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Growth in the Dominican Republic and Haiti: Why has the Grass Been Greener on One Side of Hispaniola?

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IMF Working Paper

Western Hemisphere Department

**Growth in the Dominican Republic and Haiti:
Why has the Grass Been Greener on One Side of Hispaniola?**

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Abstract

The Dominican Republic and Haiti share the island of Hispaniola and are broadly similar in terms of geography and historical institutions, yet their growth performance has diverged remarkably. The countries had the same per capita real GDP in 1960 but, by 2005, the Dominican Republic's per capita real GDP had tripled whereas that of Haiti had halved. Drawing on the growth literature, the paper explains this divergence through a combined approach that includes a panel regression to study growth determinants across a broad group of countries, and a case study framework to better understand the specific policy decisions and external conditions that have shaped economic outcomes in the Dominican Republic and Haiti. The paper finds that initial conditions cannot fully explain the growth divergence, but rather policy decisions have played a central role in the growth trends of the two countries.

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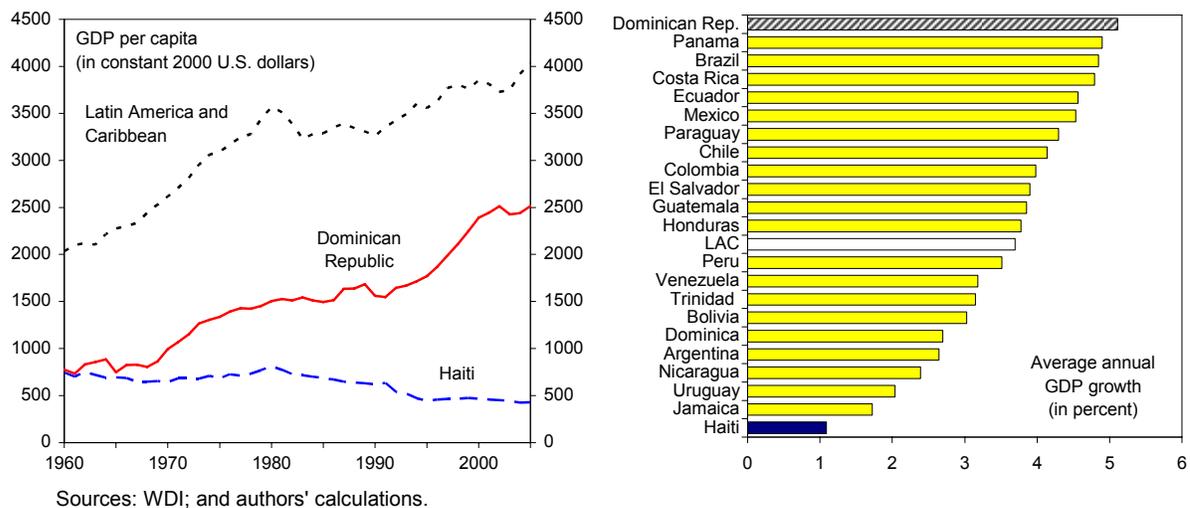
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I. INTRODUCTION

The Dominican Republic and Haiti present a quasi-natural experiment; the two countries share the island of Hispaniola and are broadly similar in terms of geography and historical institutions, yet their growth performance has diverged remarkably since 1960. In 1960, the Dominican Republic and Haiti had the same per capita real GDP at just below US\$800. However, by 2005, the Dominican Republic's per capita real GDP had tripled to about US\$2,500, whereas that of Haiti had halved to US\$430 (Figure 1). Accordingly, the Dominican Republic and Haiti have been at opposite ends of the spectrum within Latin America and the Caribbean (henceforth LAC) in terms of growth rates over the past 45 years, with the Dominican Republic achieving one of the highest average real GDP growth rates at above 5 percent and Haiti the lowest at about 1 percent (Figure 1).

Figure 1. GDP per capita, and real GDP growth rates in Latin America, 1960-2005



What explains this divergence in per capita real GDP of the two countries? The paper seeks to answer this question by examining two main issues: (i) to what extent the divergence is the inevitable result of disparities in initial conditions, and (ii) to what extent it is the result of differences in the policies pursued in each country since 1960. Drawing on the growth literature, the paper addresses these issues through a combined approach that includes a panel regression to study growth determinants across a broad group of countries, and a case study framework to better understand the specific policy decisions and external conditions that have shaped economic outcomes in the Dominican Republic and Haiti. To examine policy decisions, the paper uses growth determinants from the literature and introduces alternative variables of institutional quality and stabilization policies to help better explain the income divergence between the two countries. Furthermore, to facilitate comparisons, Latin America is used as a reference point throughout the paper.

When examining initial conditions, namely geography and historical institutions, we find great similarities between the Dominican Republic and Haiti, implying that initial conditions cannot explain their divergence in per capita real incomes. Moreover, based on the panel

regression and case study, we find that policy decisions since 1960 have played a central role. In particular, the Dominican Republic has consistently outperformed Haiti and the rest of Latin America in terms of structural measures and stabilization policies, while Haiti has been subject to numerous political shocks that have severely affected its growth performance.

The paper is structured as follows. Section II reviews findings in the growth literature on the Dominican Republic and Haiti. Section III examines the initial conditions, in particular geography and historical institutions. Section IV analyzes the policies pursued in the two countries, framing the discussion by an empirical endogenous growth model. Section V summarizes the findings and concludes.

II. LITERATURE REVIEW

Only a few studies have compared the growth performance of the Dominican Republic and Haiti, and these studies have provided mostly qualitative discussions. Among the well-known is the chapter in Jared Diamond's book "Collapse" (2005). Although Diamond focuses on environmental policies, it can be inferred from his arguments that higher population density and lower rainfall have been the main factors behind the more rapid deforestation and loss of soil fertility on the Haitian side of Hispaniola, with adverse consequences for agricultural production and therefore growth performance. Similarly, Lundahl (2001) argues that Haiti is the poorest country in the western hemisphere because of the interplay between population growth and the destruction of arable land. He explains that the increase in the rural labor force has led to an expansion of subsistence food crops to the detriment of export crops, in the context of decreasing international food commodity prices.

Other studies have found that economic performance in the Dominican Republic has been favored by political and macroeconomic stability. Bulmer-Thomas (2001) finds that, for the Caribbean in general, improvements in per capita GDP are linked to higher exports per capita, the quality of institutions, and stability of the macroeconomic framework. The World Bank (2006b) also argues that the Dominican Republic experienced a more enabling environment for private investment than Haiti due to political stability and stable macroeconomic conditions over prolonged periods that allowed it to follow a more diversified and outward oriented growth strategy. In addition, IMF (2001) argues that growth in the Dominican Republic during the 1990s was anchored by capital formation and strong productivity growth, while trade liberalization encouraged private investment and output growth.

III. INITIAL CONDITIONS

We examine two initial conditions that the growth literature highlights as the most likely to influence long-term growth performance: geography and historical institutions. While the absence of national accounts prior to 1960 does not allow us to determine exactly at what point in time the Dominican Republic started growing faster than Haiti, this analysis helps us determine if the divergence started long before 1960.

A. Geography

Geography plays a direct role in shaping a country's growth performance. It determines the quality of natural resources, the productivity of land, the public health environment, and the extent to which a country can become integrated with world markets. We find no substantial differences between the Dominican Republic and Haiti on these grounds, from which we can infer that that geography cannot explain the growth divergence between the two countries.

- Gallup, Sachs, and Mellinger (1998) argue that: (i) tropical regions are hindered in development relative to temperate regions; (ii) coastal regions are strongly favored in development relative to the hinterlands; and (iii) high population density is favorable for economic development in coastal regions with good access to trade. However, these factors do not explain the divergence between the two countries as they have the same location, ocean access, and climate, while Haiti has historically had twice the population density of the Dominican Republic.²
- As explained in the literature review, Diamond (2005) argues that rapid deforestation, caused by lower rainfall and higher population density, has led to lower growth in Haiti compared to the Dominican Republic. However, a 1941 study on rainfall in Hispaniola did not find evidence that Haiti had lower rainfall than the Dominican Republic. Based on data for an average of 11 years, the study reveals that rainfall was comparable in the two countries.³ Likewise, even if lower rainfall had in fact been an issue for Haiti, it did not appear to be an obstacle to agricultural production in the 18th century when Haiti was one of the richest colonies in the French empire.⁴ Moreover, deforestation on the Haitian side can be considered a more recent phenomenon as, even as late as 1960, the amount of arable land in both countries was comparable at about 20 hectares per person.⁵
- Diamond's argument about population density runs contrary to cross-country evidence about the potential benefits of higher population density, such as that found by Gallup et al. (1998) and Klasen and Nestmann (2004) who argue that population density generates the linkages, infrastructure, demand, and effective market size for technological innovations that fuel growth. Figure 2 illustrates the relationship between population density and growth. Between 1960 and 2005, many of the countries with the highest per

² Haiti is about half the size of the Dominican Republic, but has roughly the same population.

