable, the relative initial condition of the US economy is used to normalize this variable. We expect $ß_1<0$ since if a particular country is farther from its medium term GDP_{pc} than the leader economy (US), it is expected that that economy will growth faster than the leader.

regional is used to check for regional differences. We used two different approaches. First, we tested with regional dummies to explore differences in the intercept due to specificities of each region. Second, we estimated the same equation for each region independently. The estimations included East Asia and the Pacific (*east_asia_pacific),* Europe and Central Asia (*euro_cent_asia)*, the Middle East and North Africa (*mid_east_nor_afr) and South Asia (south_asia)*

[5] Consistent with the analysis thus far presented we used the PWT 6.3 data set and organized in panel format using average decadal mean to construct the time-series dimension of the panel. The econometric analysis presented follows Wooldridge (2002).

Equation (1) above was estimated using both pooling cross-section across time and panel data estimation (random and fixed effects). When estimating the pooled model we include some decade dummies variables to the equation, using the 1950's as the control group (*decade_1960, decade_1970. decade_1980, decade_1990, decade_2000).* Formally,

$$(2)\quad rel\_growth_i = \alpha + \beta_1 Initial + \beta_2 rel\_loss_i + \beta_3 rel\_gain_i + \beta_4 regional_i + \sum_{j=1}^{6} \delta_j Decade_{ji} + \varepsilon_i$$

Table 9 below shows how under the different specifications of the model the coefficients of both ***rel_loss*** and ***rel_gain*** are statistically significant and with the expected signs. It should be noted that the relative size of the coefficients of ***rel_gain*** (11.4, 11 and 10 for pooled, random, and fixed effects models respectively) are, in absolute value, systematically higher and those corresponding to ***rel_loss*** (-3.0, -3.4 and -2.6 for pooled, random, and fixed effects models respectively) suggesting that for developing economies the positive effects of a recovery process in GDP_{pc} may have a more significant effect than a similar (in magnitude and duration) contraction of the GDP_{pc} to reduce the difference in growth rate with respect to more developed economies (proxied here by the USA as the 'leader economy').

Table 9
Results of the panel method estimation of Eq (1)

Independent Variables:	Pooled	Random -Effect	Fixed - Effect
const	0.90 (0.000)	0.68 (0.000)	0.72 (0.000)
initial	-0.66 (0.000)	-0.68 (0.000)	-0.71 (0.000)
rel_loss	-2.95 (0.001)	-3.39 (0.000)	-2.58 (0.017)
rel_gain	11.39 (0.000)	11.0 (0.000)	10.1 (0.000)
east_asia_pacific	-0.16 (0.084)	-0.17 (0.082)	
euro_cent_asia	0.51 (0.000)	0.66 (0.000)	
mid_east_nor_afr	-0.15 (0.096)	-0.12 (0.217)	
south_asia	0.039 (0.765)	0.013 (0.928)	
decade_1960	-0.52 (0.000)		
decade_1970	-0.56 (0.000)		
decade_1980	-0.35 (0.002)		
decade_1990	-0.23 (0.036)		
decade_2000	0.25 (0.030)		
Num Obs.	705	705	705

R-sq	0.85	0.83*	0.82*
Deg. of Freedom	692	692	517
Note: P-values in parenthesis. *Denotes the overall R-sq; ** Denotes not significant at the 95% level of confidence.			

In order to explore for possible regional differences in the estimations, fixed effect estimation were used for each of the regions considered within the sample. The results are presented in Table 10 below.

Table 10
Results of the panel method estimation of Eq (1)

Independent Variables	All Sample	LAC	East Asia and Pacific	Middle East and N. Africa	South Asia	Sub-Saharan Africa
const	0.72 (0.000)	0.67 (0.000)	0.80 (0.000)	0.59 (0.002)	0.53 (0.101)	0.66 (0.000)
initial	-0.71 (0.000)	-0.58 (0.000)	-0.52 (0.000)	-0.56 (0.000)	-0.95 (0.000)	-0.76 (0.000)
rel_loss	-2.58 (0.017)	-7.35 (0.001)	-4.05** (0.320)	-7.67 (0.037)	-2.66** (0.784)	-2.87** (0.143)
rel_gain	10.14 (0.000)	13.01 (0.000)	5.78 (0.000)	12.4 (0.000)	11.73 (0.000)	10.56 (0.000)
N. Obs.	705	150	67	72	32	218
*R-sq**	0.8234	0.7537	0.7082	0.7755	0.9693	0.8769
Deg. of Freedom	517	113	43	51	21	168
P-values in parenthesis *Denotes the overall R-sq; ** Denotes not significant at the 95% level of confidence.						

