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# Peru's Great Depression: A Perfect Storm?

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# A Perfect Storm?

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## Abstract

We describe Peru's great depression over the 1970's and 1980's and discuss possible hypotheses that may explain its deep collapse and slow recovery. The main finding of the paper is that it is very hard to find a single explanation for Peru's great depression. Very much like a perfect storm, so many things went wrong at the same time, with the effects of each negative shock amplifying those of the other shocks. In particular, our findings suggest that the external shocks that hit the country in the 1980s were amplified by a weak and fractionalized political system (for a discussion of the interaction between external shocks and ability to recovery from external shocks, see Rodrik, 1999), limited domestic entrepreneurial capacity, and lack of a coherent industrial policy that could lead to the discovery of new productive activities.

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*The expression "Perfect Storm" refers to the simultaneous occurrence of events which, taken individually, would be far less powerful than the result of their combination. Such occurrences are rare by their very nature, so that even a slight change in any one event contributing to the perfect storm would lessen its overall impact. (Wikipedia)*

## Introduction

Over the 1970s and 1980s Peru went through a series of deep and protracted economic crises which generated enormous output losses. While output collapses are not uncommon in the emerging world (in a sample of 31 emerging market countries over the 1980-2004 period, Calvo et al., 2006 identify 22 events), Peru stands apart for the rapid succession of crises. For three times in a row, as soon as output would recover to its pre-crisis level, a new crisis would hit the country and destroy all the progress made during the previous years. As a consequence, the growth rate of Peru's GDP per capita averaged to 0 percent over a thirty-year period (1975-2005), a horrible performance even when compared to Latin America's dismal rate of economic growth. Moreover, while Calvo et al. (2006) document that great depressions tend to be V-shaped (i.e., characterized by a rapid collapse and a rapid recovery with almost no investment), the recovery from Peru's deepest collapse took 15 years, clearly not a V-shaped crisis.

The objective of this paper is to describe Peru's great depression and discuss possible hypotheses that may explain the deep collapse and slow recovery of the Peruvian economy. The main finding of the paper is that it is very hard to find a single explanation for Peru's great depression. Very much like a perfect storm, so many things went wrong at the same time, with the effects of each negative shock amplifying those of the other shocks. In particular, our findings suggest that the external shocks that hit the country in the 1980s were amplified by a weak and fractionalized political system (for a discussion of the interaction between external shocks and ability to recovery from external shocks, see Rodrik, 1999), limited domestic entrepreneurial capacity, and lack of a coherent industrial policy that could lead to the discovery of new productive activities.

## The Lost Three Decades

A deep regional economic crisis led the UN Economic Commission for Latin America (ECLAC) to call the 1980s the continent's "lost decade". While the 1980s were not a

happy period for Latin America, they were a disastrous one for Peru. Figure 1 shows that, starting 1975, Peru faced a series of economic crises and an enormous output contraction. If Latin America lost one decade, Peru lost three decades.

The objective of this section is to provide an anatomy of Peru's growth collapse. The main message of the section is that not only was the depth of Peru's recession unusually large, but its recovery was unusually slow. Hence, one of the main challenges in understanding Peru's growth performance is explaining the reason for this slow recovery.

In order to move beyond the simple graphical analysis of Figure 1 and analyze if there was something special about the collapse and recovery in Peru's GDP growth, we need to be able to compare Peru with other countries which also had serious economic troubles. In order to do so, we identify growth contractions in a large sample of countries and then compare Peru with other countries that went through growth contractions.

We identify growth contractions by focusing on cumulative reductions of output per capita throughout the 1960-2004 period (see Calvo et al., 2006, for an application of the same procedure to GDP levels). For each of these episodes, we define a pre-crisis peak, a trough, and the year of full recovery.[1] The pre-crisis peak is the year displaying the maximum level of output preceding a trough, and the full recovery point is the year in which the pre-crisis peak output level is fully restored.[2] A trough is the local minimum following the onset of a crisis. We identify 782 episodes, of which 155 are in Latin America and 4 in Peru, indicating that Peru did not have more contractions than the average Latin America country (the regional average is 5 collapses). However, by focusing only on those episodes with a cumulative contraction bigger than 5 percen of GDP, we find that Peru experienced more contractions than the average Latin American country.

[1] To make sure that we are capturing the appropriate trough point for contraction episodes, we look for additional contractions in output to the right of the initially detected trough that do not qualify as collapses and lie no more than three periods away from the initially detected trough (thus allowing for temporary positive growth "blips" of up to two periods and a "double dip" contraction). If the cumulative contraction in output at the new trough exceeds that of the initially detected trough, we extend the contraction episode to include the new trough point, so that it becomes part of the same episode.

[2] For the very few contraction episodes in which output per capita did not fully recover before being hit by another contraction episode, we take the observation showing the highest value of output per capita prior to the next contraction as the full recovery point.

Figure 2 plots real GDP per capita for Peru from 1960 to 2005. The dots mark the years of peak, trough, and recovery. Table 1 shows each episode in detail. Although there was a soft contraction in 1967, Peru managed to maintain a stable path of growth until 1975. Since that year, Peru's GDP collapsed three times, with the last collapse (from 1987 to 1990) being the most dramatic. In this episode, Peru's GDP contracted by nearly 30 percent bringing Peru's per capita income back to its 1960's levels. After the collapse, it took 15 years to go back to the per capita income prevailing in 1987.

Table 2 reports the cumulative output contraction in our sample of 782 episodes. The first thing to note is that some contractions were not real collapses but just small recessions or zero growth episodes with a cumulative output contraction well below 1 percent of GDP. In fact, in some regions (like the OECD countries and South Asia) the average or median "collapse" is rather mild, with total output contraction always below 4 percent of GDP and in most cases below 3 percent of GDP. Even in the whole sample of countries, the median contraction entailed a GDP contraction of 5 percent of GDP.

The deepest collapse in our sample took place in Liberia (starting in 1979 and associated with a cumulative output contraction of more than 90 percent of GDP). In Latin America, the deepest collapse took place in Nicaragua (starting in 1983 and associated with a cumulative output contraction of 38 percent of GDP). The region that experienced the deepest collapses is East Europe and Central Asia, with an average output contraction of 23 percent of GDP and a median contraction of 13 percent of GDP. This suggests that deep output collapses are often associated with civil wars or with dramatic changes in a country's economic structure (like the transition from plan to market).

The data of Table 2 provide a first indication of the seriousness of Peru's 1981 and 1987 growth collapses. The output contraction that started in 1981 entailed an output loss which was twice the cross-country average and three times the cross-country median, and this was only the second most severe contraction for Peru. The output loss of the contraction that started in 1987 was three times the cross-country average and more than 5 times the cross-country median. In fact, the Peruvian contraction of 1987 is comparable to contractions taking place during episodes of civil war or economic transition.

In order to compare Peru's growth collapses with those of a more homogeneous sample of countries, Figure 3 focuses on the 7 largest economies in Latin America (LAC7) and shows that the deepest and sixth deepest collapses happened in Peru.[3] However, the figure shows that Peru's 1987 collapse was not extraordinary and was not much deeper than that of Venezuela in 1977 and Argentina in 1998.

Another way to capture the depth of a growth contraction is to measure the number of years from the trough of the contraction to the moment in which per capita GDP returns to its pre-collapse level. Table 3 shows that the average contraction is fairly short and that full recovery requires an average of 2.5 years. The region with the longest average contraction is East Europe and Central Asia (4.2 years), while the OECD countries have the shortest average contraction (1.7 years). The data of Table 3 show that Peru's output contraction of 1987 really stands out for its length. Output reached its trough in 1990 and it took 15 years to recover to its 1987 level (almost 5 standard deviations above the length of the average contraction) making this contraction the 6th longest in our sample.[4]

Again, it is interesting to compare Peru with the LAC7. Figure 4, shows that the Peruvian contraction of 1987 is the longest in the sample and that there is no other country that comes close to it (recovery from the second longest contraction, Brazil 1987, "only" took seven years). In fact, the only two other contractions that were comparable in magnitude to that of Peru in 1987 (Venezuela, 1977 and Argentina 1998, see Figure 3) only lasted 3 years yielding a much smaller output loss (with respect to trend output) when compared with that faced by Peru in the 1987 recession.

To look at the relationship between collapse and recovery we use our sample of growth contractions to regress the average rate of recovery over the average rate of contraction. Column 1 of Table 4 shows the results for the full sample of 782 episodes and column 2 shows the results for the subsample of Latin American countries. In both cases, we find a robust association between the speed of the collapse and the speed of the recovery indicating that recessions characterized by very high rates of output contraction are also those characterized by high rates of recovery (with the rate of recovery being about one-third the rate of contraction). The regressions'

[3] In Figure 3 each episode is identified by a country code and the peak year.
[4] The longest contraction in the sample was related to a civil war episode and took place in El Salvador (recovery from the contraction that started in 1978 required 23 years).

scatterplots show that all of Peru's growth contractions lie below the regression line (Figures 5a and 5b), suggesting that Peru's average rate of recovery was always below what was predicted by the speed and depth of the collapse. This provides further evidence that what makes Peru's experience special is not only the depth of the growth collapses, but also the extremely slow speed of the recovery. Unlike other countries, Peru's collapses were not V-shaped crises (ie, a fast drop in output followed by a fast recovery, see Calvo et al, 2006) but were instead characterized by a deep collapse and a very slow recovery.

An alternative measure of the "cost" of the contraction that combines the depth of the collapse with the length of the recovery is the output loss caused by the crisis (for a discussion of the output costs of economic crises, see Cerra and Saxena, 2007). To calculate output loss, we subtract GDP per capita in each year of the crisis from the pre-crisis peak of GDP per capita and normalize by the pre-crisis peak GDP per capita. Formally, we define the output loss as:

$$OL = \sum_{i=1}^{T} \frac{Y_p - Y_i}{Y_p}$$

Where $Y_p$ is the pre-crisis peak, $Y_i$ is GDP per capita in year *i*, 1 is the first year of the crisis, and T the last year of the crisis. It should be clear from Figure 6 (which provides an illustration of our method to compute output loss) that our measure vastly understates the output loss brought about by the crisis because it does not allow for trend growth of GDP per capita.

Table 5 shows that the 1987 crisis led to an output loss equal to almost three times the pre-crisis GDP per capita. Figure 7 shows that Peru's output loss was by far the largest in Latin America, almost 50 percent larger than the second deepest output loss (Venezuela in 1977) and 5 times the third deepest output loss (Argentina in 1989).

**Trying to Explain Peru's Growth Performance**

What can explain Peru's dismal growth performance? Our working hypothesis is that Peru was hit by a perfect storm with mutual reinforcing negative effects of external shocks, political instability, and limited domestic entrepreneurship and ability to

develop new export activities. In this section, we will explore the interaction of these factors and highlight how each of them played a key role in Peru's growth collapse. Before doing so, it is worth painting a brief picture of the Peruvian economy in the mid 1970s.

*The Peruvian Economy in the 1970s*

Peru was never a fast growing country. According to Thorp and Bertram's (1978) authoritative economic history, over the 1890-1970 period, Peru's GDP per capita grew at an average rate of 1 percent per year. Moreover, growth was concentrated in the coastal region and completely driven by the export of primary products (agriculture, fishing, and mining). High revenues from natural resources led to Dutch disease and seriously limited Peru's ability to develop a national industry both for import substitution and export of manufacturing. In fact, the small manufacturing sector was dominated by activities related to the processing of export products and, like most of the extractive industry, often under the control of foreign investors. Moreover, the constant overvaluation of the exchange rate reduced the viability of subsistence farming (which could not compete with imported products) and further increased the geographical fragmentation of economic growth in Peru.

Attempts to create a local industry were not successful. One of such attempts was the industrial promotion law of 1959 which gave incentives for investment in industry (mainly through exemption from import duties on equipment and intermediate goods and by not taxing reinvested profits). However, the law was too generous and not selective. While most countries that were implementing similar industrial promotion laws restricted incentives to new activities, the Peruvian law did not discriminate across sectors and ended up benefiting export processing activities and slow-growing industries (like the textile). In fact, since the law made no attempt at promoting domestic entrepreneurial capacity it ended up benefiting FDIs in export processing industries.

The concentration of economic activity in few capital-intensive sectors and specific geographical areas led to increasing income inequality which, in turn, led to political fragmentation. The consequence (and to some instance, the cause) of foreign ownership of most productive activities was a limited domestic entrepreneurial

capacity. As we will see below, both of these factors played an important role in Peru's growth collapse and slow recovery.

