Financial Development, Political Instability and Growth: Evidence for Brazil since 1870

A thesis submitted for the degree of Doctor of Philosophy

By

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Abstract

What are the main macroeconomic factors that help understand economic growth in Brazil since 1870? Are institutions (and changes in institutions) a deep cause of economic growth in Brazil? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations? This thesis tries to answer these questions focusing on within country over long periods of time. It uses the power-ARCH (PARCH) econometric framework with annual time series from 1870 to 2003. The results suggest that financial development (domestic and international) exhibit the most robust first-order effects on growth and its volatility. Political instability, trade openness and public deficit play important yet secondary roles since the effects of the first two do not extent to the long-run (that is, they are restricted to the short-run) and those off the latter are sensitive to the measures of the variables used in our analysis.

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Introduction

This study examines how macroeconomic factors and political instability affected long-term economic growth in Brazil since 1870. The Brazilian case has its special interests. Ever since Brazilian independence, there is little disagreement among economists and economic historians that the period from 1870 to 1970 is a period of growth. The impact of coffee on Brazil's economy drives the output growth for almost a century. However, in the wake of the economic crisis, Brazil's economy performance entered a period of increase inflation and stagnation in 1980s. In trying to bring the inflation under control, Brazil had to undertake severe fiscal adjustment. Naturally, economic expansion required financial support and one of our focuses in this thesis is an understanding of the role of financial development. Thus, whether financial development together with other factors has affected Brazil's output growth is one central question of this thesis.

From a political point of view, Brazil was rarely stable during the past one hundred years. Frequent political/institutional changes are associated with output growth. Nevertheless, it is difficult to identify the causal effect of institutions on economic growth. Institutions do change much quicker in developing countries (rather than the developed countries) but the quality of the few existing data tends to be rather questionable, that is, when available. Therefore, this study explores a new dataset and within country variation over extremely long periods of time to assess the causal effects of various types of institutions in terms of the growth rate of per capita GDP.

This study tries to contribute to our understanding of the main causes of economic growth by using a power- ARCH (PARCH) frame work with following questions: What is the relationship between, on the one hand, financial development (domestic and international), political instability, public deficit, trade openness and, on the other hand, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations?

We believe this further our understanding of economic growth because: (a) we study only one individual country over a very long period of time with annual frequency data. (b) we extensively use the economic history literature to guide our choice of potential important reasons behind the performance of the Brazilian economy over a very large time window, (c) we choose an econometric methodology that has been seldom used in the empirical growth literature despite the fact that it easily allow us to contrast the direct to the indirect (i.e., via the volatility channel) effects of each of our candidate reasons, sort out the short- from the long-run impacts, and distill the consequences of accounting for important structural breaks on the robustness of our key results. Another important, albeit more technical, benefit of our choice of econometric framework is that it helps shedding light on an important and resilient

puzzle on the relationship between output growth and its volatility.

From the univariate analysis, we find that (1) the main explanatory factors, solely in terms of their negative lagged direct/indirect effects on economic growth in Brazil, turn out to be financial development (domestic and international), political instabilities, trade openness and public deficit. From investigating whether dynamic considerations affect our conclusions, we find important differences in terms of short- and long-run behavior of our key variables, more specifically, while the effects of financial development (mainly M1 and commercial bank deposits) are negative in the short- and positive in the long-run, that of the US interest rate work in the opposite direction. (2) Further, as to the political instability indicators, while strong negative impacts can be observed in the short-run, the corresponding effects for the long-run are weaker. (3) Finally, public deficit has both a negative short and long-run impact.

In the multivariate setting, the results show that (4) financial development (domestic and international) exhibit the most robust first-order effects on growth and its volatility. (5) Political Instabilities play important secondary roles since the effect of both formal and informal political instabilities do not extend to the long-run with the existence of all other explanatory variables. Further, (6) both trade openness and public deficit are important in explaining the output growth in Brazil. Interesting, the significance of the influences of public deficit on growth is sensitive to the choice of the political indicator. Similarly, trade openness has a significant negative direct impact on growth only when we include legislative effectiveness and revenues as a regressor.

The reminder of the thesis is organized as follows. Focus on the Brazilian case, Chapter one investigates the association between financial development and economic growth over the period of 1870 – 2003. Chapter two discusses the influences of institutional changes on output growth. Chapter three evaluates the relative merits of the factors behind these different explanations. Finally, the conclusions are summarized at the end.