Here, and as shown in the previous table, the initial conditions variable is still statistically significant and has a negative correlation with the dependent variable, for all the regions included as well as for the full sample. When looking at the correlation between relative losses and relative growth, the coefficients have the expected signs (that is they are negative). Nevertheless, they are found to be statistically insignificant for three geographical regions, including East Asia and the Pacific, South Asia, and Sub-Saharan Africa. In the cases of Latin America and The Caribbean and for the Middle East and North African economies the corresponding coefficients remain significant.

Regarding the relative gains variable, the coefficient remains as expected positive and statistical significantly. For the regions under consideration, the size of the coefficient is more or less similar to that of the full sample case. Moreover, in line with the reasoning presented throughout the paper, the coefficient corresponding to the ***rel_gain*** variable is higher, in absolute value, than that corresponding to the ***rel_loss*** (13.0 and -7.4 for LAC; 12.4 and -7.7 for Middle East and North Africa).

Once again, these results seems to suggest that for developing economies the correlation between relative growth rate and recoveries processes seems to be a rather robust finding, even when allowing for regional differences.

Conclusions and main policy implications

Since the 1950's and 1960's to the present day, irrespective of the corresponding economic and social policy regimes, Latin America and the Caribbean have consistently lost relative income share in relation to the World and the developing countries on average. They have also persistently lagged in income level comparison behind the developed economies. Moreover, the relative income gap between Latin America and the Caribbean and the OECD high income grouping and the United States has widened over time.

In 1950, Latin America and the Caribbean's GDP per capita in real terms represented 28% and 47% those of the United States and the OECD on average. In 2007, these shares had declined to 25% and 32%. Nonetheless, Latin America and the Caribbean's loss in relative income with respect to the World, the Developing World and successful regions such as East Asia is, even more patent. In 1950, Latin America and the Caribbean's real GDP per capita, was 30% higher than that of the World on average, and 100%, and 160% higher than that of the Developing World and East Asia. In 2007, Latin America and the Caribbean's GDP per capita, was equal to that of the Developing World, but 39% and 40% below that of the World on average and of East Asia respectively.

These trends which are generally more glaring in the case of the Latin American countries should certainly be a source for concern. A laggard economic performance can only hamper Latin America and the Caribbean's long-standing wish to converge towards the level of development and life style of the developed world. More precisely, it can condemn and confine Latin America and the Caribbean to the permanent status of middle income countries.

Academic, government and policy makers, and institutional organizations have not been oblivious to this phenomenon and have directed their efforts at policy recommendations in two distinct directions. On the one hand, their research has pointed to a required and necessary improvement in long-term productivity, through innovation, stronger institutional build-up, greater spending on research and development and a better education. Short-run considerations do not for the most part enter into the analysis.

On the other hand, the existing literature has placed its focus of attention on the short-run and centered on downturns and contractions in economic activity, as well as on crises brought about by 'negative 'shocks.' This is partly the product of the debt debacle of the 1980's and the increase in the number and scope of financial crises in 1990's as well as the rise in volatility that Latin America and the Caribbean has experienced since that time. Part of the literature that falls into this category links the short-run with the long-run by arguing that crises have a medium term and even long term effect on the GDP trend.

Implicitly, this view attributes Latin America and the Caribbean's laggard performance to the impact of contractions in economic activity. The main policy recommendation emanating from this view is that the region will suffer crises but must

learn how to manage them in order to mitigate their effects. In turn, since it is believed that upturns and booms necessarily predate the contractions or busts in economic activity, crisis and economic bust management requires 'economic boom' management. Hence the calls for counter-cyclical fiscal policy, for prudence during 'good times' in order to face 'bad times' and hence the perennial adagio, 'contractions are not managed in the downward phase of the cycle but in the upward phase of the economic cycle.'

We take issue with these views. We believe that given the dynamics of the business cycle in Latin America and the Caribbean, the separation and dichotomization between short-run and long-run is unfounded. We believe, in the same vein, as the literature that focuses on crisis, that the short run does influence and can indeed determined the long-run. We moreover, complement this existing literature by arguing that not only are downturns important but, more fundamentally, that the intensity and strength of expansions are more important than those corresponding to contractions to determine the convergence paths.

The statistical and econometric evidence presented for the period 1950-2007 for seven regions in the world, shows that in the case of Latin America and the Caribbean, the convergence problem is not so much linked to contractions and downturns, but rather has a direct relation to expansions (or the upward phase of the cycle). While contractions have, as expected, a negative effect on the performance of Latin America and the Caribbean in historical perspective (See, Pineda, 2010), in comparison to other regions, Latin America and the Caribbean recovers rapidly and quickly. Contrarily, in the expansion phase of the cycle, Latin America and the Caribbean tend to performs below the world and developing world regional average. The difference in the performance of Latin America and the Caribbean and say a successful region such as East Asia, during the expansion phase is notable. In other words, Latin America and the Caribbean countries are, in a regional comparative perspective, 'good' at withstanding the negative effects of contractions and 'bad' at taking advantage of expansions to boost the thrive for convergence with the developed world.