*External Shocks*

Peru received two large negative terms of trade shocks in the early 1970s and early 1980s and at least two sudden stops in capital flows. Hence, it cannot be denied that external shocks, both real and financial, played a key role in igniting the Peruvian growth collapse. The key question, however, is whether these external shocks can explain the extremely slow recovery. Peru received large external shocks in the past but the recovery from the shocks was always swift, so why were the 1980s different? It cannot be a decade effect because several Latin American countries received large negative terms of trade and financial shocks in the 1980s, but their growth performance, although not spectacular, was better than that of Peru.

To learn more about the importance of terms of trade shocks it is interesting to compare Peru with Chile. In both countries the export sector is dominated by primary exports (if anything, in the late 1970s primary exports were more important in Chile than in Peru, 65 percent versus 50 percent, Figure 8) and both countries suffered a large and long-lasting negative terms of trade shock (Figure 9). The difference between the two countries is that while Chile was able to increase its openness (Figure 10) and reduce its reliance on the exports of primary products, Peru, instead, decreased its openness and, in the second half of the 1980s, the share of primary product increased. In other words, Chile was able to replace the lost revenues brought about by the negative terms of trade shocks by developing new export activities. Peru, on the contrary, did not develop new export activities, openness decreased and, if anything the negative terms of trade shock increased the importance of primary exports in total exports.

An alternative way to look at the impact of the negative terms of trade shock on Peru's growth performance is to estimate how terms of trade shock affect output collapses and test whether there is something special about the Peruvian experience. In Table 6 we focus on our sample of growth contractions and regress the size of the output contraction over the change in terms of trade (measured as the difference between peak and trough). As expected, we find that the terms of trade variable has a positive coefficient, indicating that larger negative terms of trade shocks are

associated with deeper contractions. Figure 11 plots the relationship between the terms of trade shock and output contraction (the figure is based on column 2 of Table 6, figures based on other regressions yield similar results) and show that Peru's output contractions of 1981 and 1987 were much deeper than what was predicted by the terms of trade shock. This provides additional evidence that, while negative terms of trade shocks may have played a role in igniting Peru's great depression, they cannot fully explain the dept of the collapses; something else must have gone wrong.[5]

*Bad Economic Policies*

Another explanation for Peru's growth collapse focuses on disastrous and inconsistent macroeconomic policies.[6] Macroeconomic mismanagement is clearly illustrated by a history of high inflation (in the 1970s and early 1980s) that culminated in hyperinflation in the late 1980s and by an extremely poor fiscal performance (Figure 12 shows that over the 1978-2004 period Peru's budget deficits have always been larger than the Latin American average). Bottlenecks caused by insufficient public investment in infrastructure can also be part of the story. Figure 13 shows that in Peru investment in infrastructure was well below the LAC6 average and that the difference was particularly large in the second half in the 1980s.

However, while on average Latin America had better fiscal results than Peru, it is difficult to establish a causal relationship going from deficit to GDP growth. It is, in fact, plausible that the poor fiscal results were partly driven by low tax revenues associated with low economic growth. Similarly, while the collapse in investment in infrastructure is certainly part of the story, it cannot be the whole story since it happened after and not before the crisis. A plausible interpretation is that the economic crisis tightened the government budget constraint and this led to a contraction in investment in infrastructure. While this may have served has an amplifying factor, it cannot be the only explanation for such a protracted crisis.

An alternative explanation focuses on the fact that not only macroeconomic policies were often irresponsible, but that even responsible policies tended to be unpredictable and characterized by frequent swings of the pendulum (Carranza et al,

[5] We obtain similar results when we use terms of trade shocks to explain the size of the output loss.
[6] Bad microeconomic policies also played a role. See, for instance, Thorp and Bertram's (1978) discussion of Peru's industrial policy and Jenkner's (2006) analysis of the link between reforms and growth in Peru.

2005). This interpretation is consistent with the lack of a clear correlation between the policy stance of a given administration and economic performance. In fact, Figure 14 shows that Peru did poorly under very different types of economic policy. Peru's growth performance started deviating from the Latin American average during a period in which the administration of President Velasco adopted a set of isolationist economic policies, but divergence continued when the administration of President Belaunde adopted more market-oriented policies, and further expanded with the heterodox experiment of President Garcia. GDP growth picked up with the pro-market policies adopted by President Fujimori and per capita income grew by 10 percent in 1994 and 6 percent in 1995. However, during 1995-2005 GDP growth averaged to a more modest 1.6 percent, preventing Peru from catching up with the rest of Latin America.

While there is truth in the fact that poor macroeconomic management amplified the external shocks that hit the country in the late 1970s, these poor macroeconomic policies were partly endogenous to the crisis. A plausible story is that the correction of the large external shocks would have required a set of unpopular adjustment policies, but the high degree of political fragmentation (partly driven by rising inequality) did not allow reaching the national consensus necessary to adopt such policies. So, a vicious circle with a continuous feedback between low (or negative) growth and policy instability (for a detailed discussion of this mechanism, see Rodrik, 1999) clearly played a key role in explaining Peru's lost three decades. Yet, one feels that part of the explanation is still missing. After all, several Latin American countries characterized by high inequality and fractionalized political systems faced external shocks similar to those that hit Peru, but they "only" lost one decade. Why did Peru lose three? Why was the recovery so slow? We suspect that the third element of Peru's perfect storm is that Peru was unable to develop new manufacturing capacity that would replace the traditional export sectors hit by the negative external shocks. It is worth noting that this hypothesis is in line with Thorp and Bertram's (1978) interpretation of Peru's growth experience:

> "…local capacity to innovate and adapt technology; endogenous as distinct from external sources of economic dynamism; and policies which foster integrated growth….might have permitted the economy to survive the periodic breakdown of the export mechanism without high cost in terms of growth….It would also have prepared the economy more

> successfully to tackle the increasingly large scale and more complex investment projects required to sustain growth in the export sector. (Thorp and Bertram, 1978, pp 321-322)

Although we cannot provide a direct test of the above hypothesis, it is possible to use industry-level data to explore what might have constrained the growth of Peru's manufacturing sector. This is what we do in the next section.

**Obstacle to Manufacturing Growth: A Sector-Level Analysis**

While previous studies looked at the determinants of Peru's growth performance by using cross-country or time series data (eg. Carranza et al., 2005 and Jenkner, 2006), we focus on the evolution of different sectors within the Peruvian economy.

Figures 15a and 15b show that there is substantial heterogeneity across sectors. First of all, there was no collapse in the transport and energy sectors which kept growing throughout the 1970s and 1980s. Agriculture did not collapse in the 1970s, but it was already stagnating from before.[7] The fishing sector was the first to collapse (due to overexploitation, Bertram and Thorp 1978) in the early 1970s. It recovered in the late 1980s but fish production did not reach the level of 1970; until 1994. The mid 1970s mark the collapse of commerce, construction, other services, and industry.

Given the fact that most of Peru's industrial production was linked to the processing of primary products, it is not hard to explain why the collapse of the fishing industry and the mining sector had a negative impact on industrial production. What is more difficult to explain is why it took Peru so long to develop new industries. To shed some light on this issue, we use UNIDO data on value added to explore in greater details the behavior of Peru's industrial sectors. To maximize the country coverage we focus on the 1974-1996 period.[8] In order to limit country heterogeneity, we will not compare the performance of Peru with that of the industrial countries or with that of Africa, but limit our analysis to Latin America and emerging Asia. These are two groups of countries which in the 1970s had similar levels of per capita income but, since then, had very different growth performances.

[7] A possible interpretation for this lackluster performance was the climate of uncertainty caused by early proposals (dating back to the 1960s) of agricultural reforms (Bertram and Thorp, 1978).
[8] This period works well for Peru, since 1974 marks the beginning of the growth collapse while 1996 the end of the mini-recovery that followed the election of President Fujimori.

Figure 16 shows that, on average, the annual growth rate of Peru's industrial sectors was 5 percentage points lower than that of the rest of Latin America. There are, however, large differences across sectors. For instance, the Peruvian oil-refining sector grew faster than the Latin American average, but in Peru the growth rate of pottery and other manufacturing products was ten percentage points below the regional average. Figure 17 compares Peru with East Asia. In this case, we find that the growth rate of Peru's industrial sectors was five percentage points lower than that of East Asia. Again, we find large differences across sectors with Peru leading in the oil refining sector but lagging in machinery, chemicals, pottery and other industrial products.

Why did some sectors perform much worse than others? We explore three possible answers: (i) lack of financing; (ii) problems with the labor market; and (iii) problems with the export sector.

*Lack of Financing*

There is substantial research showing the existence of a causal relationship going from access to finance to growth (for a survey see Levine, 2004 and for an application to Peru see the chapter by Braun and Serra in this volume). As the size of the Peruvian credit market is extremely small (see the Chapter by Braun and Serra for further discussion) it is tempting to think that the small financial system is one of the key culprits in Peru's poor growth performance. We can test this hypothesis by checking whether the industrial sectors that did relatively worse in Peru are those sectors that need a larger access to external financial sources:

$$VAGR_{i,j,t} = \alpha_{i,t} + EXFIN_j * (\beta + \gamma * LAC_i + \rho * PERU_i) + \varepsilon_{i,j,t} \quad (1)$$

Where VAGR measures value added growth in country i, sector j, year t. $\alpha_{i,t}$ is a country-year fixed effect that captures all shocks that are country-year specific (thus, it captures all macroeconomic factors like inflation, GDP growth, capital flows, exchange rate, etc). EXFIN is the Rajan and Zingales (1998) measure of firms' demand for external finance (in order to compare the effect of external finance with other variables that will be introduced below, we standardize EXFIN so that its mean

is equal to zero and its standard deviation equal to one). LAC is a dummy variable taking value one for countries in Latin America and zero otherwise, and PERU is a dummy variable taking value one for Peru and zero otherwise. Since the sample only includes Latin America and East Asia, the coefficient $\beta$ measures whether East Asian firms that demand more external financing grew at a faster rate than firms that can finance themselves using internal resources. The sum of $\beta$ and $\gamma$ provides the same information for firms located in Latin America (excluding Peru) and $\beta + \gamma + \rho$ measures how demand for external finance affects firm growth in Peru. Hence, the coefficient $\rho$ measures whether sectors which are relatively more dependent on external finance did worse in Peru than in the rest of Latin America ($\gamma + \rho$ provides a similar comparison with East Asia).

If we were to find that $\rho$ is negative and large, then we could conclude that sectors that require a lot of external finance did relatively poorly in Peru. This fact would be consistent with the idea that the small size of the Peruvian financial market played a key role in the poor growth performance of the Peruvian economy. The first four columns of Table 7 present the results. Column 1 uses the whole sample (going from 1974 to 1996) and shows that $\beta$ is positive and large (a one standard deviation increase in the demand of external finance is associated with a 1.5 percentage points in annual value added growth). The coefficient interacted with the Latin American dummy ($\gamma$) is instead negative and statistically significant. This indicates that in Latin America, firms that need more access to external finance do *relatively* worse than similar firms located in East Asia and that lack of access to finance may be part of the explanation of why growth in Latin America has been slower than in East Asia. More interestingly, we find that $\rho$ is positive and statistically significant. This indicates that Peruvian firms that need more external financing do *relatively* better than similar firms located in the rest of Latin America. Hence, lack of access to finance cannot explain the differences in sectoral performance documented in Figure 16. Furthermore, the fact that $\gamma + \rho \approx 0$ suggests that there is no difference in the *relative* performance of Peruvian and East Asian firms which need more external finance. Again, this suggests that the underdevelopment of the Peruvian financial market cannot be an explanation for the sectoral differences in value added growth documented in Figure 16.

Columns 2-4 of Table 7 split the sample into 3 sub-periods: 1974-1979 (column 2), 1980-1989 (column 3), and 1990-1996 (column 4). They show that lack of access to finance was not a determinant of low growth in the 1970s and 1980s. However, column 4 shows that over 1990-1996 Peruvian industries with larger needs of external finance grew at a significantly slower rate with respect to similar firms located in the rest of Latin America and in East Asia (the difference in annual value added growth was 2 and 3.4 percentage points, respectively). Therefore, lack of access to finance may explain the lack of convergence in the 1990s, but not what happened in the 1980s.

We obtain similar results when we estimate the following regression which allows looking separately at the largest Latin American economies:

$$VAGR_{i,j,t} = \alpha_{i,t} + EXFIN_j * (\beta + \gamma * LA6_i + \lambda * OTHLA + \rho * PERU_i) + \varepsilon_{i,j,t} \qquad (2)$$

Where LA6 is a dummy variable that takes value one for Argentina, Brazil, Chile, Colombia, Mexico, and Venezuela (together with Peru, these are the largest Latin American economies) and zero otherwise. OTHLA takes value one for all Latin American countries with the exclusion of the counties included in LA6 and Peru. All the other variables are defined as above. In this case the coefficients should be interpreted as follows: $\rho$ measures whether sectors which are relatively more dependent on external finance did relatively worse (a negative sign) or better (a positive sign) in Peru than in East Asia; $\gamma$ and $\lambda$ instead compare East Asia with the LA6 countries and the other Latin American countries, respectively. When we focus on the whole period (column 5), we find no difference between Peru and Latin America. Focusing on the 1970s and 1980s, we find that Peruvian firms with more needs of external finance did better than similar firms located in East Asia. However, the opposite is true in the 1990s. This confirms that lack of access to finance may be an explanation for the relatively low growth of the early 1990s, but is unlikely to explain the disastrous outcomes of the 1970s and 1980s.