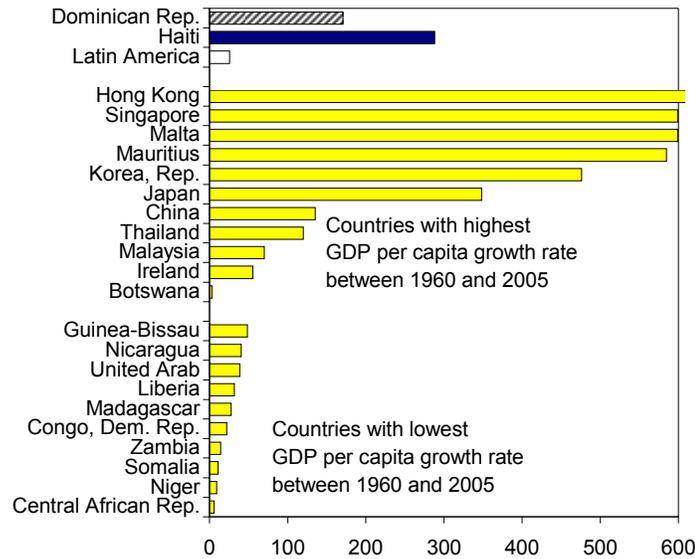
³ See Alpert (1941).

⁴ In the 1780s, Haiti, nicknamed the "Pearl of the Antilles", produced about 40 percent of all the sugar and 60 percent of all the coffee consumed in Europe.

⁵ Looking at GDP growth by sector over the period 1960-2000 reveals that performance of the primary sector did not drive overall growth results in either country. In the Dominican Republic, the primary sector explains about 12.5 percent of the total average growth rate, while the secondary and tertiary sectors explain 32.5 percent and 55 percent respectively. Similarly, in Haiti, the primary sector explains less than 10 percent of the total average growth rate, while the secondary and tertiary sectors explain about 45 percent each.

capita real GDP growth had high population densities—in some cases even higher than in Haiti—while countries with the lowest per capita real GDP growth had low population densities.

**Figure 2. Population density, 2000
(people per square kilometer)**



Sources: WDI; and authors' calculations.

B. Historical institutions

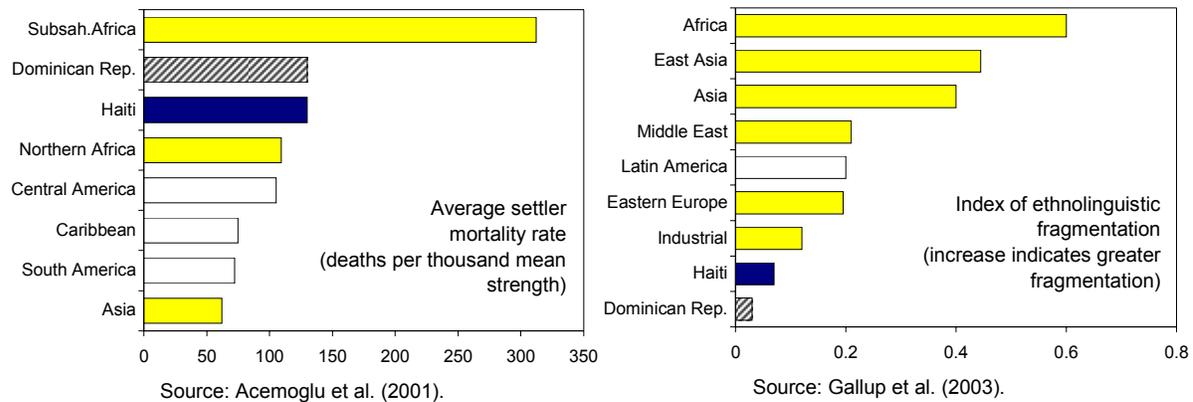
A growing body of literature argues that institutions are important for initiating and sustaining economic growth. While institutions are clearly endogenous and evolve with economic performance, in this section we focus on the influence of historical institutions to understand if economic performance since the 1960s has been driven mainly by historical legacies or rather by more recent policy developments. We find that the historical institutions of the Dominican Republic and Haiti were very similar, implying that this cannot fully explain the growth divergence.⁶

- Acemoglu, Johnson, and Robinson (2001) argue that colonial origin matters for growth. They argue that Europeans were more likely to set up extractive institutions in places where they faced high mortality rates and could not settle, resulting in poor institutions, which have persisted to the present. However, the Dominican Republic and Haiti had the same settler mortality rates as estimated by these authors, therefore it would be expected that both countries had equally extractive institutions (Figure 3).

⁶ Appendix 1 provides a chronology of political events for both the Dominican Republic and Haiti.

- La Porta, et al. (1998) find that countries that are poor, close to the equator, ethnolinguistically heterogeneous, use French or socialist laws, or have high proportions of Catholics or Muslims exhibit inferior government performance. Yet, there are no differences between the Dominican Republic and Haiti on these fronts: both have low ethnolinguistic fragmentation, both use French law, and both have mainly Catholic populations (Figure 3).

Figure 3. Settler mortality and ethnolinguistic fragmentation



- In terms of the impact of the colonial power, the literature does not provide evidence of significant differences between Spanish and French colonial rule. Several studies have used dummy variables for French, British, and Spanish colonies to try to explain growth, corruption, and policy volatility, but have found only the British dummy variable to be significant.⁷
- The quality of institutions was poor in both countries until early in the 20th century—at the time of the U.S. military occupation—with arguably greater political instability in the Dominican Republic. Between independence in 1804 and the U.S. military occupation in 1915, Haiti had 33 heads of state, with an average time in power of 3.4 years. Meanwhile, between independence in 1844 and the U.S. military occupation in 1916, the Dominican Republic had 61 heads of state, with an average time in power of only 1.2 years. Furthermore, although serving U.S. interests, the U.S. military occupation of the island was linked to internal struggles and violence in both countries.⁸ Prior to U.S. occupation in 1916, the assassination in 1911 of president Cáceres in the Dominican Republic led to various revolutions, economic chaos, and a near-collapse of government institutions.

⁷ Acemoglu et al. (2001) add British and French colony dummies to their regression. The French dummy was not significant, implying that French colonies were no different from the omitted group. Treisman (2000) and Sirimaneetham (2006) add French, British, and Spanish colony dummies in their studies on the effect of colonial heritage on corruption and policy volatility. In both papers, only the British dummy was significant.

⁸ U.S. expansion into the Caribbean Basin—at a time when the United States was pursuing the construction of the Panama canal—was supported by the Monroe Doctrine, originally intended to keep European nations out of Latin America, and Theodore Roosevelt's corollary to this doctrine, which stated that the United States had a moral mandate to enforce "proper" behavior among Latin American countries.

Similarly, preceding U.S. intervention in 1915, six different Haitian presidents since 1911 had been killed or forced into exile, with revolutions leading to economic disorder and growing external indebtedness.

In summary, strong similarities in the initial conditions in the Dominican Republic and Haiti indicate that these cannot explain the divergence in real incomes of the two countries since 1960. However, this finding does not imply that all conditions were identical going into the 1960s. In fact, by 1960, Haiti was already trailing the Dominican Republic in some social indicators, such as life expectancy and illiteracy rates.⁹ Nonetheless, we find that these differences are likely to have emerged closer to 1960 and were not inherited from the 19th or early 20th centuries. As mentioned earlier, lack of national accounts prior to 1960 does not allow us to determine the exact point in time when the Dominican Republic started to outpace Haiti, but differences are likely to have started to emerge in part as a result of the policies implemented following the U.S. military occupation. In general terms, the outcomes of U.S. intervention in both countries were akin: order was broadly restored; the countries' budgets were balanced and debt reduced; and infrastructure was expanded, including new roads, telephone connections, port facilities, and public health and education services. However ensuing governments in Haiti practiced only rent-seeking behavior without efforts to maintain public infrastructure and social services, while the Trujillo regime in the Dominican Republic promoted agriculture, industry, and public works. The next section looks at the policies pursued in each country since 1960, when national accounts became available, to shed more light on the factors contributing to the divergence in per capita real GDP.

IV. ANALYSIS OF POLICIES PURSUED

To analyze economic performance and related policies in the Dominican Republic and Haiti since 1960, the paper relies on a combination of approaches, specifically growth accounting, panel regressions, and case studies. These approaches are complementary as growth accounting provides a broad overview of economic performance and resource endowments in Haiti and the Dominican Republic, the panel regressions provide a benchmark to compare the performance of the two countries with an “average economy” facing similar shocks, while the case study allows us to capture the heterogeneity in the conditions and processes that have governed the growth experience in each country.