Chapter One

Financial Development and Economic Growth over the Very Long-Run:

Non-Linear Time-Series Evidence for Brazil since 1870

1.1 Overview

The B in BRICs is for Brazil. In 2001, Goldman Sachs put out a report that popularized the term BRICs countries in economics (BRICs standing for Brazil, Russia, India and China) and, more importantly, marked the start of a shift in relative weights in the world economy towards the so-called emerging market countries. Many doubted whether Brazil should be included in such a distinguish group, but few questioned that among the four the country has undergone a most remarkable transformation in the last 100 years or so. From a poor, unsophisticated, primary exporter economy about one hundred years ago it became one of the largest and richest emerging markets of our day. Economists and economic historians have gone to great lengths to try to understand this important transformation. One class of potential explanations that has received considerable attention is macroeconomic factors. Various hypotheses have been put forward to explain this process of deep structural transformation but attention has focused on the roles of financial development, public finances and international financial integration. Few previous studies have evaluated these explanations jointly and this is the main contribution of this chapter. It uses the power-ARCH (PARCH) framework and annual time series data for Brazil covering the period from 1870 to 2003, to answer the following questions. What is the relationship between, on the one hand, financial development, public deficit, inflation, financial international and trade openness and, on the other, economic growth and its volatility? Are the effects of these variables direct or indirect that is, do they occur directly on economic growth or indirectly via the conditional growth volatility? Does the intensity and sign of these impacts vary over time? Do these effects vary over time, that is, with respect to short- versus long-run considerations? Is the intensity of these effects constant across the different eras or phases of Brazilian economic history? Are they independent from the main structural breaks we estimate?

This chapter tries to contribute to our understanding of the main causes of economic

growth. Durlauf et al. (2005) and Acemoglu (2009) provide recent, authoritative surveys that support the view that there seems to be dissatisfaction with the empirical growth literature. This chapter tries to improve matters in this regard by focusing on a single country (as opposed to follow the common practice of trying to learn something about growth by focusing on the mean or median country). We believe this study can further our understanding about economic growth because: (a) we study only one individual country over a very long period of time with annual frequency data[1], (b) we extensively use the economic history literature to guide our choice of potential important reasons, (c) we choose an econometric methodology that has been seldom used in the empirical growth literature despite the fact that it easily allow us to contrast the direct to the indirect (i.e., via the volatility channel) effects of each of our candidate reasons, sort out the short- from the long-run impacts, and distill the consequences of accounting for important structural breaks on the robustness of our key results.

Another important benefit of our choice of econometric framework is that it helps shedding light on an important and resilient puzzle on the relationship between output growth and its volatility. While Ramey and Ramey (1995) show that growth rates are adversely affected by volatility, Grier and Tullock (1989) argue that larger standard deviations of growth rates are associated with larger mean rates. The majority of ARCH papers examining the growth-volatility link are restricted to these two key variables. That is, they seldom assess whether the effects of the presence of other variables affect the relation and, in the rare occasions that happens, they are usually inflation and its volatility that comes into play[2]. One contribution of this chapter is to study if and how the growth-volatility relationship changes in light of a much wider set of variables. Note also that the use of annual data allows us to perform a more appropriate test of the hypothesis that predicts a positive effect of output variability and uncertainty on the growth rate of output[3].

We estimate four main types of effects: (a) direct (on mean economic growth), (b) indirect (via volatility), (c) dynamic (short and long-run) and (d) structural break effects. In trying to satisfy both the time-series and economic growth literature traditions (the former mostly univariate and the latter multivariate), for each effect we report estimates for one variable at a time before discussing the full multivariate results.

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[1] Some studies access Brazil's performance for a cross-country perspective (Loayza and Rancière, 2006), while others are more focused on the period from the 1930's onwards-trying to explain the growth rate of Brazil in the period 1930-1997 (Abreu and Verner, 1997).

[2] For a comprehensive review of this literature see Fountas et al. (2007). In addition, Gillman and Kejak (2005) bring together for comparison several main approaches to modeling the inflation-growth effect by nesting them within a general monetary endogenous growth model with both human and physical capital.