*Problems with the labor market*

Labor laws implemented during the early 1970s and the mid 1980s made the Peruvian labor market extremely rigid. In Saavedra and Torero's (2004, page 131) words: "the Peruvian Labor Code developed during the import substitutions period had been termed one of the most restrictive, protectionist and cumbersome in Latin America."

We can use a strategy similar to the one described above to test if the lack of a well-working labor market played a role in explaining Peru's growth performance. In particular, we start by computing a measure of labor intensity at the country-industry-level and then use this measure to test whether more labor intensive industries did particularly poorly in Peru relative to similar industries in the rest of Latin America and East Asia.[9] Here, we have an interesting experiment because a series of reforms implemented in the early 1990s led to a substantial deregulation of the Peruvian labor market. If labor regulation was the main obstacle to Peruvian growth, we should observe that labor-intensive industries recovered in the 1990s.

We report our main results in Table 8 (the econometric specifications used in this table are identical to those used in Table 7, but we now substitute EXFIN with LI). Column 1 focuses on the whole period and finds that $\rho$ has a negative coefficient which is both statistically and economically significant. This indicates that, during the period under observation, labor intensive industries located in Peru grew relatively slower than similar industries located in the rest of Latin America or East Asia (there are no significant differences between the Latin American average and those of East Asia). The problem is that the coefficient is highly unstable across periods. It is large and positive in the 1970s (column 2 of Table 8) and negative in the 1980s and 1990s (statistically significant only in the 1980s). While the negative coefficient of the 1980s is consistent with the tightening of the labor laws implemented by the administration of President Garcia, the fact that we also find a negative coefficient also in the 1990s (a period of labor market deregulation) is more puzzling. The last four columns of Table 8 split the Latin American coefficient using an empirical

[9] We measure labor intensity by dividing value added by the number of employees and then compute an average across the period. Formally, labor intensity in country i industry j is defined as: $LI_{i,j} = \frac{1}{22}\sum_{t=1974}^{1996}\frac{VA_{i,j,t}}{EMP_{i,j,t}}$. As in the case of EXFIN, we standardize LI so that its mean is zero and its standard deviation is one.

strategy identical to that described in Equation (2) and corroborate the results of the first four columns.

*Problems with the export sector*

As the experience of several East Asian economies has shown that the export sector can be an important source of economic growth, we explore the hypothesis that the root of Peru's slow recovery had something to do with a crisis of the export sector. There are several events that may have damaged the Peruvian export sector. The first had to do with the isolationist policy stance adopted in the late 1960s by the administration of president Velasco (according to Bertram and Thorp, 1978, until the mid 1960s Peru had one of the most outward-oriented economic policies in Latin America). The second relates to Dutch disease and the extreme volatility of Peru's real exchange rate (Frankel and Wei, 1998 show that a one percent increase in the volatility of the bilateral exchange rate reduces trade by as much as 1.8 percent).[10] The third explanation relates to the fact that the non-selective industrial policy described above did not provide the incentives to discover new export activities that could replace the traditional export industries.[11]

Again, we can check whether there were problems in the export sectors by estimating regressions similar to those of Equations 1 and 2 and substituting the industry-level measure of financial dependence with an industry-level measure of export orientation which we call EXPOU.[12] Table 9 reports the results of our estimations and shows that it is indeed the case that in Peru export-oriented industries did relatively worse than similar industries based in other Latin American countries or East Asia. The negative effect was particularly large in the 1980s but was also negative in the 1990s (it was positive but not statistically significant in the 1970s).

[10] We computed the standard deviation of the bilateral (vis a vis the USD) real exchange rate for all countries for which we had data for the 1974-1990 period. The average standard deviation for the 102 countries in our sample was 0.18 and the median value was 0.16. The value for Peru was 0.36. This puts Peru in the top 5$^{th}$ percentile of the distribution. The only 4 countries where volatility was higher than Peru are: Zaire, Chile (!), Nicaragua, and Ecuador.

[11] Hausmann and Rodrik (2003) discuss why there may not be enough private incentives to discover new export activities and hence the need of industrial policies.

[12] For details on the construction of the measure of export-orientation see Borensztein and Panizza (2006). Again, we standardize the variable so that its mean is equal to 0 and its standard deviation is equals to one.

*But what type of exports?*

The results described above show that in Peru export-oriented industries underperformed relative to similar industries in other parts of the world. However, this is not enough to claim that a crisis in the export sector was the proximate cause for Peru's slow recovery. In order to make this claim, we also need to establish that the evolution of the export sector has a sizable effect on GDP growth. We already mentioned that the experience of East Asian countries provide evidence supporting the idea that the export sector can be one of the main engines of growth, but recent research has shown that not all types of export have the same effect on growth. Hausmann et al. (2005) construct an index for the "income level of a country's export" (which they call EXPY) and show that countries that export the same type of goods which are exported by high-income countries (i.e. country with high EXPY) tend to grow faster than countries with low EXPY. Figure 18 compares Peru's EXPY with those of the LA6 and East Asia. In 1975, Peru's EXPY was about 10 percent lower than that of the LA6 (the data in the figure are measured in logs) and about the same as Asia's EXPY. By 1996, the difference with the LA6 countries had grown substantially and that with Asia went from nil to enormous. In fact, the figure shows that the quality of Peru's exports (as measured by EXPY) deteriorated together with GDP growth (with a collapse in the mid 1980s).

Figure 19 plots the value of EXPY conditional to a country's level of development (i.e., it plots the residuals of a regression of EXPY over GDP per capita). It shows that in almost every year, Peru's EXPY was lower than that predicted by the country's level of development. In the case of the LA6, we find that the actual value of EXPY is slightly higher than that predicted from the region's level of development. In the case of Asia, we find that the actual level of EXPY is much higher than that predicted by the region's level of economic development. This last factor may have played a role in Asia's economic success.

Again, we can use the framework of equations 1 and 2 to formally test whether industries with a large EXPY did relatively poorly in Peru. Since Hausmann et al.'s (2005) data are only available at the country-level, we need to build our own proxy of industry-level EXPY. We do so by dropping all developing countries from our sample and then computing an industry-level cross-country average of the EXPOU variable originally built by Borensztein and Panizza (2006). The resulting

variable (which we call EXPIND) captures the average sector-specific export orientation of industrial countries and can be interpreted as a measure of industrial countries comparative advantage in a given sector.[13]

Table 10 reports the results of our estimation. We find that Peruvian industries that produce products in which the advanced economies have a comparative advantage performed significantly worse than similar industries in the rest of Latin America and Asia.[14] This confirms the idea that Peru did relatively poorly in those export industries that have the largest positive spillover for growth.

*Putting things together*

By looking at one explanation at a time, we found: (i) no traction for the idea that Peru's growth performance was driven by lack of access to finance; (ii) some support for the idea that a rigid labor market could have contributed to Peru's slow growth; and (iii) stronger support for the idea that Peru's protracted crisis may have originated with something going wrong in the export sector, particularly in industries where the advanced economies have a comparative advantage. It is now interesting to estimate a model that includes all these possible explanations and see which one still holds true in a horserace. Columns 1 and 3 of Table 11 confirm that lack of access to finance is not an important obstacle for the Peruvian industrial sector (at least, in relative terms) and that the worst-performing industries in Peru where those with higher labor intensity and those in which the advanced economies have a comparative advantage. Columns 2 and 4 also include country-industry level export orientation (the Borensztein and Panizza EXPOU measure) and find that this variable, which was statistically significant when we did not control for other industry characteristics, becomes insignificant in the horserace regression. This suggests that the real problem in Peru's export sector was really in those sectors in which the advanced economies have a comparative advantage. According to the finding of Hausmann et al. (2005) this is the sector which has the largest positive effect of GDP growth.

Why did Peru find it so difficult (with respect to Asia, for instance) to develop new export industries and why did it find it particularly difficult to develop those type

[13] We apply the usual standardization to EXP_IND.
[14] The only exception is for the 1980-1990 sub-sample, where the coefficient is positive but not significant.

of industries in which industrial countries have a comparative advantage? One possible answer is that Peru was too poor and did not have the endowment to be competitive in these industries. This, however, cannot be the whole story since some East Asian countries which were successful in developing these types of industries were not very different from Peru (and if anything they were poorer) at the beginning of their growth take-off. Hausmann and Klinger (2006) propose an alternative explanation for why some countries can develop a diverse and competitive export sector while others cannot. They suggest that, while the inputs and know-how are necessary to produce a given good are good specific, the degree of specificity varies widely across types of goods. They develop a measure of revealed proximity between products (which they call OPEN FOREST) and show that countries that specialize in oil production, tropical products and other raw materials have a high degree of product specificity which does not allow them to easily diversify into other products (these are products with a sparse OPEN FOREST). Countries that specialize in light manufactures, electronics and capital goods, instead, tend to be less product-specific and find it easier to transition from one product to another (these are products with a dense OPEN FOREST). The fact that products differ in their specificity is a source of externalities and of intra and inter-industry spillovers and justify the role for industrial policies aimed at promoting the creation of sectors characterized by less asset specificity and located in more dense zones of the product space.

It is possible to use the Hausmann-Klinger OPEN FOREST measure to check how Peru compares to the rest of Latin America and East Asia. Figure 20 shows that in 1975 Peru's OPEN FOREST index was well below that of the LA6 and that of East Asia. This may explain Peru's difficulty to develop new export activities after the collapse of the traditional sectors. On the positive side, the figure shows a substantial catch up over the 1990s. Figure 21 plots the value of OPEN FOREST conditional on the level of income and indicates that when we control for GDP per capita, Peru is still far away from both East Asia and Latin America.

Of course, the above discussion begs another question: why did Peru have such a low value in its OPEN FOREST index? Addressing this question goes well beyond the purpose of this paper, but our best guess is that the importance of the extractive industry and Peru’s misguided industrial policy may have played a key role in preventing Peru from developing industries that could generate positive spillovers.

## Concluding Remarks

The objective of this paper was to document what was really unusual about Peru's growth collapse and discuss possible explanations for this extraordinary event. We show that external shocks may have played an important role in igniting the crisis but cannot explain its length and depth. Next, we argue that the interaction between negative external shocks and a fragile political system may have amplified the effect of the shocks. However, similar problems were present in other Latin American countries which faced milder collapses. Finally, we show some evidence that Peru's slow recovery had something to do with the inability of Peru's industrial sector to develop innovative products and products that have positive spillovers on GDP growth.

This led us to conclude that there is no single cause for Peru's extraordinary growth collapse. Like a perfect storm, three factors (external shock, fragile political system, lack of domestic entrepreneurial capacity) came at play at the same time and led to a collapse similar to those which are usually faced by countries that go through a civil war. The confluence of these three factors in the late 1970s and early 1980s, not only sets Peru apart from other Latin American countries, but can also explain why this great depression did not happen when the country was hit by previous terms of trade shocks. For instance, Peru did not suffer a prolonged crisis after the external shock of 1929 because at that time political fragmentation was less important as the country was ruled by a small elite.[15] Of course, while this lack of participation may have had short-term benefits it ended up having long-term costs. In fact, Thorp and Bertram (1978) suggest that it was the elite's resistance to innovate and implement policies aimed at generating a local entrepreneurial class that sown the seeds for one of the elements of Peru's perfect storm.[16]

[15] The same happened in Chile which, when hit by the terms of trade shocks of the 1980s, was not a democracy.

[16] Rajan and Zingales (2003) discuss why a country's elite may have incentives to block new entrepreneurs. Interestingly, another factor that may have limited the need of the Peruvian elite to develop new sectors was that the Peruvian extractive sector was already much more diversified than that of the average country with an economy based on primary exports.