A. Growth accounting

A standard growth accounting exercise shows that total factor productivity (TFP) has been an important factor for both the Dominican Republic and Haiti (Figure 4).¹⁰ In broad terms, the

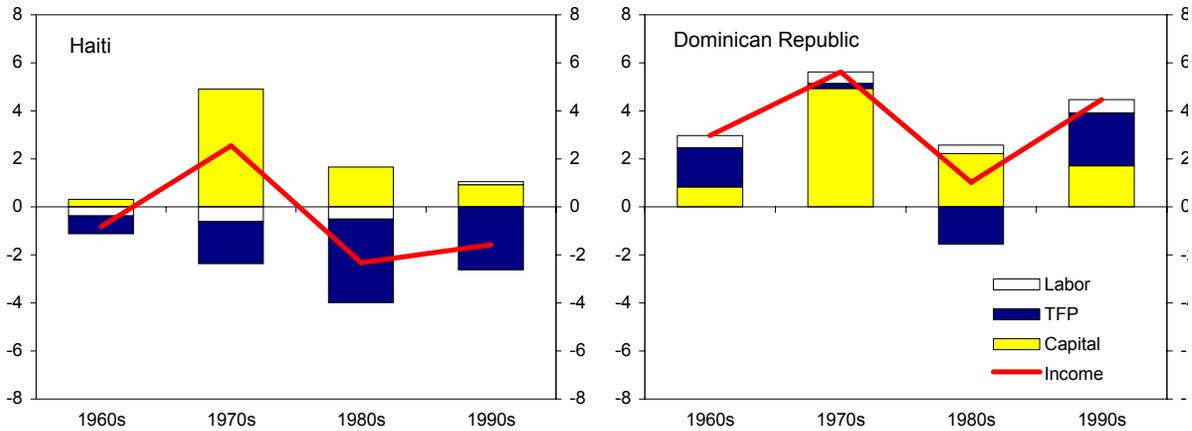
⁹ In 1960, life expectancy at birth was 44 years in Haiti compared to 54 years in the Dominican Republic. The under 5 five mortality rate per thousand children was 253 in Haiti compared to 149 in the Dominican Republic. The adult illiteracy rate above age 15 (data available for 1970) was 78 percent in Haiti and only 33 percent in the Dominican Republic.

¹⁰ The capital stock data were constructed using aggregate investment figures. We use a perpetual inventory method to compute capital stocks, with a share of capital income in national output of 0.4 (different values do

(continued...)

Dominican Republic had favorable growth trends between 1960 and 2000, largely fueled by productivity gains and capital accumulation. In contrast, economic performance in Haiti has been dismal, with negative TFP in all four decades. Real growth in the 1970s, the only period in which Haiti had positive per capita GDP growth performance, was achieved through strong investment efforts. The empirical endogenous growth model explained below will provide greater insight into the factors that underlie both TFP and capital accumulation.

Figure 4. Contribution to GDP per capita growth (annual average over 10-year periods, in percent)

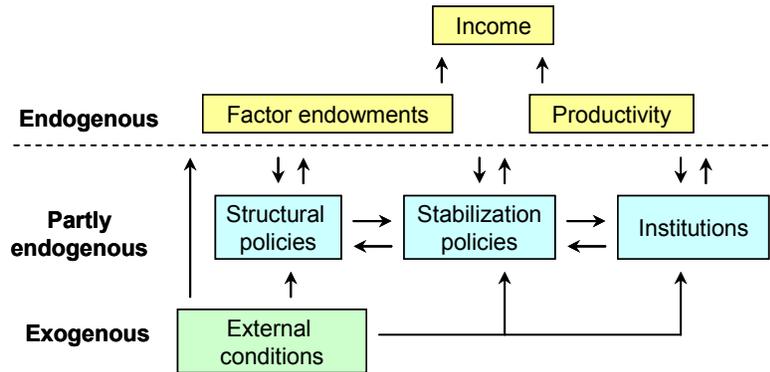


Sources: IFS; WDI; and authors' calculations.

B. Empirical Endogenous Growth Model

The empirical endogenous growth model identifies partly endogenous variables (structural policies, stabilization policies, and institutions) and exogenous variables (external conditions) (Figure 5). Our choice of growth determinants was guided by two criteria: that these variables are widely used in the growth literature and that they capture the diverse aspects of policies and shocks in Haiti and the Dominican Republic (Box 1).

Figure 5. Endogenous growth model



not alter the conclusions). We do not control for capacity utilization or quality of human capital due to data limitations.

Box 1. Literature survey

Below is a brief literature survey of the main reference papers used to guide our choice of explanatory variables.

Stabilization policies. Using regression analysis, Fischer (1993) finds that high inflation, distorted foreign exchange markets, and large budget deficits have a negative effect on economic growth. Inflation reduces growth by reducing investment and productivity growth; large budget deficits also reduce both capital accumulation and productivity growth. Sahay and Goyal (2006) find that on average in Latin America volatility of inflation and devaluation was higher in low growth periods as compared to high growth periods, and fiscal balances were worse and their volatility higher during low growth periods.

Human capital formation. Lucas (1993) finds that the main engine of growth is the accumulation of human capital and the main source of differences in living standards among nations is differences in human capital. Romer (1989) also finds that the growth of total factor productivity depends on the level of human capital, reflecting the idea that more educated and skilled people are more inventive and innovative.

Financial depth. Schumpeter (1934) argues that financial intermediation alters the path of economic progress by affecting the allocation of savings with consequent positive impacts on productivity growth and technological change. King and Levine (1993a, b) find that higher levels of financial development are positively associated with faster rates of economic growth, physical capital accumulation, and economic efficiency improvements.

Trade openness. Miller and Upadhyay (2000) find that trade openness generally benefits total factor productivity by improving the terms of trade, and lowering the real value of the domestic currency. Sachs et al. (1995) find that trade openness fosters growth and Edwards (1997) finds that more open countries have experienced faster productivity growth. Dollar and Kraay (2004) also find that increased trade has encouraged growth and poverty reduction, and has contributed to narrowing the gaps between rich and poor countries.

Political stability. Corbo and Rojas (1993) find that political instability has a highly negative effect on investment rates, by creating an environment of high uncertainty. Barro (1991) sustains that there is a negative relationship between political instability and investment and growth, due to its adverse effects on property rights.

Terms of trade. Findings on the effects of terms of trade shocks are not consistent. Easterly et al. (1993) find that terms of trade shocks play a large role in explaining variance in growth. Perez and Moreno-Brid (1999) find that the terms of trade may not necessarily explain the long-term growth of Central American and Caribbean economies, as terms of trade have been rather stable for these countries, including for the Dominican Republic and Haiti.

Global external conditions. Easterly (2001) finds that worldwide factors such as the increase in international interest rates, the growth slowdown of industrial countries, the rise in the debt burden of developing economies, and the development of skill-based technological innovations explain the marked decrease in developing countries' growth rates in the 1980s and 1990s with respect to the previous two decades.

Based on this framework, a dynamic panel model of per capita real GDP growth is estimated to assess the relative importance of these growth determinants. The reduced-form equation builds on the work by Loayza, Fajnzylber and Calderón (2005), modifying their specification to better explain developments in the Dominican Republic and Haiti, as will be described in detail further below.

Loayza, Fajnzylber, and Calderón (2005)—LFC Model

Loayza, Fajnzylber and Calderón (2005) use the following variation of the standard growth regression:

$$y_{i,t} - y_{i,t-1} = \alpha y_{i,t-1} + \alpha_C (y_{i,t-1} - y_{i,t-1}^T) + \beta' X_{i,t} + \mu_t + \eta_i + \varepsilon_{i,t}$$

where y is log of output per capita, y^T represents the trend component of output per capita, $y_{i,t-1} - y_{i,t-1}^T$ is the output gap at the start of the period, X is a set of additional variables postulated as growth determinants, μ_t is a period-specific effect, η_i represents unobserved country-specific factors, and ε is the regression residual. The inclusion of the initial output gap as an explanatory variable controls for cyclical output movements in order to differentiate between transitional convergence (initial GDP per capita, y_{t-1})—based on the conditional convergence hypothesis—and cyclical reversion to the long-run trend (y_{t-1}^T).