[3] Black (1987) argues that investments in riskier technologies will be pursued only if the expected return on these investments (expressed as the average rate of output growth) is large enough to compensate for the extra risk. As real investment takes time to materialize, such an effect would be more likely to obtain in empirical studies utilizing low-frequency data.

The main results are as follows. Regarding the direct effect on economic growth, we find evidence for a negative influence from domestic financial development, trade openness as well as public deficit. Equally importantly, we find evidence of a positive effect of international financial integration (proxies by movements in the U.S. interest rate). In the multivariate setting, the lagged direct effect on growth of domestic financial development, trade openness as well as public deficit is again negative whereas those of international financial integration remain positive providing further confirmation of our main findings. Regarding the indirect effects (through the conditional growth volatility), the strongest indirect impacts are the volatility-decreasing effects of domestic financial development, trade openness and deficit as well as the growth volatility increasing effects of international financial integration (US interest rates.).Thirdly, regarding the likelihood of differential effects in terms of short- versus long-run behavior, we find that domestic financial development affects growth negatively in the short- but positively in the long-run, while the effects from international financial integration are opposite (proxies by US interest rate), the effects of public deficit are negative in both short- and long-run, while the effect of trade openness is restricted to the short-run. Fourth and finally, we subjected all these results to the presence of structural breaks. This is an important exercise given the very long-term nature of the data. We find that the basic results remain once structural breaks are taken into account. One noteworthy aspect of these findings is that effects of domestic financial development are larger before the breaks we estimate in the growth series (1962 and 1979.) In short, the main results from this analysis suggest that financial development (domestic and international) exhibit robust first-order effects on growth and its volatility. Trade openness and public deficit play important yet secondary roles. In our view, this is because the effects of trade openness do not extend to the long-run, while for public deficit the results depend on the variable we use to measure it in the multivariate setting.

The chapter is organized as follows. Section 1.2 sets the historical context for the chapter by documenting the Brazilian puzzle. More importantly, this section briefly reviews the Brazilian historiography stressing the main reasons that have been offered to explain the economic performance of Brazil from 1870 to 2003. Section 1.3 reviews the historical researches of financial development, trade openness and public deficit separately. Section 1.4 describes the data and Section 1.5 provides details and justification for our econometric methodology. Section 1.6 has our baseline econometric results. Section 1.6 concludes and suggests directions for future research.

1.2 A General Overview of the Economic History of Brazil since 1870

The objective of this section is to provide general background information about the main economic eras of Brazilian economic history. The reason for this is to help judge the range of variables we choose to focus on in the econometric analysis as well as to assess our main estimation results. The official historical cannon posits that Brazil was "discovered in April 21st 1500" by Portuguese commander Pedro Alvares Cabral. Yet the Treaty of Tordesilhas of 1494 divided the newly discovered American continent between Spain and Portugal and assigned to the latter a considerable part of modern Brazil (in 1494, still undiscovered). In any case, for the first 200 years since its "discovery," Brazil was clearly not the most important part of the Portuguese empire especially in economic terms. Nevertheless, the first 200 years mark the expansion of the production of sugar for exports, based on extensive plantations of sugar cane and considerable slave trade. The so-called "sugarcane cycle" took place mainly in coastal areas of Pernambuco and Bahia, in the Brazilian Northeast. The discovery of gold and later of diamonds in the interior in an area that became known as Minas Gerais ("General Mines," which is still its name today) is an important turning point. A gold rush ensued and Brazil became a much more important "piece in the Portuguese crown." As a consequence, the Portuguese change the capital from Salvador (Bahia, which was close to the sugar cane plantations), to Rio de Janeiro, which was closer to the areas producing gold and diamonds and which had a port and a bay that were much easier to defend militarily (a crucial consideration in light of the much more valuable products being now exported.) A consequence of this was the possibility of a smooth change in domestic elites, from sugar- to gold-based, which was necessary given the enormous increase in migration from Portugal which came to Brazil in search of gold riches but also responding to a clear relative economic decline of the metropolis. It is also important to mention that minerals were discovered thanks to various searching expeditions organized both by the State ("entradas") and by the local elite or nascent private sector ("bandeiras.") Portugal's nineteenth-century economic decline (Summerhill, 2005) is somehow well illustrated by the disastrous reactions to the Napoleonic Wars, which forced the royal family to flee from Portugal to Brazil and hence to transfer the crown, the political and economic center of the Empire, from Lisbon to Rio de Janeiro. Brazil may have been the only colony in the world that was also one day the Imperial center, the metropolis. Gold and diamonds, Napoleon, the rushed escape of the crown to Rio, the emergence of a new domestic elite (built upon gold and diamonds), the 1808 forced opening of all the Brazilian ports to the "friendly nations" (that is, England), Portugal's clear nineteenth-century economic decline culminate with Brazilian independence in 1822. The half a century that follows is a period of enormous political and economic instability, in which the new nation tries to find its footing in a new world. It is crucial to keep in mind that elsewhere and very much over the same period there is a rather important event taking place: the take-off of the Industrial Revolution.