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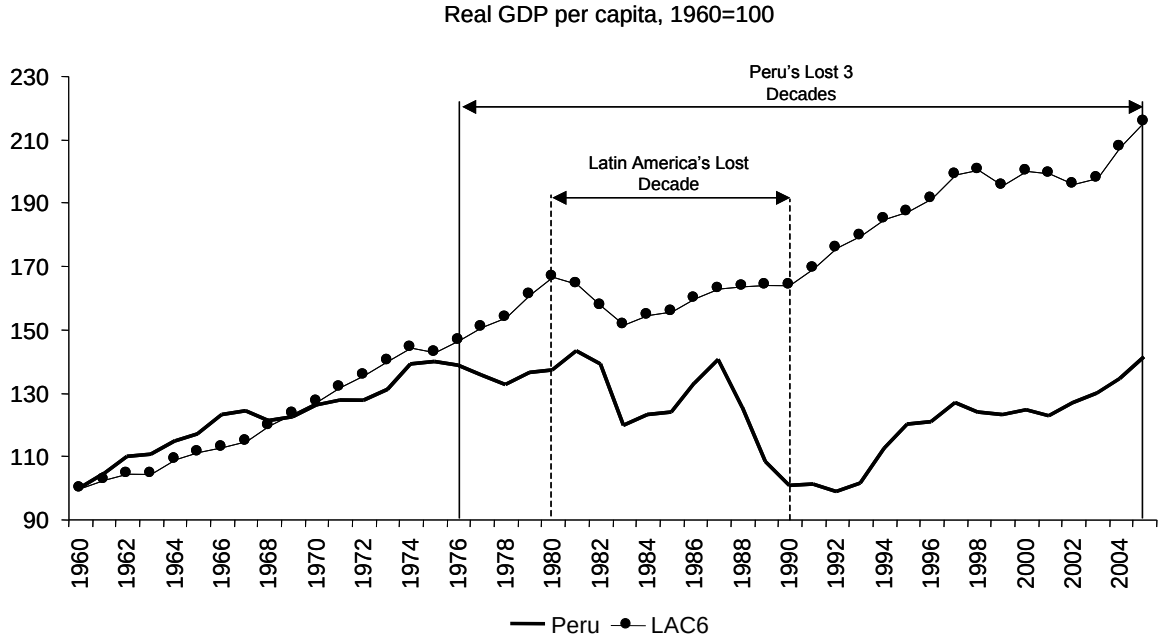
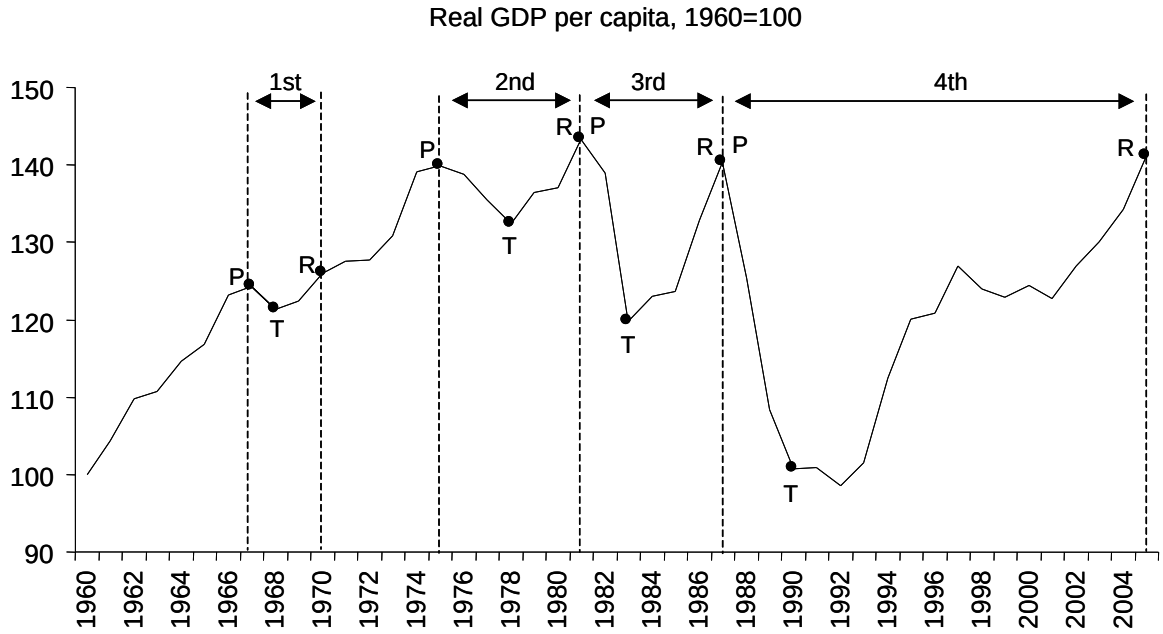
**Figure 1: Real GDP per Capita in Peru and LAC6**




Note: LAC6 is the simple average of real GDP per capita Argentina, Brazil, Chile, Colombia, Mexico and Venezuela

Source: WDI. Own calculations

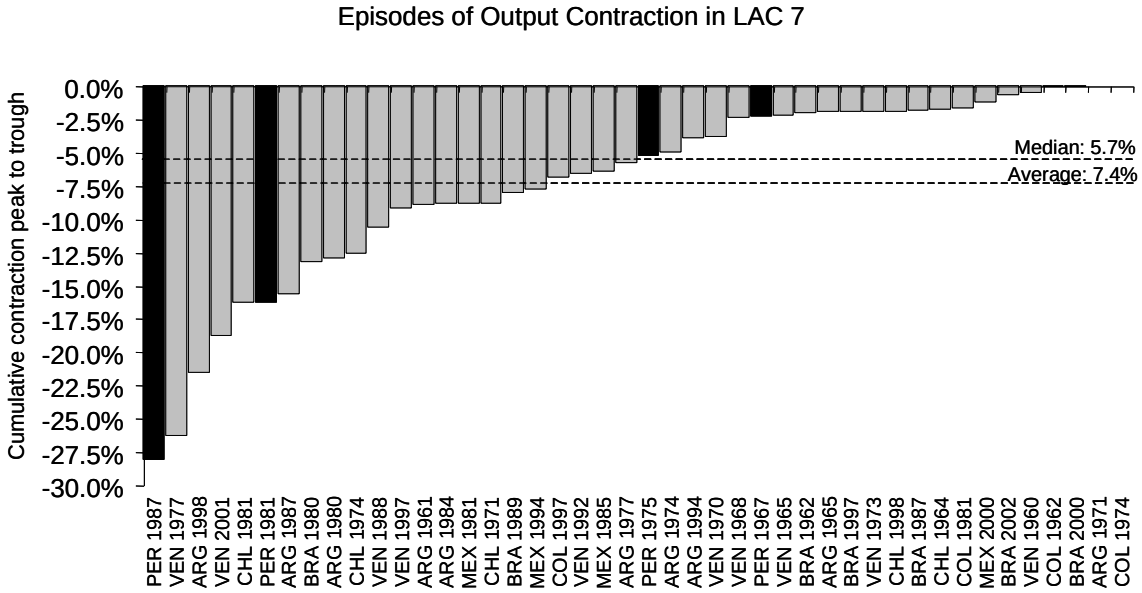
**Figure 2: Peru's Growth contractions**




Note: P: Peak; T: Trough, R: Recovery

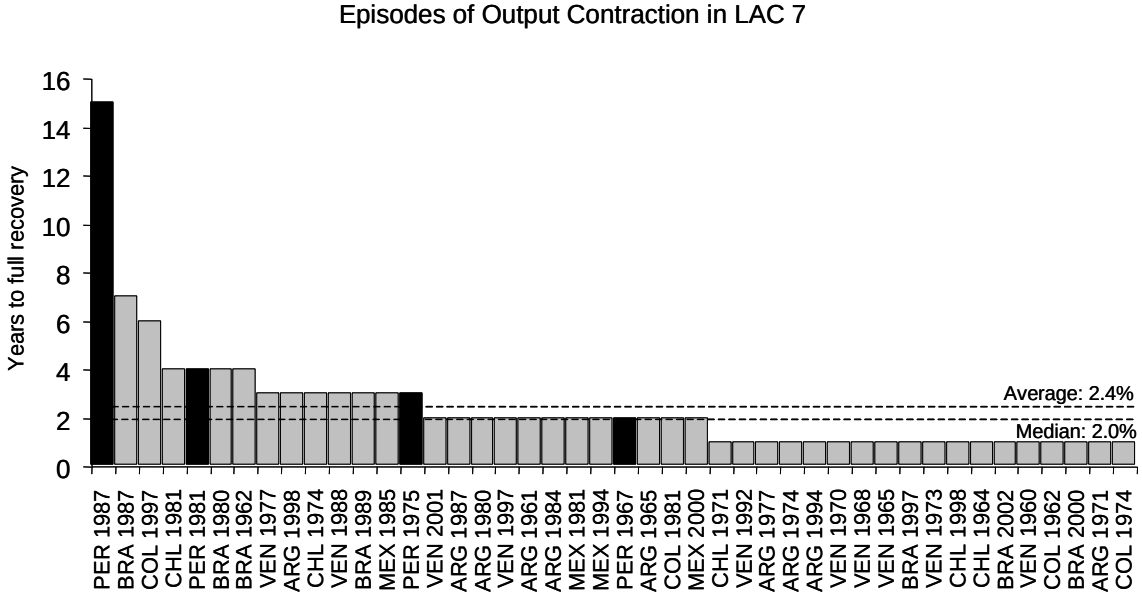
Source: WDI. Own calculations

**Figure 3: Cumulative Contraction peak to trough**




Note: Own calculations.

**Figure 4: Years to full recovery**




Note: Own calculations.