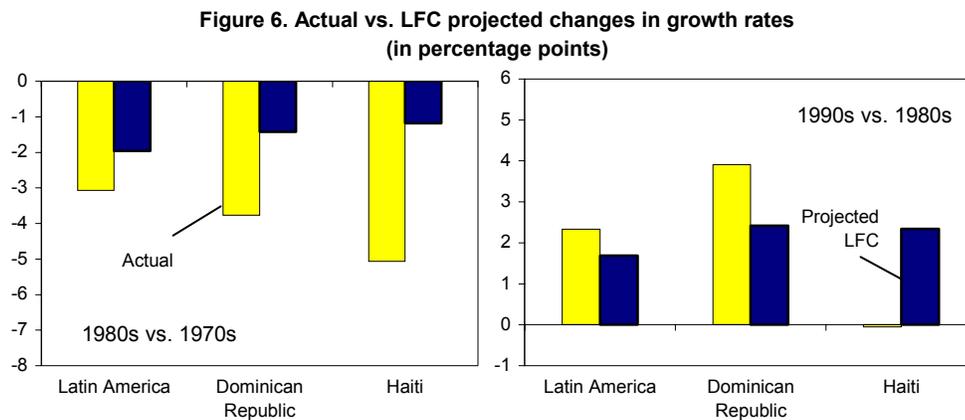
Table 1 describes the growth determinants included in the LFC model, which can be grouped as in the proposed empirical endogenous growth model.¹¹

Table 1. Variables used in the LFC model	
Transitional convergence (initial GDP per capita)	
Cyclical reversion (initial output gap)	
Structural policies	
	Education (secondary school enrollment)
	Financial depth (private domestic credit /GDP)
	Government burden (government consumption /GDP)
	Public infrastructure (main phone lines per capita)
	Trade openness (structure-adjusted trade /GDP)
Stabilization policies	
	Lack of price stability (inflation rate)
	Cyclical volatility (standard deviation of output gap)
	Real exchange rate overvaluation (index of real exchange rate overvaluation)
	Systemic banking crises (frequency of years under crisis)
Institutions	
	Governance indicator (International Country Risk Guide- ICRG)
External conditions	
	Terms of trade shocks (growth rate of terms of trade)
Source: Loayza et al. (2005)	

¹¹ See Appendix 2 for details on definitions and sources.

The LFC model is estimated using a system generalized method of moments (GMM) estimator for a sample of 79 countries over the period 1961-1999.¹² The regression analysis is conducted using five-year, ten-year, and thirty-year averages, but for conciseness we will refer only to the ten-year results.

Figure 6 shows that in broad terms, the LFC model does well in explaining the direction of the changes in growth rates in LAC. The results show that the Dominican Republic, Haiti, and LAC all experienced a decline in their growth rates in the 1980s, while economic recovery in the 1990s was stronger in the Dominican Republic than for the LAC average. However, the LFC model does not perform as well in explaining the magnitude of change, especially for Haiti. Therefore, to improve the fit of the model, we propose some modifications to the LFC specification.



Sources: Loayza et al. (2005); and authors' calculations.

Improving the fit of the LFC model

Looking more deeply into the behavior of the different growth determinants for the Dominican Republic, Haiti, and LAC, we identify variables in the LFC model that can be enhanced to improve the fit of the model. In particular, we propose alternative measures for institutional quality and stabilization policies.

Institutional quality

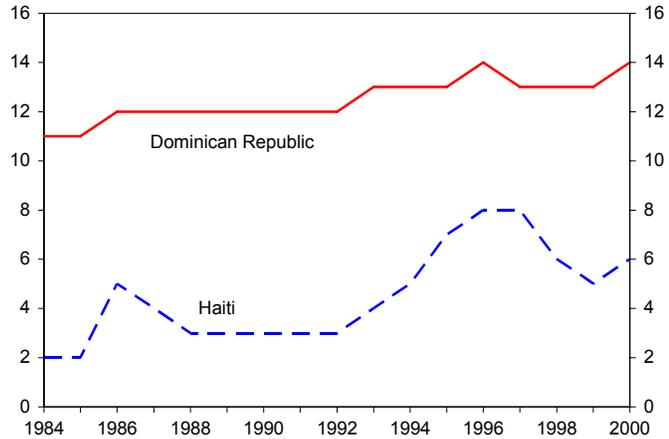
LFC uses an International Country Risk Guide (ICRG) index as a measure of institutional quality that captures the prevalence of law and order, quality of bureaucracy, absence of corruption, and accountability of public officials. However, this variable is not found to have a statistically significant impact on economic growth. This may be the case because the time series is too short, as ICRG data are only available from 1984 onwards, and because the ICRG is a subjective indicator that measures perceptions of change in institutional quality, not the actual change. Furthermore, for the particular case of Haiti, the ICRG indicator does not provide an adequate picture of important political and institutional developments as it

¹² See Appendix 3 for the list of countries included in the panel regression.

shows improvement in institutional quality during the most politically unstable periods, that is, the mid-1980s and early 1990s (Figure 7).

Another factor—directly linked to institutional quality—that has been found to have a negative impact on growth is political instability (Barro, 1991; and Corbo and Rojas, 1993). We propose using changes in political regime as a proxy for political instability. Information on political regimes is drawn from the Polity IV database, which provides a unified polity scale that ranges from +10 (strongly democratic regime) to -10 (strongly autocratic regime) on an annual basis for all countries between 1800 and 2004. We measure political instability as the absolute sum of changes in political regime, as determined by the polity scale. That is, when a country moves from a democratic regime to an autocratic regime (or the reverse), the political instability measure will be higher than if a country faces small variations within a democratic regime (or within an autocratic one).

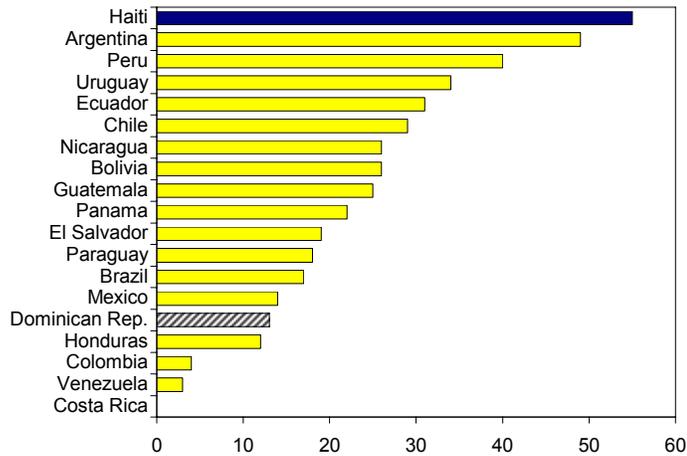
Figure 7. ICRG institutions index
(increase indicates better institutions)



Sources: ICRG; and authors' calculations.

Figure 8 shows the contrast between Haiti and the Dominican Republic in terms of political instability. Haiti has faced much more political instability than the rest of Latin America, with several democratically-elected regimes quickly turned over by coups or elected leaders becoming more authoritarian. On the other end of the spectrum, the Dominican Republic has been among the most stable countries in the region, in particular since 1970 when the Dominican Republic's growth rate began to outpace that of Latin America.¹³

Figure 8. Magnitude of regime changes, 1970-2003
(increase indicates more political instability)

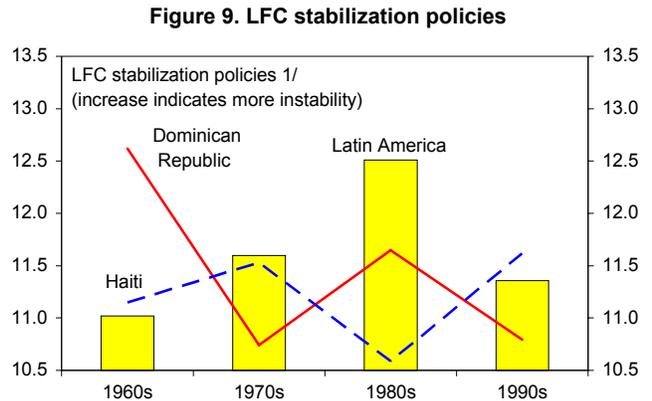


Sources: Polity IV database; and authors' calculations.

¹³ Since 1960, Haiti has experienced numerous regime changes, including following the fraudulent elections of Papa Doc (1961); the death of Papa Doc (1971); the freeing of political prisoners and loosening of control over the press by Baby Doc (1977); the departure of Baby Doc (1986); failed elections and coups d'etat (1988-1991); return of Aristide (1994); the dissolving of Parliament (1999); and irregular elections (2000). Regime changes
(continued...)

Macroeconomic stability

We find that the stabilization measures used by LFC have several drawbacks related to measurement difficulties. In particular, a credible estimation of potential output is complex, especially in countries that face structural breaks (through conflict or structural reform), making the output gap difficult to measure. Determining the real exchange rate equilibrium to calculate overvaluation of the exchange rate is also tricky. These issues are evident in the case of Haiti during the 1980s, where continuous poor economic performance resulted in low output gap volatility, implying better stabilization policies according to LFC variables, but clearly contrary to overall developments in the economy (Figure 9).



Sources: Loayza et al. (2005); IFS; and authors' calculations.
1/ Combines inflation, cyclical volatility, and real exchange rate overvaluation for illustrative purposes only. The variables are used independently in the regression analysis.