The evidence presented questions the exclusive focus on counter-cyclicality as a policy rule in expansions and downturns and forms the basis for arguing that instead of viewing expansions through the lens of 'crisis management,' expansions should be seen and understood as an opportunity to grow and expand and promote greater levels of well-being, employment and equity in the region.

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Appendix

Table 11
Episodes of per capita GDP full and incomplete recoveries per geographical regions

Region	Episodes of recovery	Episodes of Full Recovery			Episodes of incomplete Recovery	
		% respect total episodes	Average Recovery Ratio*		Average Recovery Ratio*	Median Recovery Ratio*
East Asia & Pacific	137	63.5	1.47		0.89	0.94
Europe & Central Asia	58	70.7	1.43		0.86	0.89
Latin America & the Caribbean	279	72.0	1.20		0.92	0.96
Middle East & North Africa	148	61.5	1.22		0.84	0.93
North America	5	100.0	1.12		-	-
South Asia	64	76.6	1.26		0.94	0.98
Sub-Saharan Africa	466	54.9	1.22		0.91	0.94
OECD	178	89.9	1.36		0.97	0.98
Total	1335	66.7	1.28		0.90	0.94

Note:* Recovery ratio with respect the pre-crisis level.
Source: On the basis of the Penn-World Tables 6.3 (2010).

Table 12
Episodes of per capita GDP full and incomplete recoveries per geographical regions: Lower-Middle income economies

Region	Episodes of recovery	Episodes of Full Recovery			Episodes of incomplete Recovery	
		% respect total episodes	Average Recovery Ratio*		Average Recovery Ratio*	Median Recovery Ratio*
East Asia & Pacific	95	60.0	1.50		0.92	0.9521
Europe & Central Asia	13	76.9	1.49		0.82	0.8015
Latin America & the Caribbean	87	64.4	1.14		0.92	0.957
Middle East & North Africa	75	72.0	1.18		0.86	0.937
South Asia	37	83.8	1.12		0.98	0.9794
Sub-Saharan Africa	80	66.3	1.23		0.90	0.9133
Total	387	70.4	1.26		0.89	0.9456

Note:* Recovery ratio with respect the pre-crisis level.
Source: On the basis of the Penn-World Tables 6.3 (2010). and the World Bank Development Indicators (2010).

Table 13
Episodes of per capita GDP full and incomplete recoveries per geographical regions: Upper-Middle income economies

Region	Episodes of recovery	Episodes of Full Recovery			Episodes of incomplete Recovery	
		% respect total episodes	Average Recovery Ratio*		Average Recovery Ratio*	Median Recovery Ratio*
East Asia & Pacific	24	70.8	1.30		0.85	0.9163
Europe & Central Asia	32	68.8	1.46		0.85	0.8982
Latin America & the Caribbean	148	75.7	1.22		0.93	0.9586
Middle East & North Africa	27	51.9	1.16		0.82	0.9048
South Asia	-	-	-		-	-
Sub-Saharan Africa	53	69.8	1.29		0.92	0.9204
Total	284	70.4	1.3		0.9	0.9325

Note:* Recovery ratio with respect the pre-crisis level.
Source: On the basis of the Penn-World Tables 6.3 (2010). and the World Bank Development Indicators (2010).