**Figure 5a: Regression Scatterplot, all countries**

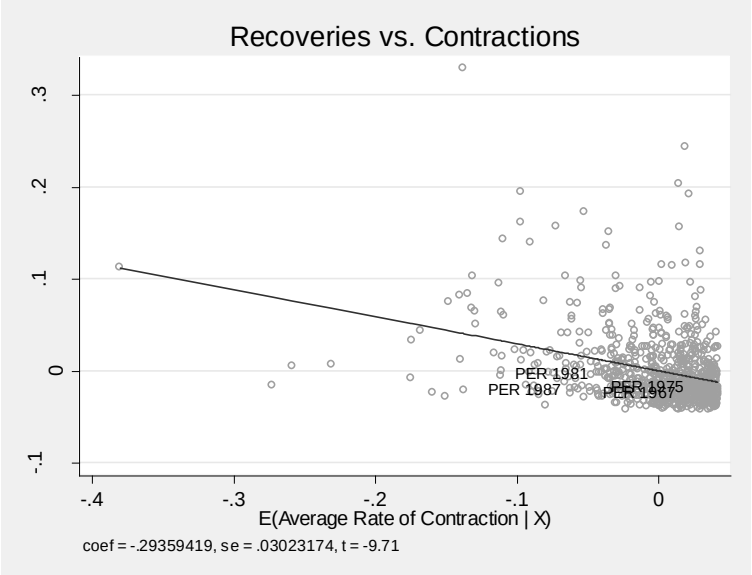



**Figure 5b: Regression Scatterplot, LAC**

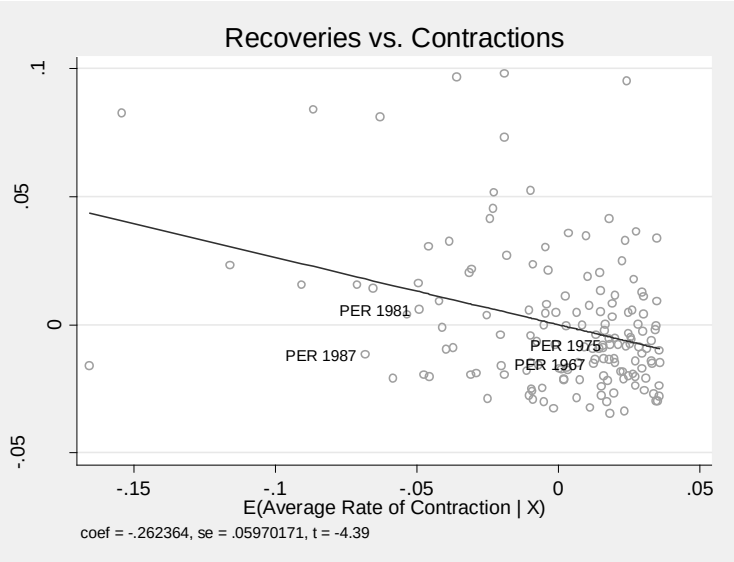
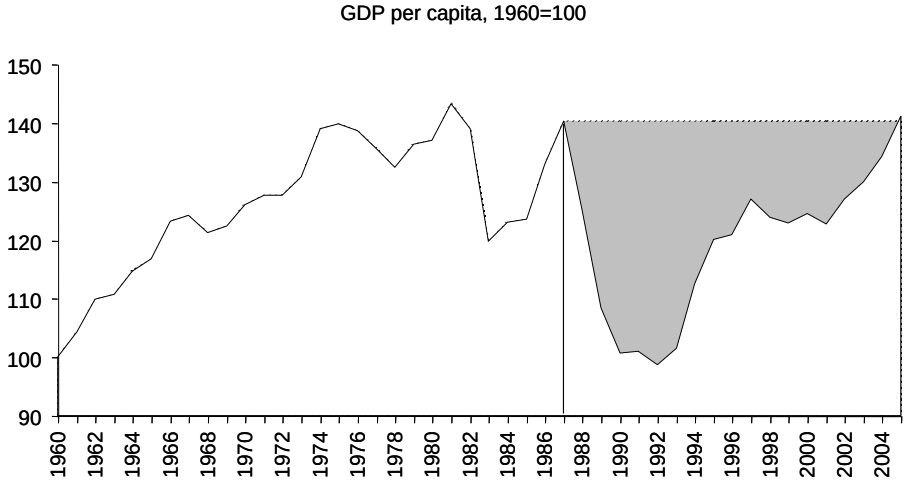
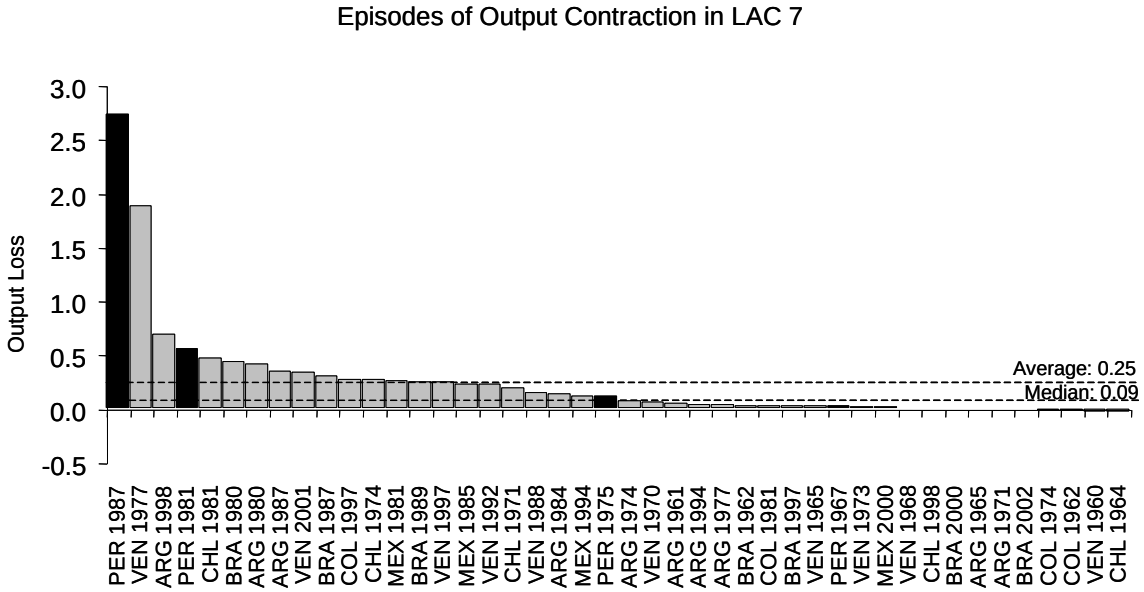



**Figure 6: Output Loss**



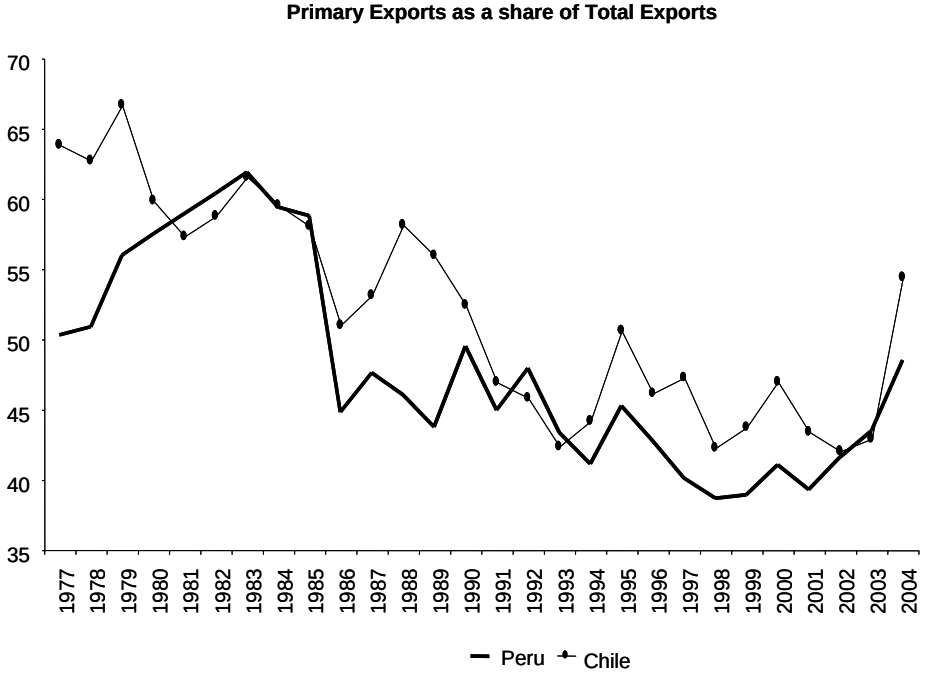

Note: The grey area shows the output loss associated to the 1987 growth collapse

**Figure 7: Output Losses in LAC 7**




Note: Own calculations.

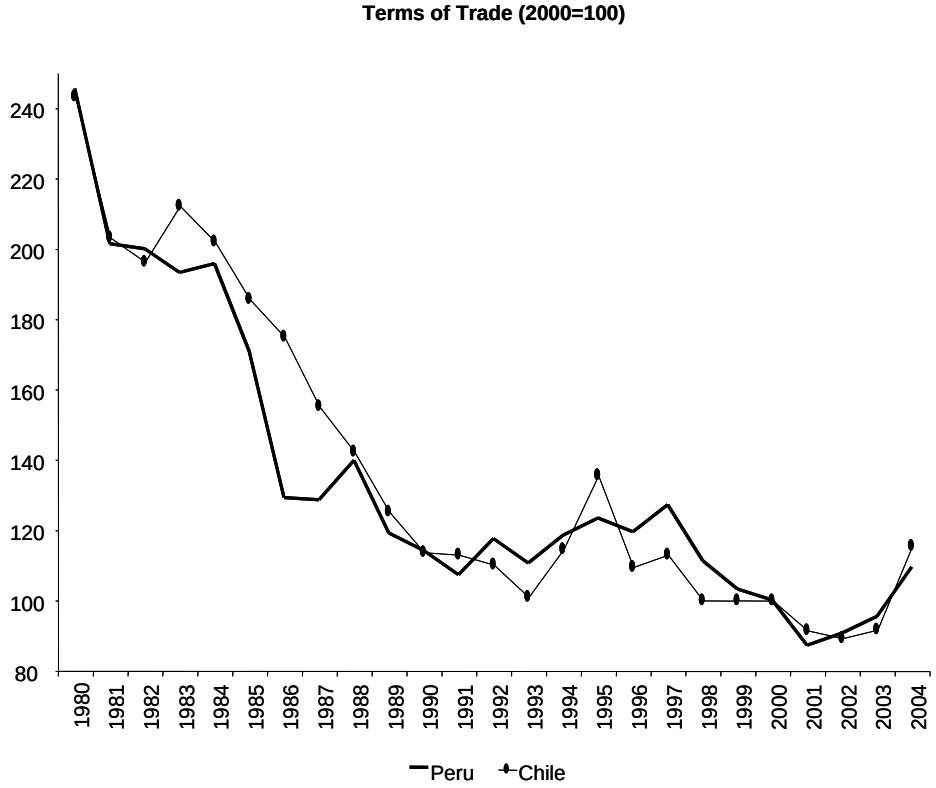
**Figure 8: Share of primary exports**




Note: Primary exports as a share of Total Exports is proxied by the sum of agricultural raw exports, fuel and metal and ores exports over merchandise and commercial service exports.

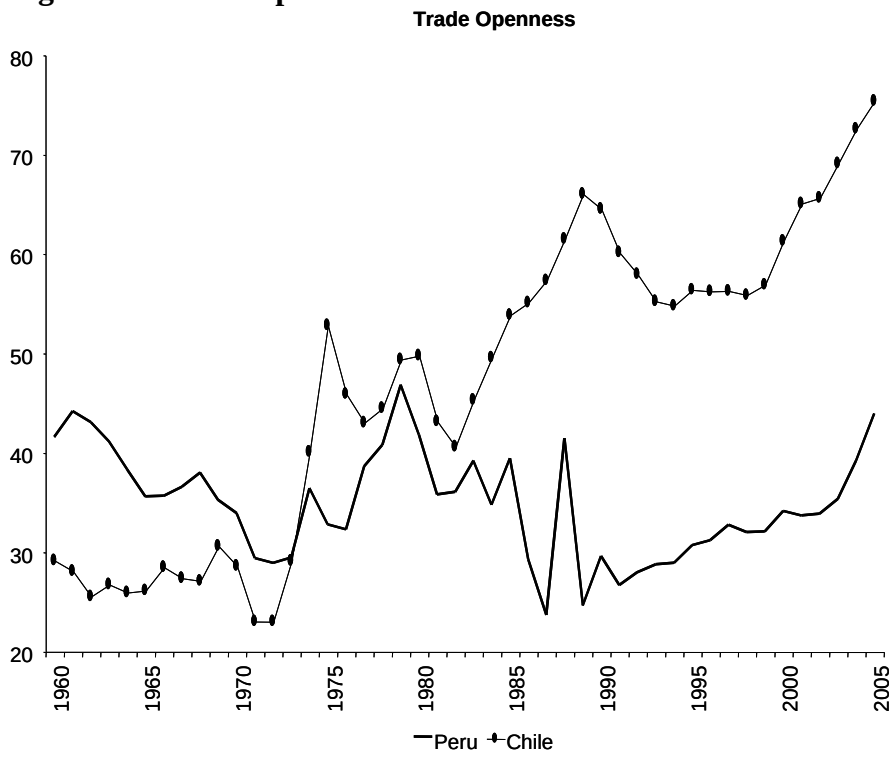
Source: WDI. Own calculations

## Figure 9: Terms of trade




Source: WDI. Own calculations

## Figure 10: Trade Openness




Note: Trade Openness is calculated as Exports plus Imports over GDP.

Source: WDI. Own calculations

**Figure 11: Regression Scatterplot, all countries**

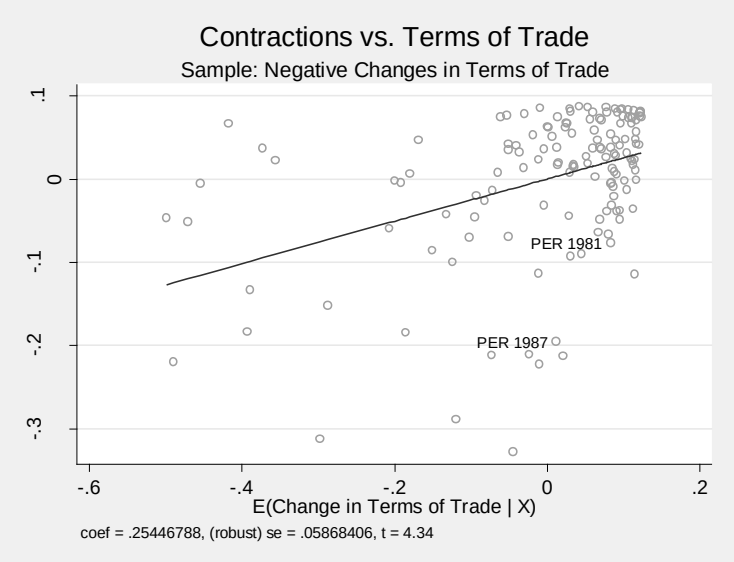
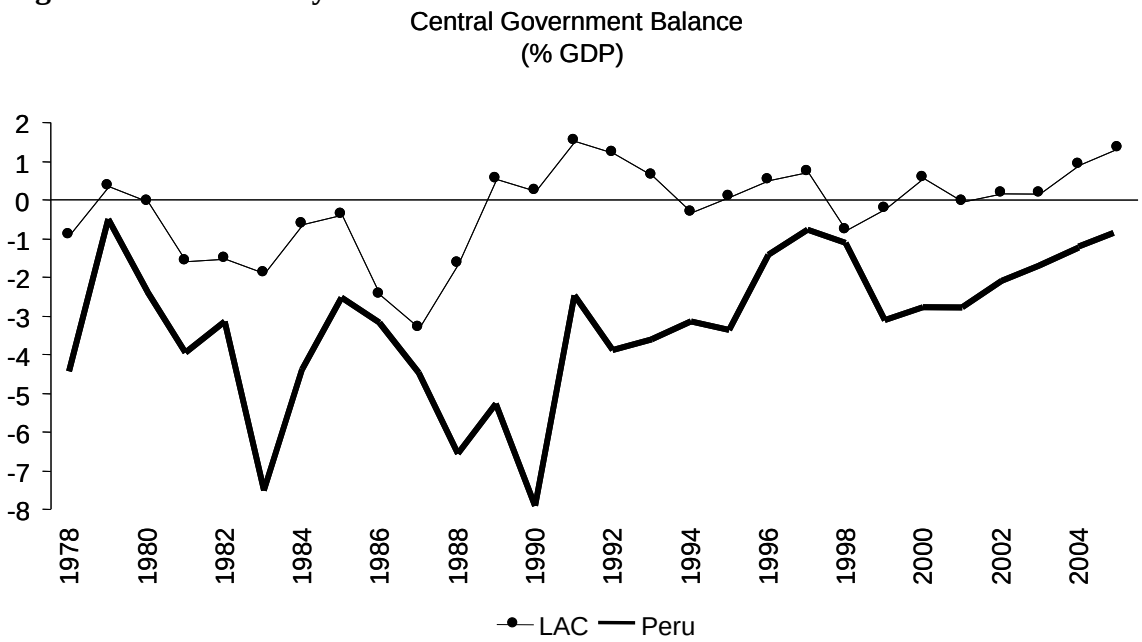