Alternatively, in order to get an overall picture of the stance of stabilization policies, we propose a measure of macroeconomic instability that combines inflation, the fiscal deficit, exchange rate volatility, and international reserves losses. The need to look at various factors simultaneously to determine the stance of macroeconomic policies has been underscored by Fischer (1993) and Sahay and Goyal (2006). A combined indicator is considered to be more appropriate because any variable taken in isolation provides only partial information. For example, inflation gives a good indicator of the stance of monetary and fiscal policies, but may be biased by price controls. However, price controls would show up as higher fiscal deficits when funds are transferred to price control agencies. Moreover, while price controls might keep inflation down, uncertainty and lack of confidence in financial policies would put pressure on the exchange rate. Exchange rate pressures may not be evident in the context of a fixed exchange rate regime, but the authorities' efforts to maintain foreign exchange stability would show up as changes in international reserve holdings.

More specifically, a macroeconomic instability index (mi) is constructed as the weighted sum of inflation rates and exchange rate volatility, minus reserve accumulation as a percent of base money at the beginning of the period, and minus the fiscal balance as a percent of GDP. Therefore, a higher value for the index indicates more instability. Each variable is weighted by the inverse of its standard deviation. Standardizing the variables ensures that all the components of the index have equal sample volatilities so that movements in the index are

in the Dominican Republic have been few, especially since 1970, and include the death of Trujillo (1961); coup and civil war (1962-63); Balaguer's defeat in the elections (1978); and Balaguer's agreement to cut his term short following rigged elections (1994). See Appendix 1

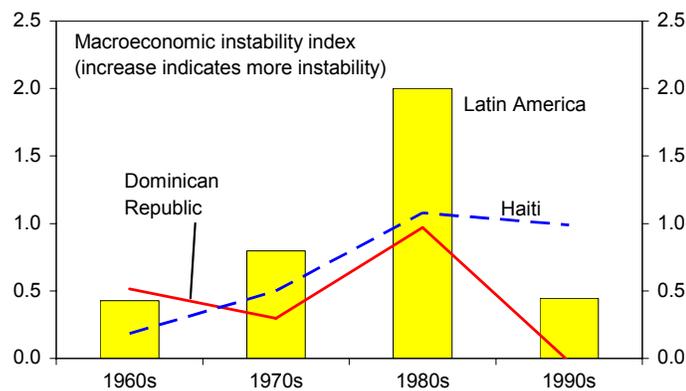
not solely driven by the most volatile component. While the methodology for constructing the mi index draws from indicators of speculative pressure in the crisis literature, to our knowledge, this particular index has not been used elsewhere.¹⁴ The index is constructed as follows:

$$mi_{it} = \frac{\ln\left(\frac{cpi_{it}}{cpi_{i,t-1}}\right)}{\sigma_{cpi}} + \frac{\ln\left(\frac{er_{it}}{er_{i,t-1}}\right)}{\sigma_{er}} - \frac{\ln\left(\frac{res_{it} - res_{i,t-1}}{bm_{i,t-1}}\right)}{\sigma_{res}} - \frac{\ln\left(\frac{fbal_{it}}{gdp_{it}}\right)}{\sigma_{fbal}}$$

where mi is the macroeconomic instability index for country i at time t , cpi is the consumer price index, er is the exchange rate of national currency to US dollar, res is the stock of international reserves, bm is base money, $fbal$ is the fiscal balance, gdp is nominal GDP, and σ is the standard deviation of each variable.

Figure 10 illustrates the behavior of the mi index for the Dominican Republic and Haiti. Since the 1970s, the Dominican Republic has outperformed Haiti and Latin America on average, in terms of stabilization policies. Meanwhile, Haiti's performance in terms of stabilization policies was better than that of the region until the 1990s. This was largely the result of a conservative monetary policy, which consisted of a *de facto* currency board arrangement until 1979 and a tight policy stance during the 1980s with high reserve requirements and high real interest rates.¹⁵ Further details on stabilization policies in both countries are provided in the following section.

Figure 10. Indicator of macroeconomic instability



Sources: IFS; and authors' calculations.

¹⁴ See Eichengreen et al. (1995), Kaminsky and Reinhart (1999), and Herrera and Garcia (1999). Sensitivity analysis indicated that the panel regression results are largely robust to the choice of weighting scheme.

¹⁵ Until 1979, the central bank law stipulated that the amount of currency issued had to be fully covered by foreign reserves in order to preserve the exchange rate parity.

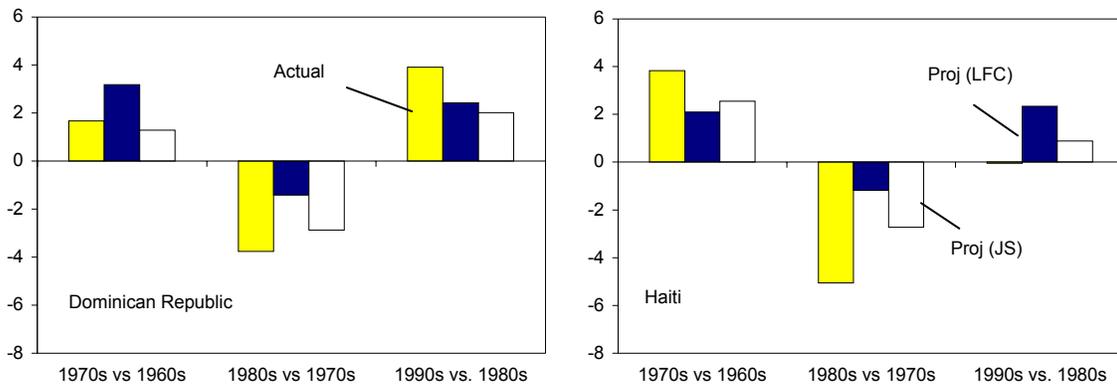
Panel regression

We use dynamic panel analysis to test the significance of the two proposed variables discussed above. We follow the basic approach of LFC, modifying the explanatory variables by: (i) replacing the ICRG index with the regime change variable based on the Polity IV database; and (ii) replacing the four LFC stabilization policy variables (inflation rate, standard deviation of output gap, real exchange rate overvaluation, and systemic banking crises) with the composite macroeconomic instability index (*mi*). We use the same 79 country sample, with five- and ten-year intervals between 1961 and 1999, but discuss only 10-year results for simplicity and conciseness.¹⁶ The panel regression is estimated with a GMM-IV system estimator using lagged levels and first-differences of the variables as instruments, and imposing robust two-step standard errors (Table 2).

C. Growth Determinants

The analysis of changes in growth rates between decades reveals that the model improves the fit for both the Dominican Republic and Haiti, as well as for Latin America (Figure 11). In the case of the Dominican Republic, the model is able to better predict the changes in growth trends in the 1970s and 1980s, though some of the growth boom of 1990s remains unexplained. For Haiti, the model provides a better explanation of developments over the entire period.

Figure 11. Actual vs. LFC and JS projected changes in growth rates (in percentage points)



¹⁶ Both period intervals yield similar results; the coefficients have identical signs and are broadly of the same order of magnitude; however, the significance of these coefficients is lower for the 10-year estimation largely due to lower degrees of freedom.

Table 2. Results of panel regressions on real per capita GDP

Growth determinants	GMM-IV system 5-year periods	GMM-IV system 10-year periods
Transitional convergence (initial GDP per capita, in logs)	-0.0245 [0.023]	-0.0495 [0.089]
Cyclical reversion (initial output gap, in logs)	-0.2273 [0.027]	-0.0167 [0.818]
Structural policies		
Gross secondary school enrollment (in logs)	0.0186 [0.093]	0.0145 [0.483]
Private domestic credit /GDP (in logs)	0.0038 [0.514]	0.0092 [0.118]
Trade /GDP (in logs)	0.0139 [0.139]	0.0101 [0.269]
Government consumption /GDP (in logs)	-0.0208 [0.064]	-0.0031 [0.819]
Main phone lines per capita (in logs)	0.0112 [0.174]	0.0246 [0.002]
Stabilization policies		
Macroeconomic instability index	-0.0024 [0.063]	-0.0021 [0.211]
Institutions		
Polity IV index	-0.0016 [0.004]	-0.0003 [0.620]
External conditions		
Growth rate of terms of trade	0.0197 [0.520]	0.0592 [0.323]
Period shifts		
1966-70	0.0058	
1971-75	0.0038	
1976-80	-0.0010	
1981-85	-0.0227 **	
1986-90	-0.0161	
1991-95	-0.0230 *	
1996-99	-0.0287 **	
1970s		-0.0081
1980s		-0.0288 ***
1990s		-0.0403 **
Intercept	0.0851	0.3010 *
Specification tests (<i>p</i> values)		
Hansen test of overidentifying restrictions	1.000	0.412
First-order serial correlation	0.000	0.065
Second-order serial correlation	0.278	0.159

1. *p* values are in brackets. ***, **, and * denote significance at 1 percent, 5 percent, and 10 percent respectively.