There is little disagreement among economists and economic historians that the period from 1870 to 1930 is a period of growth, though Brazil also went through difficulties caused in part by World War I and later by the Great Depression. The so-called Coffee Economic Cycle would then drive Brazil's economy for almost a century, and at least until year 1930. The impact of coffee on Brazilian economy was much stronger than that of sugar and gold since when the coffee surge began, Brazil was already freed from limitation of colonialism. Further, slavery was also finally abolished in 1888 which completed in a way an important shift towards wage labor. By the 1920s, Brazil was supplying about 80% of world's coffee. It is very important to point out here that, differently from Argentina for example, Brazilian international trade were strongly linked with the US, this country importing most of the very Brazilian coffee and consequently being an important source of foreign capital . Trade openness was 60% of GDP until 1900 while coffee exports accounted for 12.5 percent of GNP in 1920s. As Werner Baer (2001) among many other leading scholars' notes, there is no doubt that coffee exports were the engine of growth throughout most of the nineteenth century. Naturally, such an economic expansion required financial support and one of our focuses in this chapter is an understanding of the role of financial development. Since the early nineteenth century, Brazil declared its independence and also built up its first modern style financial system[4]. The attention to the role of the financial system is not a hallmark of this literature and we intend to contribute to it by focusing more on it. Thus, whether financial development together with other factors has affected Brazil's output growth is one central question of this chapter.

After a period of chaos, consolidation and war, Brazil entered the last two decades of the monarchic period from year 1870 to year 1889 (the so-called Second Empire). In 1864 -- 1870 Brazil and its allies, Argentina and Uruguay, fought a war with Paraguay. The war ended with victory for Brazil and allies, but at a high price. As Skidmore states in "Brazil: Five Centuries of Change": victory over such a small, poor, and desolate country hardly qualified Brazil for the annals of glorious warfare but raised fundamental questions about whether their own ill-integrated society was ready to join the race to modernity. Although the decline of the empire can be attributed to various reasons, it can be roughly divided into three factors: economic, political factors and the army. First, the nascent bourgeoisie of Sao Paulo pushed for the end of the monarchy in an attempt to keep benefitting more fully from the coffee economy. Second, the empire had moved towards more political and administrative centralization. Regional oligarchies wanted to push for decentralization under a federal system to consolidate their positions. As a result, the empire was marked by considerable political instability in the 1880s. At last, the army came under influence of "positivism". They supported education, industrialization, abolition of slavery, regeneration

[4] For example, Banco do Brasil was founded in 1808 and functioned both as bank of issue and a commercial bank until 1829.

of the nation, and guarding the fatherland: the "solider citizen" as agent of social change. All these reasons lead to the end of the Second Empire in year 1889.

After the emperor was dethroned on November 15 of 1889, Brazil passed from a centralized empire to a federal republic by a bloodless coup led by the army. The period from 1889 to 1930 is known as the Old Republic or the First Republic, and economically the period is marked by the politics of coffee-with-milk ("cafe com leite"), a combination of Sao Paulo (coffee) and Minas Gerais (milk) political elites. From a political point of view, Brazil was rarely stable during this period. The most sensitive feature of the oligarchic system of the First Republic was to adjust the political power between two groups -- the different regional oligarchies (states governor) and the armed forces. During the 1920s, the problems of the oligarchy system developed. Politically, the "tenent revolt" of 1922 and then again in 1924, shaken the interior of Brazil without ever being fully defeated by the armed forces. In October 1929, with the Great Depression coffee exports stalled, and the Paulista oligarchy tried to stay in power ignoring the agreed-upon the alternation with the elites of Minas Gerais. This of course led to the end of the "politics of coffee with milk". In the year 1930, the situation reached a breaking point. At first, vice president Mello Vianna was shot three times in the neck and in the hand at Monte Claros (in the state of Minas Gerais). Later, in the Revolta da Princesa occurred in the Northeastern state of Paraiba. Soon after this event, Joao Pessoa, who was the governor of Paraiba, was murdered. After his death, more riots followed. And, at the end, on October 24th 1930, the "revolution of 1930" broke out. All those political crises together with the economic crisis led to the end of the Old Republic.