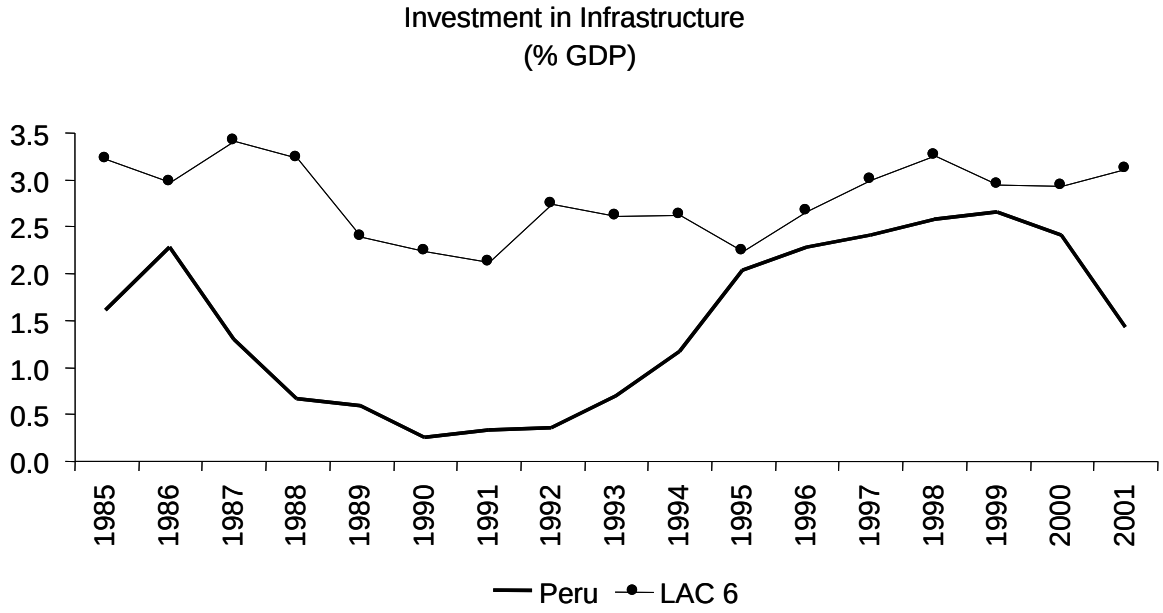

**Figure 12: Fiscal Policy**




Note: LAC is the simple average of Central Government Balance (% GDP) Argentina, Colombia, Ecuador, Uruguay and Venezuela

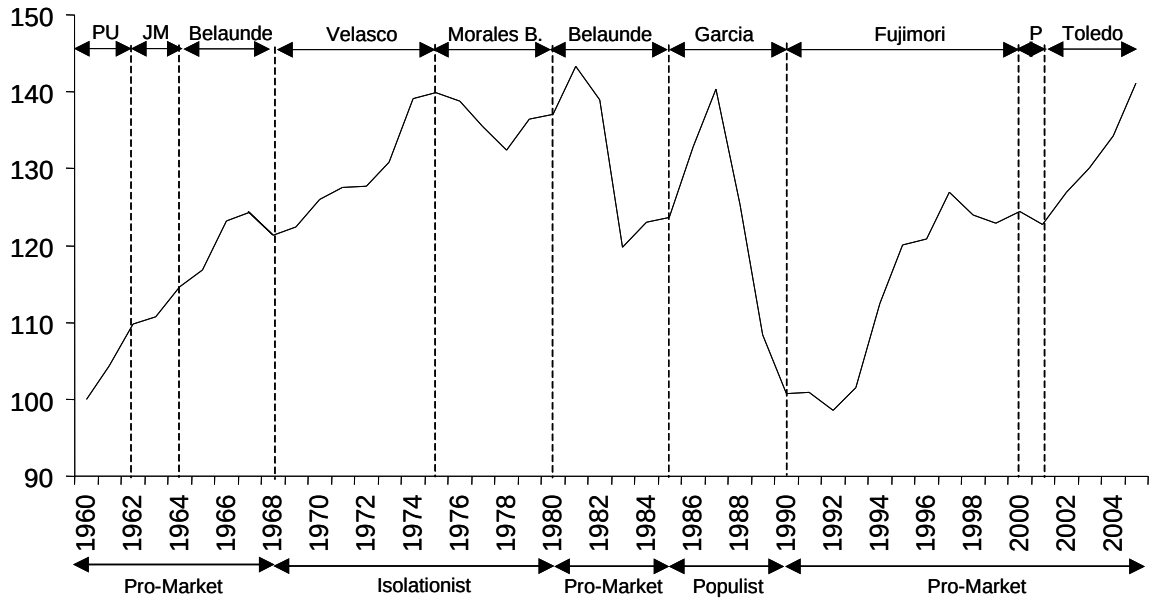
Source: The Institute of International Finance. Own calculations

**Figure 13: Infrastructure**



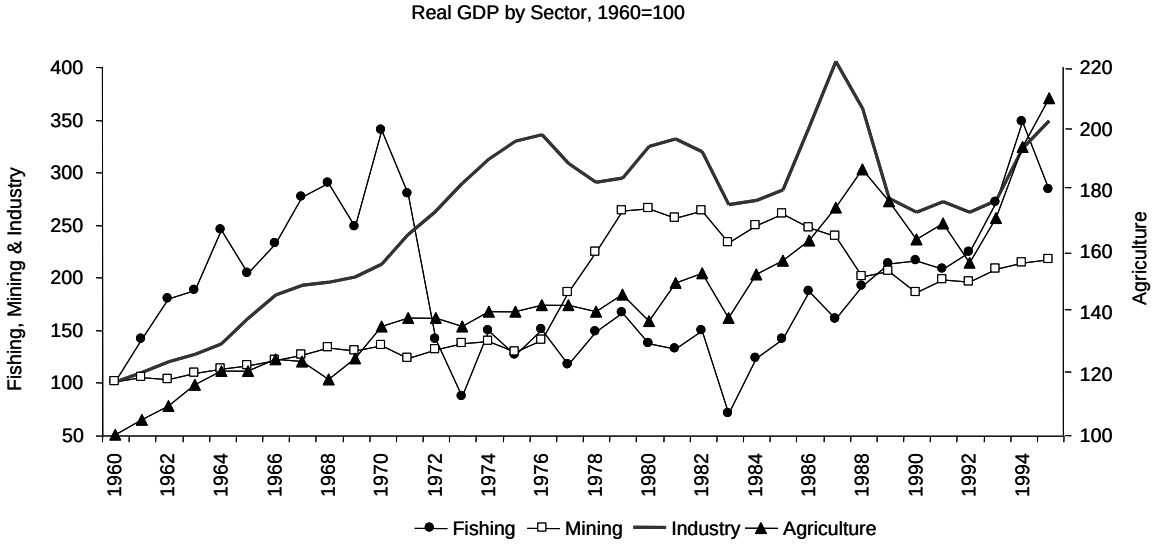

Source: Fay and Morrison (2005)

**Figure 14: GDP and Chronology of Governments**



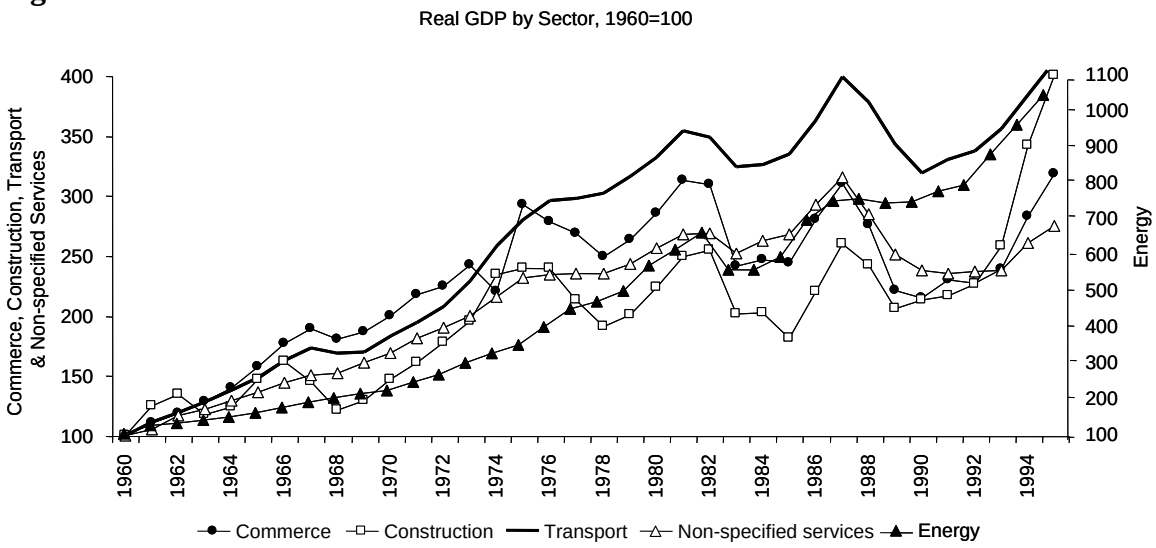

Note: PU: Prado y Ugarteche; JM: Junta Militar Godoy-Lindey; P: Paniagua

**Figure 15a**



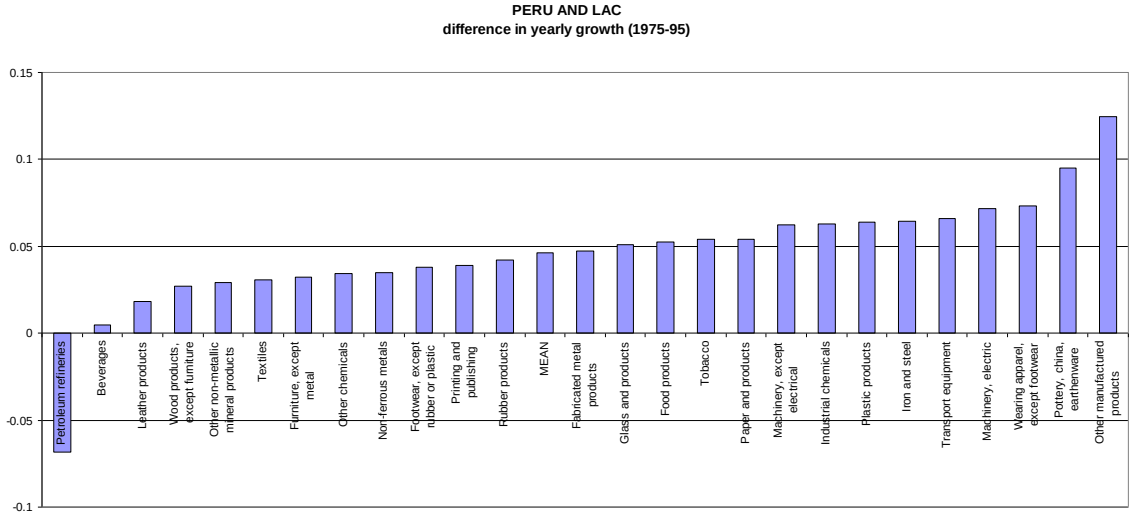

Source: Beltrán and Seminario (1998)

**Figure 15b**




Source: Beltrán and Seminario (1998)