2. Significance of coefficients is lower for the estimation with 10-year periods largely due to lower degrees of freedom. In addition, imposing robust two-step standard errors considerably lowers significance, especially for the estimation for 10-year periods.

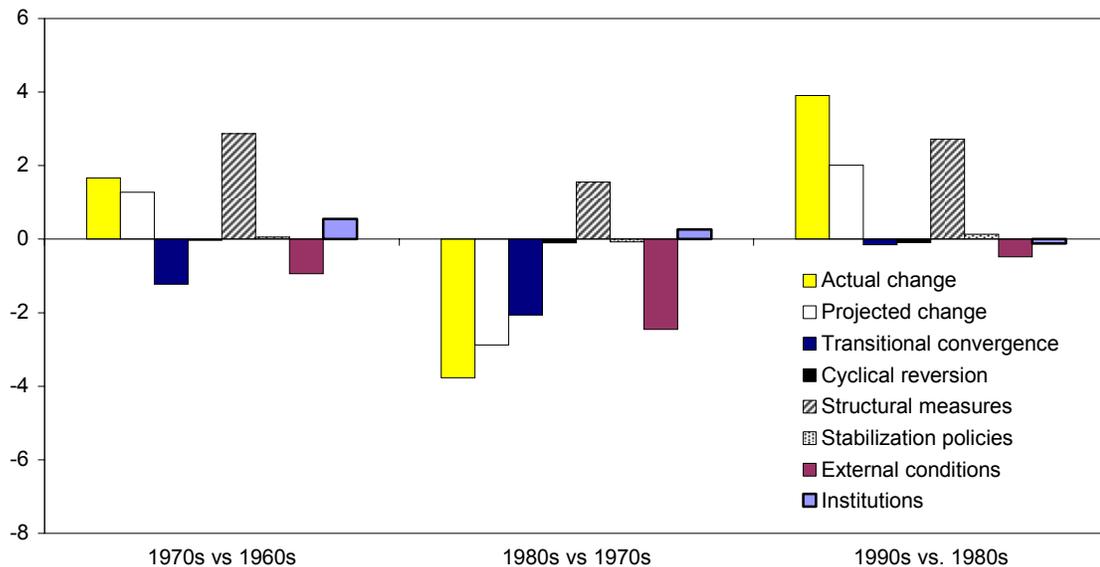
Source: Authors' estimation using Arellano-Bond dynamic panel data estimation with robust two-step standard errors.

Based on these results, the following section identifies the main determinants of growth for each period, for each country, in order to provide a flavor of the specific policies being captured by the model. In general, structural policies have been the key determinant of growth in both the Dominican Republic and Haiti, followed by political stability and stabilization policies.

Dominican Republic

During the 1970s, average GDP per capita growth rates in the Dominican Republic increased to just above 5 percent, from close to 3 percent in the 1960s. The improvement in growth rates is explained in most part by progress made on structural measures, in particular education and credit to the private sector, and by enhanced political stability (Figure 12). This progress took place within a framework of broadly prudent fiscal and monetary policies, favored by a strong balance of payments position in the early 1970s.

Figure 12. Dominican Republic: Changes in growth rates by component (in percentage points)



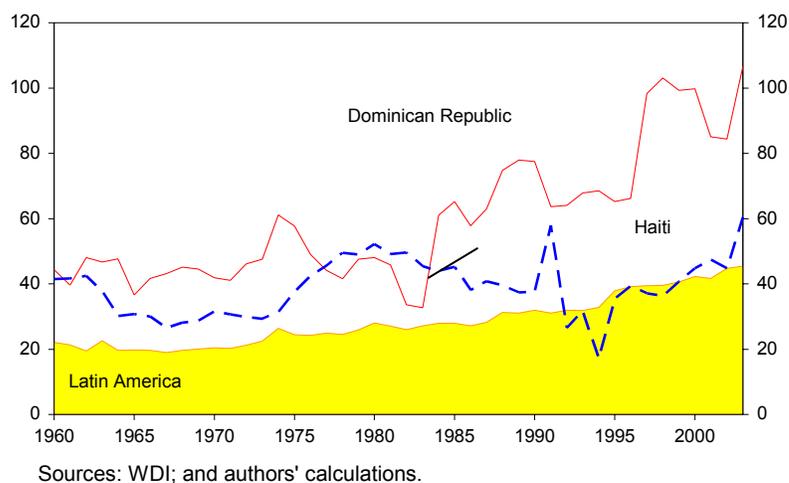
- Improvements in secondary school enrollment outpaced the average for LAC, which allowed the Dominican Republic to “catch up” to the average enrollment levels of the region. Specifically, the government introduced major curriculum reforms at the primary and secondary levels to make schooling more relevant to work life, resulting in improvements in access to education.
- Although still at lower levels than the LAC average, credit to the private sector as a percent of GDP grew more rapidly in the Dominican Republic than in the region. Commercial bank credit received a boost in the late 1960s when effective reserve requirements were lowered. The new system allowed banks to discharge part of their required reserve obligation by lending a certain minimum of their reserve liabilities to “productive” sectors. By end-1973, all banks were under the new system.

- Furthermore, Joaquin Balaguer, the president of the country for most of the 1970s, provided political stability following the years of political unrest in the mid-1960s.

As with most of LAC, the 1980s were years of economic turmoil. Average growth of GDP per capita in the Dominican Republic was basically flat. The sharp contraction in growth rates during this decade can be explained by unfavorable external conditions and by the deterioration of stabilization policies. This took place despite considerable improvements in structural measures, particularly trade openness.

- In the 1980s, large fiscal deficits contributed to monetary expansion and inflationary pressures, which in turn exacerbated the distortions created by extensive price controls. The inconsistency between exchange rate policy and other financial policies generated overvaluations of the peso that resulted in sizeable depreciations, and the central bank steadily lost official reserves.

**Figure 13. Trade openness
(in percent of GDP)**



- The increase in trade openness is explained by improvements in exports arising from greater trade benefits to the U.S. market, as the Caribbean Basin Initiative came into effect in 1983, and by the approval of the 1983 Free Trade Zone Law that provided incentives for export industries, including 20-year tax exemptions (Figure 13).

During the 1990s the Dominican Republic recovered the GDP per capita growth rates of the 1970s, just under 5 ½ percent of GDP. The primary contributors to growth were structural measures, and in particular important improvements in trade and infrastructure, supported by the implementation of corresponding stabilization policies.

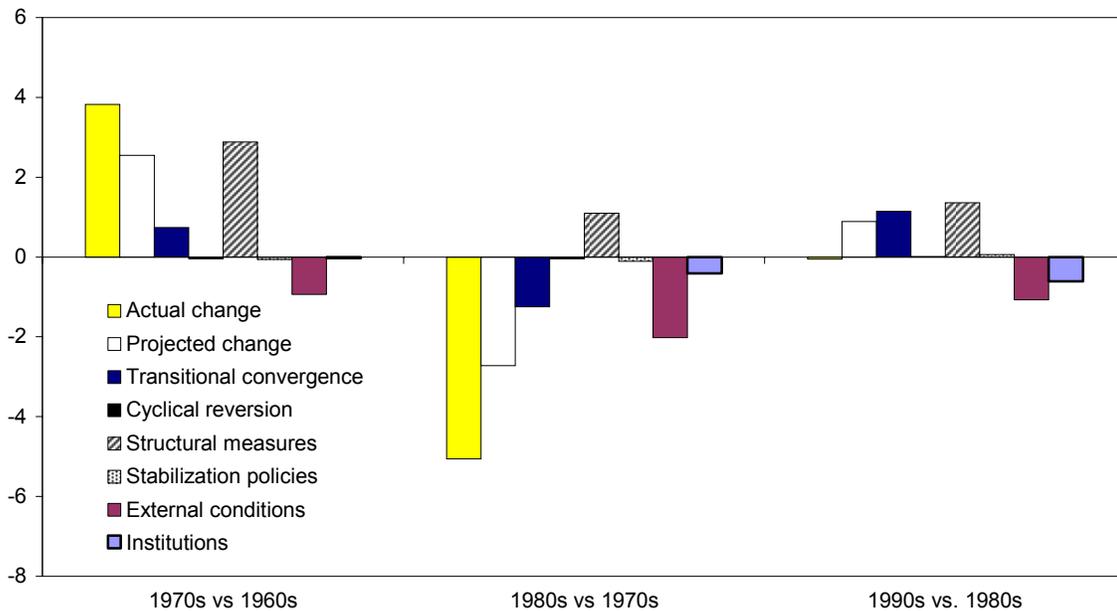
- In the 1990s, the Dominican Republic embarked on a comprehensive economic program that included liberalization of the exchange rate, prices, and interest rates, as well as fiscal consolidation. This led to a sharp reduction in inflation, foreign exchange rate stability, and declining public external debt.
- Trade openness jumped in the mid-1990s, as a result of the elimination in 1993 of export restrictions (such as export licensing and minimum export prices for agricultural products) and all export taxes, as well as the reduction in tariffs. In addition, a new FDI law was approved in 1996 that facilitated operations of foreign firms, reduced sectoral restrictions and liberalized repatriation of capital and utilities. This led to a substantial increase in FDI, in particular in the tourism sector.