Table 14
Country list by region and upper and lower middle income countries

Region	Country list	Upper middle income countries	Lower Middle Income countries
East Asia and the Pacific	Brunei Darussalam, Cambodia, China , Fiji, Indonesia, Kiribati, Lao PDR , Macao SAR, China, Hong Kong, Malaysia, Marshall Islands, Micronesia, Fed. Sts., Mongolia, Palau, Papua New Guinea Philippines, Samoa, Solomon Islands, Singapore, Thailand, Tonga, Vanuatu, Vietnam.	Fiji, Malaysia, Palau.	China , Indonesia, Kiribati, Marshall Islands, Micronesia, Fed. Sts., Mongolia, Palau, Papua New Guinea, Philippines, Samoa, Solomon Islands, Singapore, Thailand, Tonga, Vanuatu.
Europe and Central Asia	Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, FYR, Moldova Montenegro, Poland , Romania, Russian Federation, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.	Belarus, Bosnia and Herzegovina, Bulgaria, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, FYR, Montenegro, Romania, Russian Federation, Serbia	Albania, Armenia, Azerbaijan, Georgia, Moldova, Turkmenistan, Ukraine.
Latin America and the Caribbean	Antigua and Barbuda, Argentina, The Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras Jamaica, Mexico, Nicaragua, Panama, Paraguay Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, RB.	Argentina, Barbados, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic,Grenada, Jamaica, Mexico, Panama, Paraguay Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Uruguay, Venezuela, RB.	Belize, Bolivia, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Nicaragua, Paraguay.
Middle East and North Africa	Algeria, Djibouti, Egypt, Arab Rep., Iran, Islamic Rep., Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen, Rep.	Algeria, Lebanon, Libya.	Djibouti, Egypt, Arab Rep., Iran, Islamic Rep., Iraq, Jordan, Morocco, Syrian Arab Republic, Tunisia.
South Asia	Afghanistan, Bangladesh, Bhutan, India, Maldives, Nepal, Pakistan, Sri Lanka.		Bhutan, India, Maldives, Pakistan, Sri Lanka.
Sub-Saharan Africa	Angola, Benin, Botswana, Burkina Faso, Burundi, Cameroon, Cape Verde, Central African Republic, Chad, Comoros, Congo, Dem. Rep., Congo, Rep., Cote d'Ivoire, Equatorial Guinea, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Guinea-Bissau, Kenya, Lesotho, Liberia, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Namibia, Niger, Nigeria, Rwanda, Sao Tome and Principe, Senegal, Seychelles, Sierra Leone, Somalia, South Africa, Sudan, Swaziland, Tanzania, Togo, Uganda, Zambia, Zimbabwe.	Boswana, Gabon, Muaritius, Namibia, Seychelles, South Africa.	Angola, Cameroon, Cape Verde, Congo Rep., Cote D'Ivoire, Lesotho, Nigeria, Sao Tome and Principe, Sudan, Swaziland.
Developed Countries	Canada, United States, Austria, Belgium, Cyprus Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom, Australia, Japan, Korea, Rep., New Zealand, Taiwan, Israel, Malta.		

Table 15
Country list by region and subregion

Region	Sub-region	
East Asia and the Pacific	**East Asia**	**Pacific**
Brunei Darussalam, Cambodia, China , Fiji, Indonesia, Kiribati, Lao PDR , Macao SAR, China, Hong Kong, Malaysia, Marshall Islands, Micronesia, Fed. Sts., Mongolia, Palau, Papua New Guinea Philippines, Samoa, Solomon Islands, Singapore, Taiwan, Thailand, Tonga, Vanuatu, Vietnam.	Cambodia, Laos, Vietnam, China, Indonesia, Mongolia, Philippines, Thailand, Malaysia, Brunei, Hong-Kong, Singapore.	Kiribati, Marshall Islands, Micronesia, Papua, Samoa, Solomon, Tonga, Vanuatu, Fiji, Palau, macao.
Europe and Central Asia	**Europe**	**Central Asia**
Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Kyrgyz Republic, Latvia, Lithuania, Macedonia, FYR, Moldova Montenegro, Poland , Romania, Russian Federation, Serbia, Tajikistan, Turkey, Turkmenistan, Ukraine, Uzbekistan.	Albania, Armenia, Azerbaijan, Belarus, Bosnia and Herzegovina, Bulgaria, Croatia, Estonia, Georgia, Hungary, Kazakhstan, Latvia, Lithuania, Macedonia, FYR, Moldova Montenegro, Poland , Romania, Russian Federation, Serbia, Turkey, Ukraine..	Kyrgyz Republic, Tajikistan, Turkmenistan, Uzbekistan..
Latin America and the Caribbean	**Latin America**	**The Caribbean**
Antigua and Barbuda, Argentina, The Bahamas, Barbados, Belize, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominica, Dominican Republic, Ecuador, El Salvador, Grenada, Guatemala, Guyana, Haiti, Honduras Jamaica, Mexico, Nicaragua, Panama, Paraguay Peru, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago, Uruguay, Venezuela, RB.	Argentina, Bolivia, Brazil, Chile, Colombia, Costa Rica, Cuba, Dominican Republic, Ecuador, El Salvador,Guatemala, Honduras Mexico, Nicaragua, Panama, Paraguay Peru, Uruguay, Venezuela, RB.	Antigua and Barbuda, The Bahamas, Barbados, Belize, , Dominica, Grenada, Guyana, Haiti, Jamaica, St. Kitts and Nevis, St. Lucia, St. Vincent and the Grenadines, Suriname, Trinidad and Tobago.
Middle East and North Africa	**Middle East**	**North Africa**
Algeria, Djibouti, Egypt, Arab Rep., Iran, Islamic Rep., Iraq, Jordan, Kuwait, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, Tunisia, United Arab Emirates, Yemen, Rep.	Djibouti, Arab Rep., Iran, Islamic Rep., Iraq, Jordan, Kuwait, Lebanon, Oman, Qatar, Saudi Arabia, Syrian Arab Republic, United Arab Emirates, Yemen, Rep.	Algeria, Egypt, Libya, Morocco, Tunisia.