The Revolution of 1930 in Brazil not only marked the end of the Old Republic but also the beginning of the Vargas Era. By leading the revolution, Provisional President Getulio Dornelles Vargas, ruled as dictator from 1930 to 1934, was elected as president from 1934 -- 1937, and again governed as dictator from 1937 to 1945. Further, after 1945, Vargas still served as a senator until 1951 when after the general elections of 1950 once more Vargas returned to power as president (1951 - 1954). In other words, Getulio Vargas retained central political power in Brazil for nearly 24 years. Economic historians argue that Brazil during the Vargas Era and up until the late 1970s was as one of the fastest growing economies in the world (Maddison, 1995). As such, this era is also a turning point in the political history of Brazil. Under the Estado Novo (1937 - 1945), state autonomy ended, governors were replaced and all political parties were dissolved until 1944 (Hudson, 1997).

As mentioned, from 1945 to the late 1970s Brazil is widely considered to be one of the fastest growing economies in the world (see among others Maddison, 1995). One of the most important contributions to the study of the long--term Brazilian economic growth is Abreu

and Verner (1997). They studied the contribution of various factors, with emphasis on the period 1930--1990, including financial development, degree of the trade openness, and education policies. They do not find evidence that financial development boosted growth. As they argued: "increased public sector savings proved (disappointingly) to have only a small impact on GDP", and "attempts to include monetary variables as explanations for either short-term or long-term economic growth in Brazil came to naught". It seems that in their view financial development fails to explain the economic growth in Brazil in this particular period. However, our results present a different story. By using a different econometric approach and longer term data, we find that financial development affects long-term growth positively and robustly.

Although there is wide consensus that the 1980s was a "lost decade" in economic terms (on the other hand, in political terms, it saw re-democratization) the growth of Brazil since 1990 is now a hotly debated issue. A lot of recent researches on either Latin America or Brazil covered this particular period and have paid attention to the study of financial development. Bittencourt (2010) finds that financial development played a significant role in generating growth in Latin America. Castelar et al. (2004) examined the relationships between financial development growth and equity. Also, Stefani (2007) investigated this relationship in Brazil between 1980 till 2006 by using cointegration methods. Further, some more papers shed some light on how relative factors like how interest rates and inflation affect Brazil's recent growth (Muinhos and Nakane 2006; Vale 2005). Most of these papers obtained a strong positive relationship between financial development and output growth in Brazil, yet they have not investigate this relationship over the long-term, and neither have assessed whether this a is a more or less important reason vis-a-vis the other important factors economic historians normally highlight (such as trade openness, public finances, and inflation or macroeconomic instability.)

In sum, the period since 1870 is an important one in Brazil as it sees the country economical and politically take-off and becoming an emerging market, or a BRIC in other accounts. However, there is still debate about which factors better explain this remarkable transformation. Trade openness, macroeconomic stability, financial development, and international financial integration are the four main reasons often highlighted by economists and economic historians. One of the major objectives of this chapter is to evaluate the relative merits of the factors behind these different explanations. In this chapter, we cover the period from 1870 to 2003 and try to contribute by studying how financial development, trade openness, public deficit together with integration with of global financial markets played a role in the process of economic growth and transformation of Brazil.

1.3 Literature Review

1.3.1 Financial Development

The role of financial sector in economic growth is a long-debated issue. Robert Lucas (1988) and Nobel Laureate Merton Miller (1998) represent two different poles in the literature. While Robert Lucas dismisses finance as a "badly over-stressed" determinant of economic growth, Merton Miller argues that, "financial markets contributed to economic growth is a proposition too obvious for serious discussion".

Theoretically, as Merton and Bodie (1995) stated, in arising to ameliorate market frictions, financial system naturally influence the allocation of resources across space and time. Therefore, the development of the financial systems may impact the savings rates, investment decisions and technological innovations and hence the long-term growth rates.