- During this period, infrastructure in the Dominican Republic grew at a faster rate than the average for the region. Beyond the expansion of telephone lines (the measure used in the regression), there was a general improvement in infrastructure in the 1990s, with the expansion in electricity generation and construction in tourism resort areas (including an international airport and roads).

Haiti

The 1970s was the only decade when the change in GDP per capita growth rates was positive (Figure 14). From negative growth rates in the 1960s, growth in the 1970s averaged just above 2.5 percent. The main contributors to growth were structural measures, in particular, trade openness, education, and credit to the private sector.

Figure 14. Haiti: Changes in growth rates by component (in percentage points)



- In 1971, Haiti freed exchange transactions for all current payments and capital investment, while eliminating restrictive practices and controls (including the exchange surrender requirement for exports and delays in remittances for service payments). This favored the export environment and the assembly sector in Haiti began to grow.
- In the 1970s, the Haitian government began to reform its educational system, mostly at the primary level. With the 1978 education reform, the government unified educational administration and introduced the use of Haitian Creole as the language of instruction in the first four grades. In addition, school enrollment was boosted by school nutrition programs. Notwithstanding the improvement, Haiti's secondary school enrollment continued to be lower than the average for LAC.
- Credit to the private sector was encouraged by a 1972 reform that gave banks permission to extend medium-term credit to industrial and export sectors.

The economic contraction in Haiti during the 1980s was stronger than in LAC, at an average of -2.4 percent in Haiti compared to -0.9 percent for the region. While external conditions were adverse, growth performance was affected by increasing political instability and a weakening of stabilization policies.

- Political turmoil increased in the early 1980s due to growing discontent with the Duvalier regime. His departure in 1986 was followed by successive failed elections and coups d'état. Between 1986 and 1990, there were six different heads of state.
- In the 1980s, government revenues began to underperform while the government pursued heavy outlays on construction works, defense, and loss-making public enterprises. Extrabudgetary spending continued to expand in the face of civil disturbances, as external concessional assistance declined. The public sector increasingly relied on central bank financing that led to official reserve losses and external payments arrears emerged, putting rising pressures on the exchange rate and domestic prices.

GDP per capita growth in the 1990s continued the same negative trend as in the 1980s, with an average growth rate of -2.4 percent. Growth performance over the period was dominated by a major shock to the economy. Following the coup d'état against Jean Bertrand Aristide, the U.S. and the OAS imposed a trade embargo in 1991, aggravated by a U.N.-sponsored oil embargo in 1993. While the embargo is captured to some extent by the political instability and trade openness variables, the broader effects of this shock are not well represented in the model.

- Political events in the 1990s in Haiti included several failed presidential and parliamentary elections, coups d'état, as well as a U.S.-led military intervention. During this period, there were nine different heads of state.
- In the years prior to the embargo, trade openness was about 40 percent of GDP. During the embargo years, average trade openness fell to an average of 25 percent of GDP, and has been recovering slowly. The assembly sector was severely affected. At the end of the 1980s, Haiti assembled a wide variety of light manufactures, such as baseballs and electrical switches, together with apparel products. With the embargo, the assembly industry collapsed, and following the lifting of sanctions in 1994, only the garment sector reestablished itself. Employment in the assembly sector fell from 46,000 in the late 1980s to just 5,000 in 1995.

V. CONCLUSIONS

This paper tries to explain why the Dominican Republic and Haiti have experienced a striking divergence in growth performance despite their broad similarities in terms of geography and historical institutions. We examine both the initial conditions and the different policies pursued in each country since 1960 in order to identify the factors that may have contributed to this divergence.

When examining initial conditions, namely geography and historical institutions, we find strong similarities between the Dominican Republic and Haiti, implying that initial conditions cannot fully explain the divergence in real incomes of the two countries. While, by 1960, Haiti was already trailing the Dominican Republic in some social indicators, differences were not inherited from the historical legacies of the 19th or early 20th centuries. Although lack of national accounts prior to 1960 does not allow us to determine the exact point in time when the Dominican Republic started to outpace Haiti, disparities are likely to have started to emerge in part as a result of the policies implemented in each country following the U.S. military occupation.

The panel regression and case study approach allow us to conclude that policy decisions since 1960 have played a central role in the growth divergence between Haiti and the Dominican Republic. In general, structural policies have been the key determinant of growth in both the Dominican Republic and Haiti, followed by political stability and stabilization policies. In particular, we find that the Dominican Republic has consistently outperformed Haiti and LAC in terms of implementation of structural measures, stabilization policies, as well as political stability. Meanwhile, Haiti has lagged the region in implementing structural policies, while being subject to numerous political shocks that have severely affected its growth performance.

While this paper identifies the kind of policies linked to growth performance in both countries of Hispaniola, future work would be needed to understand why decision makers in the Dominican Republic chose and were able to implement superior policies to those in Haiti. Further research could also provide insight into the sources of the persistent political turmoil in Haiti, as well as to the circumstances that allowed the Dominican Republic to surmount the political instability of the 19th and early 20th centuries.

APPENDICES

I. Chronology of political events**Dominican Republic**

- 1821-1843 In 1821, the DR gains independence from Spain but is soon after invaded by Haitian leader Jean-Pierre Boyer, uniting the island for the next 22 years.
- 1844 On February 27, 1844 (Dominican Independence Day), Juan Pablo Duarte executes a bloodless coup in Santo Domingo. During the next 16 days all of the eastern towns announce their decision to separate from Haiti.
- 1844-1865 General Pedro Santana Familias and Buenaventura Baez Mendez dominate the political scene. In 1861 Santana agrees to the Dominican Republic's annexation by Spain. However, on March 3, 1865 the annexation is annulled and Spain withdraws its soldiers.
- 1865-1878 Political turmoil and corrupt governments dominate this period.
- 1879-1882 Two dominant parties—the Azules and the Rojos—emerge. For the next three years the Azules control the government.
- 1882-1899 General Ulises Heureaux comes to power. He retains power through fraudulent elections and army control. Heureaux borrows vast sums from U.S. investors at high interest rates. He also replaces the National Bank with the U.S. owned and operated San Domingo Improvement Company. Heureaux is assassinated in July 1899.
- 1900-1905 Soon after Heureaux's death, the Dominican Republic could not repay its debts. The U.S. government intervenes by taking control of the customs houses in 1905, guaranteeing repayment of all loans.
- 1905-1911 Ramon Caceres is elected president. He sets up the railway, improves the postal service, installs telegraph lines, rebuilds docks, funds new schools, and constructs highways. He increases export taxes on Dominican sugar to pay for public improvements, which angers plantation owners. Caceres is shot dead in 1911.
- 1911-1916 Various revolutions follow Caceres' death. U.S. president Woodrow Wilson, concerned about U.S. national security, threatens to send marines if elections are not held. Juan Isidro Jimenez is elected president but is soon impeached before Congress. The U.S. offers support, and though Jimenez only requests weapons, the marines are sent in.
- 1916-1924 The Dominican Republic comes under U.S. control for 8 years. In particular, the Americans control the budget. The American troops leave by 1924, as Woodrow Wilson is no longer in power, World War I is over, and the U.S. is considerably less concerned with the Dominican Republic's strategic importance.
- 1924-1930 President Horacio Vasquez has a progressive government, building roads creating access to the countryside, schools, and irrigation and sanitation services.
- 1930-1961 Rafael Leonidas Trujillo, chief of the National Police (which later became the National Army), forces Vasquez to resign. Trujillo holds an election for which he is the sole candidate. Trujillo rules the Dominican Republic with an iron fist from 1930 to 1947 and indirectly thereafter until his assassination in 1961.

Trujillo uses his government to amass a personal fortune by establishing monopolies that his family controlled. Trujillo carries out programs of public works and construction. He also presses for industrial progress, and scores of factories are opened. Agricultural production improves and the economy flourishes.