## Figure 16




## Figure 17

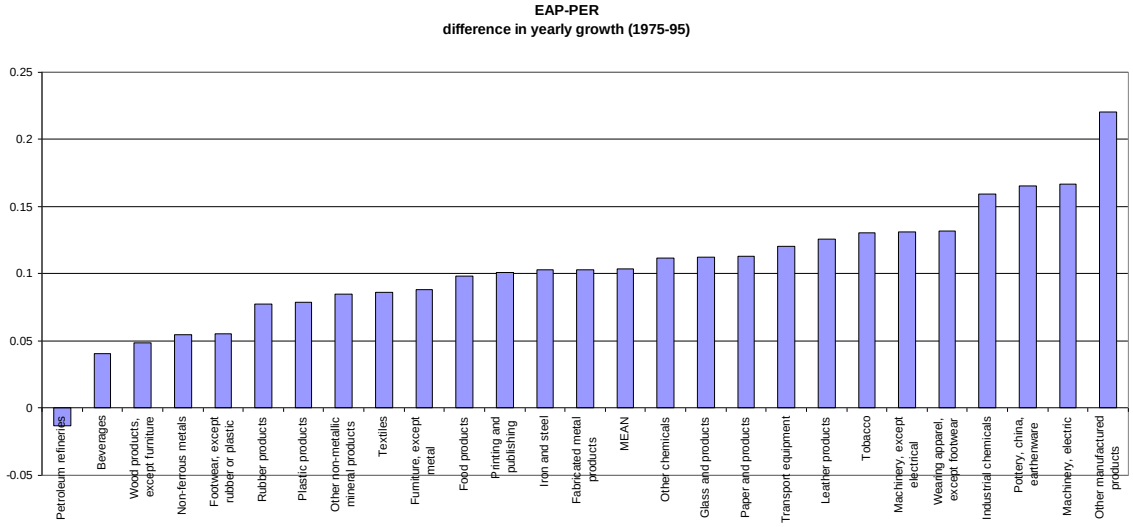


**Figure 18**

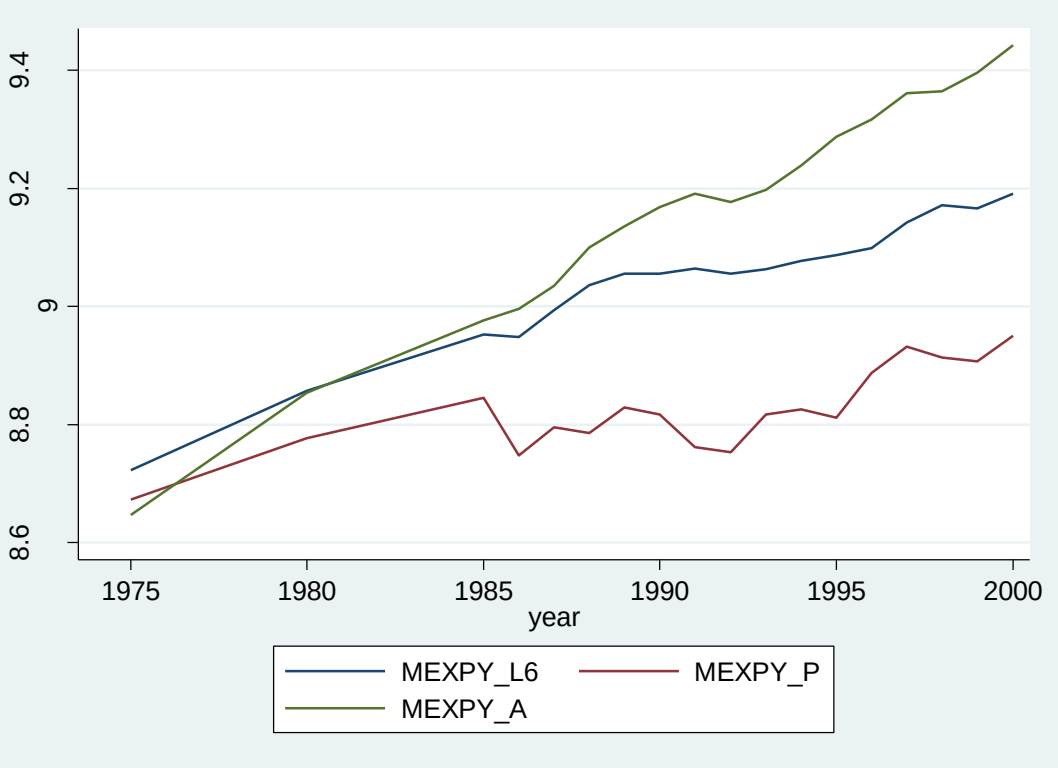



**Figure 19**

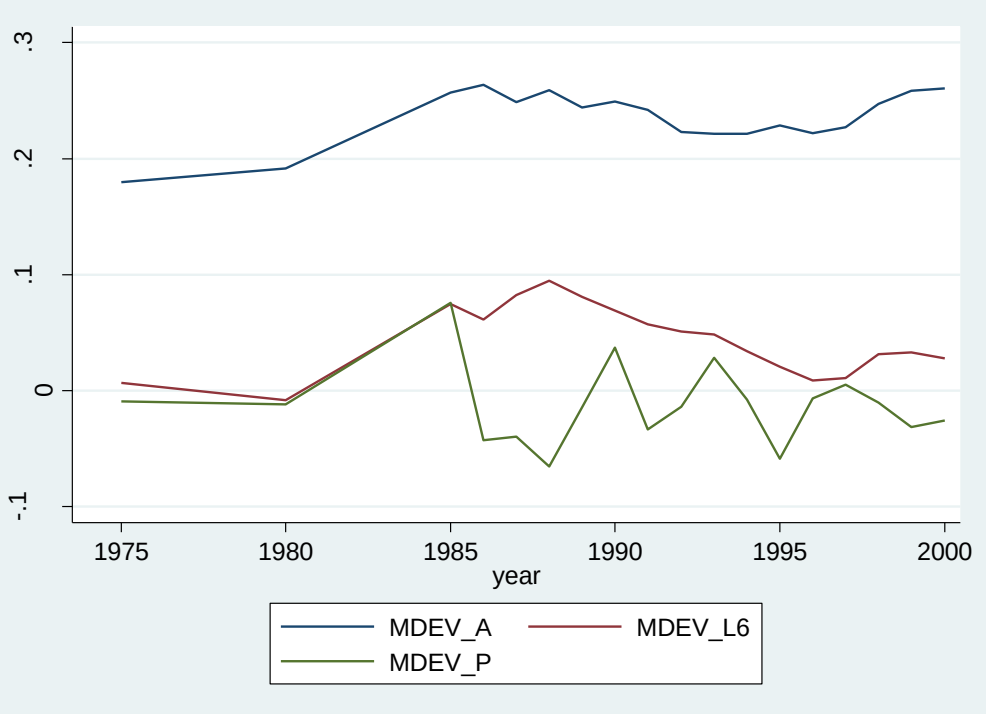


**Figure 20**

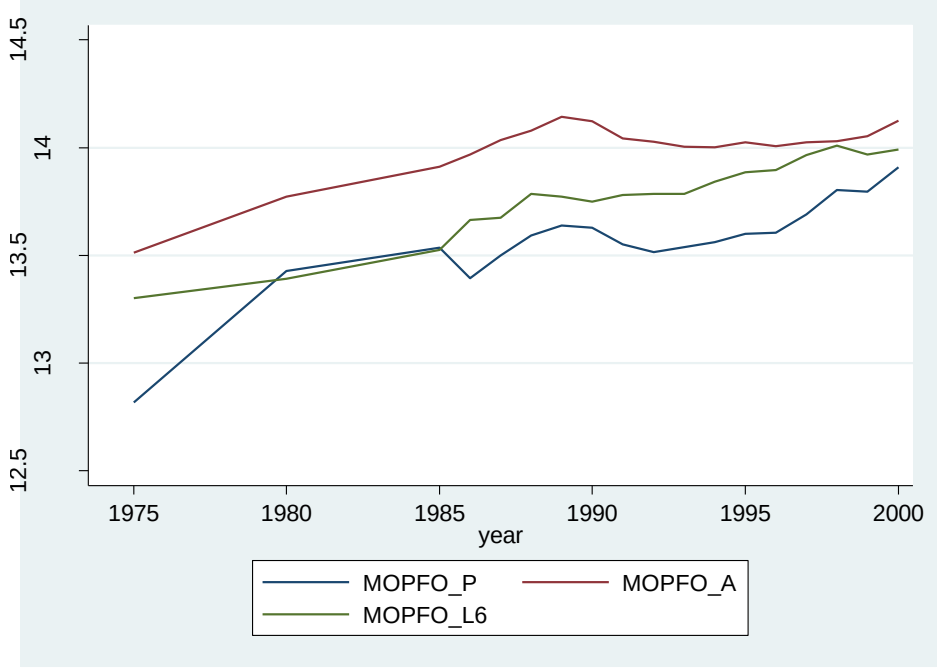



**Figure 21**

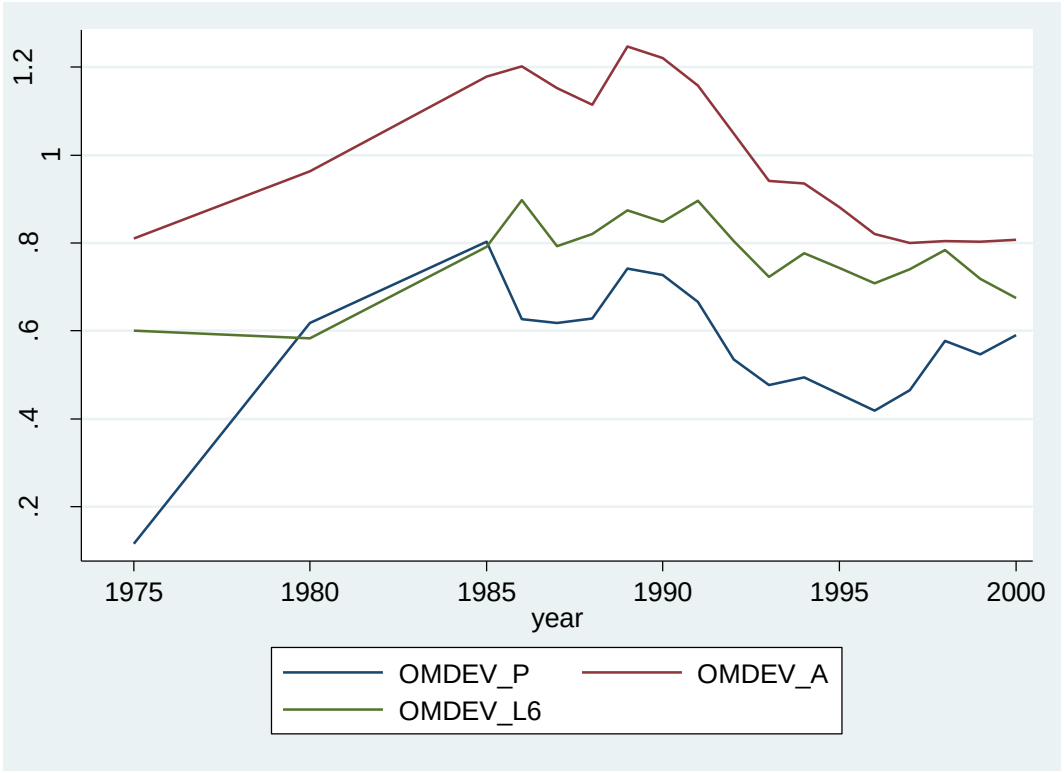


**Table 1: Output contractions in Peru**

| No. Episode | Peak | Trough | Recovery | Cumulative Output Contractions | Average Rate of Recovery | Number of years for full recovery |
|---|---|---|---|---|---|---|
| 1st | 1967 | 1968 | 1970 | -2.40% | 1.99% | 2 |
| 2nd | 1975 | 1978 | 1981 | -5.40% | 2.67% | 3 |
| 3rd | 1981 | 1983 | 1987 | -16.41% | 4.06% | 4 |
| 4th | 1987 | 1990 | 2005 | -28.23% | 2.27% | 15 |

**Table 2: Cumulative output contractions**

| | Mean | median | St dev | min | max | N.Obs |
|---|---|---|---|---|---|---|
| All Countries | -8.97% | -5.13% | 11.69% | -92.89% | -0.02% | 782 |
| LAC | -7.65% | -4.54% | 8.61% | -37.65% | -0.05% | 155 |
| Sub-Saharan Africa | -9.67% | -6.67% | 10.71% | -92.89% | -0.11% | 263 |
| East Asia & Pacific | -9.32% | -6.02% | 10.73% | -70.06% | -0.20% | 68 |
| South Asia | -3.65% | -2.65% | 4.29% | -22.50% | -0.32% | 28 |
| Europe & Central Asia | -23.17% | -12.65% | 22.15% | -76.86% | -0.16% | 48 |
| Middle East North | -10.29% | -4.92% | 13.02% | -58.16% | -0.13% | 57 |
| OECD | -2.39% | -1.52% | 2.67% | -13.19% | -0.02% | 94 |
| Non-OECD High | -9.14% | -6.16% | 11.39% | -52.08% | -0.03% | 69 |