On the empirical side, the literature on finance and growth includes at least four aspects: (ⅰ) cross-country studies; (ⅱ) panel studies; (ⅲ) time-series analysis and (ⅳ) detailed country case-studies.

Cross-country studies

The pioneering study to assess whether finance exerts a causal influence on growth is given by Goldsmith (1969). By using the data compiled on 35 countries over the period from 1860 to1963 (when available) on the value of financial intermediary assets as a proportion of GNP, Goldsmith's paper was the first to show the existence of a positive relationship between financial development and economy development. However, Levine (2005) pointed out several problems of Goldsmith's work. For example, first of all, only 35 countries are involved in the investigation. Secondly, it doesn't systematically control for other factors influencing economic growth. The third, close association dose not identify the direction of causality and further, the measure of the financial development used may not accurately proxy for the functioning of financial system.

Building on Goldsmith's work, King and Levine (1993a) investigated 77 countries and covered the period of 1960 – 1989. Beyond the monetary indicators, King and Levine also construct additional measures of the level of financial development – measures of both the size and relative importance of banking institutions. Systematically control for other factors affecting the growth, their study shows that financial development is robustly and positively associated with their three growth indicators[5]. Additionally, to examine the predictability of the financial indicators, King and Levine study whether the value of financial development

[5] By using different econometric methods and robustness check, King and Levine (1993b, 1993c) confirm these findings.

in 1960 predicts the growth indicators over the next 30 years. Their empirical results show that financial depth in 1960 is a good predictor of subsequent rates of economic growth, capital accumulation and productivity growth.

Unlike the earlier researches focus only on one segment of the financial system – banks, the following studies also examine the role of stock markets on development. Building on the work by Atje and Jovanovic (1993), Levine and Zervos (1998) conclude that there is a significant relationship between the stock market and growth, however, when the banking depth indicators are included in the regressions, the impact of stock market on growth turn out to be insignificant.

Panel

Differ from the previous studies that are based on cross-section data, this subsection discusses the panel approaches. According to Levine (2005), the panel approaches benefit the investigations in three aspects. The first benefit from moving a panel is the ability to exploit both the time-series and cross-sectional variation in the data. Secondly, the panel approach avoids biases associated with cross-country regressions. And at last, it also permits the use of instrumental variables for all regressors.

By using the panel data of 74 developed and less developed countries over the period 1960 - 1995, Levine, Loayza and Beck (2000) find a strong positive relationship between financial development and output growth. Moreover, Loayza and Ranciere (2006) extend this line of empirical research. Using a sample of 75 countries with annual data during the period 1960 -2000, they provide evidence that financial liberalization can generate both short-run instability and long-run growth. In other words, the positive long-run relationship between financial development and growth co-exists with a negative short-run effect.

Time-series analysis and detailed country case-studies

Two classic studies on country case-studies are given by Cameron et al. (1967) and McKinnon (1973). Cameron et al. (1967) studies the historical relationships between banking development and early stages of industrialization for seven countries (Note: England (1750-1844), Scotland (1750-1845), France (1800-1870), Belgium (1800-1875), Germany (1815-1870), Russia (1860-1914), Japan (1868-1914)), while McKinnon studies the relationship between financial system and economic development in Argentina, Brazil, Chile, Germany, Korea, Indonesia and Taiwan. Although these researches do not use the formal statistical analysis, mass of evidence emerging from these country studies which suggest that better functioning financial systems support faster economic growth.

Some more recent researches examine the impact of finance on economic growth for the United States. Focusing on the early decades after U.S. independence, Wright (2002)

examines how the U.S. financial system drove America's transformation after 1780. Jayaratne and Strahan (1996) and Dehejia and Lleras Muney (2003) both examine the growth experiences of states across the U.S. these two papers find that financial development boost economic growth rates. Further, the latter one extends the findings by examining the impact of deposit insurance.

In terms of the Brazil, one of the important historical researches is given by Haber (1991, 1997). Using firm-level data from 1830 – 1930, Haber suggests that when Brazil overthrew the monarchy in 1889, it also dramatically liberalized restrictions on financial markets. Financial development gave more firms easier access to the external finance and therefore, industrial concentration fell and production boomed. In other words, Haber concludes that international differences in financial development will significantly affect the rate of industrial expansion and hence the output growth. Another impressive work on Brazil is given by Abreu and Verner (1997). The study argues that since the mid-1990s, investment is the major factor that drives the GDP growth. However, it seems that financial development fails to explain the economic growth in Brazil in this particular period, as Abreu and Verner (1997) argued: "increased public sector savings proved (disappointingly) to have only a small impact on GDP", and "attempts to include monetary variables as explanations for either short-term or long-term economic growth in Brazil came to naught".