- 1962-1966 President Joaquin Balaguer is in office at the time of Trujillo's assassination. Elections are organized. In 1962 Juan Bosch Gaviño is elected, but is toppled in a military coup in 1963. Bosch and a group of supporters who called themselves the Constitutionals take to the streets and seize the National Palace. To reinstate order, 24,000 U.S. soldiers were ordered to the Dominican Republic until new elections were held in 1966.
- 1966-1978 Balaguer defeats Bosch in national elections. Balaguer purges the military and uses the National Police to curtail non-military opposition. His reelections in 1970 and 1974 are mostly accomplished through intimidation.
- The economy expands rapidly, benefiting from favorable world prices for sugar. However, by the late 1970s, plunging sugar prices and rising oil costs bring the Dominican economy to a standstill.
- 1978- 1986 Silvestre Antonio Guzman defeats Balaguer in the elections. He leads a corrupt government. Public-works programs are brought to a halt and the administration borrows heavily from abroad. Guzman's popularity diminishes rapidly. Salvador Jorge Blanco is elected in 1982. Soon after comes the debt crisis and the Dominican Republic enters an IMF agreement. Macroeconomic and structural measures are put in place and slowly the economy picks up and inflation is brought under control.
- 1986-1996 Balaguer is reelected for a fifth term. He runs his government like a dictatorship, intimidating political rivals. He reverses the adjustment program under Blanco, leading to a sharp depreciation of the peso and annual inflation of 60 percent. By 1990, 900,000 Dominicans move to New York, fleeing the economic situation.
- Balaguer rigs the 1990 and 1994 elections. However, in 1994 the military threatens to intervene. Balaguer agrees to cut his last term short and hold elections 18 months later.
- 1996-2000 Leonel Fernandez wins the presidency. He presides over strong economic growth, privatization, and structural reform.
- 2000-2004 Hipolito Mejia becomes president. The events of September 11, 2001 and the ensuing slowdown in the world economy—take a toll on economic growth.
- In 2003, failures of 3 large banks due to accounting malpractices and mismanagement lead to a banking crisis.
- 2004-2006 Fernandez is reelected in 2004. The economy recovers at high growth rates.

Haiti

- 1804 The ex-slaves of the French colony of Saint-Domingue declare independence after defeating the French army at Vertière. They name their new nation Haiti, which means “mountainous” in the language of its original Arawak inhabitants.
- 1804-1820 Jean Jacques Dessalines proclaims himself emperor, but is assassinated in 1806. His death led to civil war between the south under General Pétion and the north under Henry Christophe.
- 1820-1843 Faced with a rebellion by his own army, Christophe commits suicide, paving the way for Jean-Pierre Boyer to reunify the country and become President of the entire republic in 1820. President Boyer invades Santo Domingo following its declaration of independence from Spain, controlling the entire island until 1844.
- In 1938, France recognizes Haitian independence in exchange for an indemnity of 150 million francs to compensate for the losses of French planters during the 1803 revolution.
- In 1843 Boyer flees the country following a revolution to overthrow him from the presidency.
- 1844-1915 Haiti sees 22 heads of state, most of whom leave office by violent means. The U.S. and other slaveholding states do not recognize Haiti until 1862.
- 1915-1934 Concerned about German economic influence in the country and continued political instability, the U.S. military occupies Haiti after the last in a series of short-lived presidents is torn to pieces by a mob. The U.S. marines establish control over customs-houses and port authorities, and create the Haitian National Guard.
- 1934-1956 Once the Americans leave, political instability resumes, with regime changes taking place through military coups.
- In 1937, thousands of Haitians living near the border of the Dominican Republic are massacred by Dominican soldiers under the orders of President Trujillo.
- 1957-1971 Francois Duvalier (Papa Doc) is elected president in the country’s first universal suffrage election. Reelected in fraudulent elections in 1961, he declares himself president for life in 1964 and, until his death, holds on to power as a ruthless dictator with the help of a paramilitary force known as Tontons Macoutes.
- 1971-1986 Jean-Claude Duvalier (Baby Doc) becomes the new president for life after his father’s death in 1971.
- After relatively favorable economic performance in the 1970s, the macroeconomic situation deteriorates sharply in the early 1980s, affected by the recession in the U.S. and economic mismanagement. Social discontent culminates in public protests and violence, and Duvalier flees to France in 1986.
- 1986-1994 Starting in 1986 there are several brief attempts at civilian democracy, each terminated by a military coup.
- In September 1991, Jean-Bertrand Aristide, a popular priest elected in 1990, is forced to flee the country only nine months after taking office. The United States and the Organization of American States respond with a trade embargo, and in 1993 a UN-sponsored oil embargo is imposed. In September 1994, Aristide is reinstalled in office with the help of a U.S.-led military intervention.

- 1995-1996 Aristide disbands the army. Aristide supporters win parliamentary elections. As according to the constitution Aristide cannot serve a consecutive second term, he is succeeded by a close ally, René Préval.
- 1997-1999 Following a period of political deadlock, Préval dissolves parliament and rules by decree.
- 2000-2003 Aristide is reelected president, but the international community criticizes irregularities during the parliamentary elections. Political stalemate with the opposition leads to the freezing of foreign aid.
- 2004-2005 Amid deteriorating economic conditions, growing dissatisfaction with the government culminates in an armed rebellion. President Aristide resigns in February 2004 and leaves the country. A transition government is formed to lead the country to elections and an interim multinational force arrives.
- 2006 Elections are held in February 2006, and René Préval is reelected president.

II. Variable definitions and sources

Symbol	Variable	Source
Variables used in LFC		
Real GDP per capita	1985 PPP adjusted U.S. dollars (in logs)	Penn World Tables
Transitional convergence	Initial GDP per capita (in logs)	
Cyclical reversion	Initial output gap The difference between the log of actual GDP and the log of trend GDP at the beginning of the period. Trend growth is determined using a Baxter-King filter.	
Education	Gross secondary school enrollment (in logs) The gross enrollment ratio is defined as the total enrollment, regardless of age, expressed as a percentage of the official school-age population for a given level. Gross enrollment ratio can be over 100% due to the inclusion of over-aged and under-aged students.	UNESCO and Loayza et al. (2005)
Financial depth	Private domestic credit/GDP (in logs) Ratio to GDP of the stock of claims on the private sector by deposit money banks and other financial institutions.	International Financial Statistics (IFS)
Government burden	Government consumption /GDP (in logs)	IFS
Public infrastructure	Main phone lines per capita (in logs) The number of telephone mainlines per 1,000 people.	World Development Indicators (WDI)
Trade openness	The residual of a regression of the log of the ratio of exports and imports to GDP, on the logs of area and population, a dummy for oil-exporting countries, and a dummy for landlocked countries.	Authors' estimates based on IFS and WDI data
Terms of trade	Change in terms of trade Log difference of the terms of trade. Terms of trade is estimated as customary.	World Economic Outlook (WEO)

Symbol	Variable	Source
Alternative measures		
Political instability	Change in political regime The absolute sum of changes in political regime, as determined by the Polity IV polity scale that ranges from +10 (strongly democratic regime) to -10 (strongly autocratic regime).	Authors' estimates using Polity IV database.
MI	Macroeconomic instability index Weighted sum of inflation rates and exchange rate volatility, minus reserve accumulation as a percent of base money at the beginning of the period, and minus the fiscal balance as a percent of GDP. Each variable is weighted by the inverse of its standard deviation.	Authors' estimates based on IFS data
Inflation rate	Annual percent change in the consumer price index (in logs)	Authors' estimates based on IFS data
Exchange rate volatility	Annual percentage change of the foreign exchange rate (in logs)	Authors' estimates based on IFS data
International reserve accumulation	Annual change in net international reserves as a percent of base money at the beginning of the period (in logs)	Authors' estimates based on IFS data
Fiscal balance	Government fiscal balance /GDP (in logs)	Authors' estimates based on IFS data

III. List of countries included in the panel regression

Algeria	Kenya
Argentina	Korea, Republic
Australia	Madagascar
Austria	Malawi
Bangladesh	Malaysia
Belgium	Mexico
Bolivia	Morocco
Botswana	Netherlands
Brazil	Nicaragua
Burkina Faso	Niger
Canada	Nigeria
Chile	Norway
Colombia	Pakistan
Congo, Democratic Republic	Panama
Congo, Republic	Papua New Guinea
Costa Rica	Paraguay
Cote d'Ivoire	Peru
Denmark	Philippines
Dominican Republic	Portugal
Ecuador	Senegal
Egypt, Arab Republic	Sierra Leone
El Salvador	South Africa
Finland	Spain
France	Sri Lanka
Gambia	Sweden
Ghana	Switzerland
Greece	Syria, Arab Republic
Guatemala	Thailand
Haiti	Togo
Honduras	Trinidad and Tobago
Iceland	Tunisia
India	Turkey
Indonesia	Uganda
Iran, Islamic Republic	United Kingdom
Ireland	United States
Israel	Uruguay
Italy	Venezuela
Jamaica	Zambia
Japan	Zimbabwe
Jordan	

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