**Table 3: Number of years for full recovery**

| | mean | median | St dev | min | max | N.Obs |
|---|---|---|---|---|---|---|
| All Countries | 2.5 | 1.0 | 2.7 | 1.0 | 23.0 | 782 |
| LAC | 2.8 | 2.0 | 3.5 | 1.0 | 23.0 | 155 |
| Sub-Saharan Africa | 2.6 | 2.0 | 2.7 | 1.0 | 21.0 | 263 |
| East Asia & Pacific | 2.5 | 2.0 | 2.3 | 1.0 | 14.0 | 68 |
| South Asia | 1.6 | 1.0 | 0.9 | 1.0 | 4.0 | 28 |
| Europe & Central Asia | 4.2 | 3.0 | 3.5 | 1.0 | 11.0 | 48 |
| Middle East North Africa | 2.3 | 1.0 | 2.6 | 1.0 | 14.0 | 57 |
| OECD | 1.7 | 1.0 | 1.5 | 1.0 | 9.0 | 94 |
| Other High Income countries | 2.0 | 1.0 | 1.5 | 1.0 | 8.0 | 69 |

**Table 4: Speed of recovery and Speed of Contraction**
Dep Var: Average Rate of Recovery

| | All Sample | LAC |
|---|---|---|
| Average Rate of Contraction | -0.294 | -0.262 |
| | (0.030)*** | (0.060)*** |
| Constant | 0.03 | 0.025 |
| | (0.002)*** | (0.003)*** |
| Observations | 782 | 155 |
| R-squared | 0.11 | 0.11 |

Standard errors in parentheses
* significant at 10%; ** significant at 5%; *** significant at 1%

**Table 5: Output contractions in Peru**

| No. Episode | Peak | Trough | Recovery | Cumulative Output Contractions | Average Rate of Recovery | Number of years for full recovery | Cost of the Crisis |
|---|---|---|---|---|---|---|---|
| 1st | 1967 | 1968 | 1970 | -2.40% | 1.99% | 2 | 0.02 |
| 2nd | 1975 | 1978 | 1981 | -5.40% | 2.67% | 3 | 0.11 |
| 3rd | 1981 | 1983 | 1987 | -16.41% | 4.06% | 4 | 0.56 |
| 4th | 1987 | 1990 | 2005 | -28.23% | 2.27% | 15 | 2.74 |

**Table 6: Cumulative Output Contraction vs. Terms of Trade**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| ΔTOT | 0.089 | 0.254 | 0.044 | 0.233 | 0.089 | 0.254 | 0.083 | 0.253 |
| | (0.039)** | (0.059)*** | (0.03) | (0.063)*** | (0.031)*** | (0.047)*** | (0.030)*** | (0.047)*** |
| Constant | -0.077 | -0.056 | -0.078 | -0.059 | -0.077 | -0.056 | -0.079 | -0.057 |
| | (0.006)*** | (0.007)*** | (0.005)*** | (0.010)*** | (0.006)*** | (0.009)*** | (0.006)*** | (0.009)*** |
| N. Obs | 262 | 141 | 262 | 141 | 262 | 141 | 262 | 141 |
| Fixed Effects | No | No | Country | Country | No | No | No | No |
| Sample | All | ΔTT <0 | All | ΔTT <0 | All | ΔTT <0 | All | ΔTT <0 |
| Method | OLS | OLS | Panel | Panel | Tobit | Tobit | Panel Probit | Panel Probit |

Robust standard errors in parentheses. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 7: Growth and Finance**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| EXFIN | 0.015 | 0.022 | 0.014 | 0.013 | 0.015 | 0.022 | 0.014 | 0.013 |
| | (3.91)*** | (2.13)** | (3.65)*** | (2.45)** | (3.91)*** | (2.13)** | (3.65)*** | (2.45)** |
| EXFIN*LAC | -0.011 | -0.028 | -0.005 | -0.014 | | | | |
| | (2.27)** | (1.90)* | (0.85) | (1.63) | | | | |
| EXFIN*PER | 0.010 | 0.075 | 0.018 | -0.020 | -0.000 | 0.047 | 0.013 | -0.034 |
| | (3.63)*** | (7.20)*** | (4.03)*** | (3.20)*** | (0.11) | (4.47)*** | (3.28)*** | (6.27)*** |
| EXFIN*OT | | | | | -0.009 | -0.029 | -0.003 | -0.012 |
| | | | | | (1.46) | (1.79)* | (0.32) | (0.92) |
| EXFIN*LA6 | | | | | -0.012 | -0.027 | -0.007 | -0.015 |
| | | | | | (2.64)** | (1.30) | (1.41) | (1.85)* |
| Observations | 9987 | 2524 | 4355 | 3108 | 9987 | 2524 | 4355 | 3108 |
| N. of cy | 396 | 104 | 169 | 123 | 396 | 104 | 169 | 123 |
| Period | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 |

Robust t statistics in parentheses. Standard errors are clustered at the country-year level. All regressions include country-year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%

**Table 8: Growth and Labor Intensity**

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| LI | 0.007 | -0.021 | 0.015 | 0.018 | 0.007 | -0.021 | 0.015 | 0.018 |
| | (1.10) | (2.23)** | (1.89)* | (1.99)* | (1.10) | (2.23)** | (1.89)* | (1.99)* |
| LI*LAC | -0.002 | 0.026 | -0.004 | -0.021 | | | | |
| | (0.22) | (2.38)** | (0.40) | (1.84)* | | | | |
| LI*PER | -0.011 | 0.037 | -0.038 | -0.012 | -0.013 | 0.063 | -0.041 | -0.033 |
| | (4.09)*** | (7.10)*** | (9.10)*** | (1.56) | (2.04)* | (6.63)*** | (5.10)*** | (3.75)*** |
| LI*OT | | | | | -0.005 | 0.021 | -0.004 | -0.031 |
| | | | | | (0.73) | (1.87)* | (0.41) | (2.17)** |
| LI*LA6 | | | | | 0.006 | 0.040 | -0.004 | -0.008 |
| | | | | | (0.64) | (3.38)*** | (0.29) | (0.61) |
| Observations | 13068 | 3441 | 5886 | 3741 | 13068 | 3441 | 5886 | 3741 |
| N. of cy | 533 | 142 | 237 | 154 | 533 | 142 | 237 | 154 |
| Period | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 |

Robust t statistics in parentheses. Standard errors are clustered at the country-year level. All regressions include country-year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%

## Table 9: Growth and Export Orientation

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| EXPOU | 0.002 | 0.016 | -0.005 | 0.000 | 0.002 | 0.016 | -0.005 | 0.000 |
| | (0.36) | (1.30) | (0.65) | (0.02) | (0.36) | (1.30) | (0.65) | (0.02) |
| EXPOU*LAC | 0.001 | 0.016 | -0.005 | 0.004 | | | | |
| | (0.08) | (0.67) | (0.51) | (0.25) | | | | |
| EXPOU*PER | -0.038 | 0.084 | -0.107 | -0.040 | -0.038 | 0.100 | -0.112 | -0.036 |
| | (5.47)*** | (0.90) | (13.05)*** | (5.95)*** | (5.51)*** | (8.15)*** | (16.14)*** | (2.42)** |
| EXPOU *OT | | | | | -0.003 | 0.021 | -0.015 | 0.005 |
| | | | | | (0.28) | (1.00) | (1.27) | (0.28) |
| EXPOU *LA6 | | | | | 0.007 | 0.008 | 0.014 | 0.003 |
| | | | | | (0.38) | (0.15) | (0.78) | (0.15) |
| Observations | 11785 | 2905 | 5303 | 3577 | 11785 | 2905 | 5303 | 3577 |
| N. of cy | 449 | 112 | 201 | 136 | 449 | 112 | 201 | 136 |
| Period | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 |

Robust t statistics in parentheses. Standard errors are clustered at the country-year level. All regressions include country-year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%

## Table 10: Growth and Export Orientation of Advanced Economies

| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
|---|---|---|---|---|---|---|---|---|
| EXPIND | 0.009 | 0.025 | 0.002 | 0.007 | 0.009 | 0.025 | 0.002 | 0.007 |
| | (2.28)** | (2.67)** | (0.42) | (0.90) | (2.28)** | (2.67)** | (0.42) | (0.90) |
| EXPIND*LAC | -0.013 | -0.030 | -0.000 | -0.018 | | | | |
| | (2.46)** | (2.50)** | (0.01) | (1.93)* | | | | |
| EXPIND*PER | -0.009 | -0.018 | 0.003 | -0.025 | -0.021 | -0.048 | 0.003 | -0.043 |
| | (2.68)** | (2.46)** | (0.75) | (5.16)*** | (5.20)*** | (5.03)*** | (0.56) | (5.32)*** |
| EXPIND*OTH | | | | | -0.014 | -0.027 | -0.004 | -0.020 |
| | | | | | (2.29)** | (2.22)** | (0.58) | (1.80)* |
| EXPIND*LA6 | | | | | -0.011 | -0.040 | 0.007 | -0.016 |
| | | | | | (1.89)* | (1.95)* | (1.13) | (1.67) |
| Observations | 13872 | 3737 | 6180 | 3955 | 13872 | 3737 | 6180 | 3955 |
| Number of cy | 546 | 148 | 239 | 159 | 546 | 148 | 239 | 159 |
| Period | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 | 1974-1996 | 1974-1979 | 1980-1989 | 1990-1996 |

Robust t statistics in parentheses. Standard errors are clustered at the country-year level. All regressions include country-year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%

## Table 11: Horserace Regressions

| | (1) | (2) | (3) | (4) |
|---|---|---|---|---|
| EXFIN | 0.014 | 0.014 | 0.014 | 0.014 |
| | (4.82)*** | (5.72)*** | (4.82)*** | (5.72)*** |
| EXFIN*LAC | -0.009 | -0.008 | | |
| | (1.74)* | (1.56) | | |
| EXIN*PER | 0.011 | 0.010 | 0.002 | 0.002 |
| | (2.63)** | (2.29)** | (0.73) | (0.91) |
| EXPIND | 0.012 | 0.015 | 0.012 | 0.015 |
| | (2.72)** | (4.10)*** | (2.72)** | (4.10)*** |
| EXPINF*LAC | -0.013 | -0.018 | | |
| | (2.04)* | (3.38)*** | | |
| EXPIND*PER | -0.017 | -0.015 | -0.031 | -0.033 |
| | (3.70)*** | (3.83)*** | (6.89)*** | (9.08)*** |
| LI | 0.013 | 0.010 | 0.013 | 0.010 |
| | (1.70) | (1.36) | (1.70) | (1.36) |
| LI*LAC | -0.005 | -0.002 | | |
| | (0.65) | (0.25) | | |
| LI*PER | -0.013 | -0.012 | -0.018 | -0.015 |
| | (3.65)*** | (2.66)** | (2.38)** | (1.92)* |
| EXPOU | | -0.005 | | -0.005 |
| | | (0.77) | | (0.77) |
| EXPOU*LAC | | 0.009 | | |
| | | (0.69) | | |
| EXPOU*PER | | -0.009 | | 0.000 |
| | | (0.79) | | (0.04) |
| EXFIN*OTH | | | -0.008 | -0.006 |
| | | | (1.02) | (0.79) |
| EXFIN*LA6 | | | -0.011 | -0.010 |
| | | | (1.98)* | (1.98)* |
| EXPIND*OTH | | | -0.014 | -0.021 |
| | | | (1.72) | (3.84)*** |
| EXPIND*LA6 | | | -0.012 | -0.015 |
| | | | (1.65) | (2.16)** |
| LI*OTH | | | -0.010 | -0.010 |
| | | | (1.26) | (1.13) |
| LI*LA6 | | | 0.000 | 0.003 |
| | | | (0.04) | (0.31) |
| EXPOU*OTH | | | | 0.006 |
| | | | | (0.28) |
| EXPOU*LA6 | | | | 0.010 |
| | | | | (0.75) |
| Constant | 0.129 | 0.136 | 0.128 | 0.135 |
| | (339.23)*** | (48.05)*** | (153.96)*** | (40.87)*** |
| Observations | 9502 | 8815 | 9502 | 8815 |
| Number of cy | 396 | 355 | 396 | 355 |
| Period | 1974-1996 | 1974-1996 | 1974-1996 | 1974-1996 |

Robust t statistics in parentheses. Standard errors are clustered at the country-year level. All regressions include country-year fixed effects. * significant at 10%; ** significant at 5%; *** significant at 1%