Later from 1990 till early 21st century, the growth of Brazil becomes a hot debated issue. Recent researches mainly focus on the role of financial development on either Latin American or Brazil. Bittencourt (2010) found that financial development played a significant role in generating growth in Latin America. Castelar et al. (2004) examined the relationship between financial development growth and equity. Also, Stefani (2007) investigated this relationship in Brazil between 1980 till 2006 by using a cointegration methodology. Moreover, some papers shed some light on the relative fields like how interest rates and inflation affect Brazil's recent growth (Muinhos and Nakane 2006; Vale 2005). In line with the theory we discussed above, most of the papers obtained a strong positive relationship between financial development and output growth in Brazil.

1.3.2 Trade Openness

Similar to the financial development, the relationship between trade openness and economic growth is also a long controversy issue in the literature. Ideally, countries that are more open have a greater ability to catch up to leading technologies of the world. In other words, as Chang, Kaltani, Loayza (2009) argued, openness promotes the efficient allocation of resources through comparative advantage, allows the dissemination of knowledge and

technological progress, and encourages competition in domestic and international markets and hence output growth. In a line with the theory, several studies in this field, conclude that trade openness is a significant explanatory variable for the economic growth (see Dollar (1992), Harrison (1996), Sala-i-Martin (1997), Easterly and Levine (2001) and Dollar and Kray (2002)). However, there is always a position at the opposite side. For instance, Krugman (1994) and Rodrik and Rodríguez (2001) argue that the effect of openness on growth is doubtful. Further, a few more recent studies suggested that not all the counties share the equally gains from the trade openness. Saches and Warner (1997) find that specialization in exporting primary products is bad for the economy growth. Ahmad and Kwan (1991) investigate 47 African countries and find no causality between exports and growth.

Concerning case studies, Muendler (2002) and Lopez-Cordova and Moreira (2003) cover the case of Brazil and show that productivity growth resumed during the period of 1986 – 2000. Both Muendler, and Lopes-Cordova and Moreira suggested a powerful import discipline effect. In addition, Muendler also find a positive association between imported input and turnover effects. Marie Daumal and Selin Ozyurt (2011) cover 26 Brazilian states over the period of 1989 – 2002 and find that openness is more beneficial to states with high level of initial per capita income.

As regard of exports/imports, there are only few historical studies that focus on the influence of exports/imports on Brazil separately. The only detailed historical quantitative study on the export of coffee is given by Delfim Netto (1959). Nevertheless, in the paper, Delfim Netto doesn't provide a general econometric model to measure the relative importance of the factors that shaped coffee export cycles and his findings are only concerned with proving the harmful effects of the coffee valorization policies upon Brazil's competitiveness in the world coffee market. Another historical research in this field is given by Luis Catao (1992), who argues that due to the compensatory exchange rate depreciation in the particular period of falling world coffee prices, the insufficient expansion of the domestic transportation and the extreme dependence of both investment and government finance on foreign investment, the exports failed to promote generalized economic development in Brazil in the certain period (1870-1930).

However, it is worthwhile to note that the theoretical literature has given more attention to the relationship between trade policies and growth rather than the association between trade volumes and growth (Note: Trade openness has two concepts – volumes and policies. Although these two concepts are closely related, their relationship with growth may differ from each other.). Therefore, in this chapter, we have three measures of trade openness,

namely exports, imports and the summation of exports and imports, to explore the impact of Brazil's trade openness (volumes) on the economic growth.

1.3.3 Public Deficit

Theoretically, the measurement of public deficit, budget deficit or budget balance itself is compounded by the lack of uniformity in different countries. For instance, the definition of conventional budget deficit can measured in two means. Firstly, the deficit equals to the difference between total cash flow expenditure and fiscal revenue. Secondly, the deficit reflects accrued income and spending flow (regardless of whether they are involved cash payments or not). As Agénor and Montiel (1999) stated, the difference between these two measurements is that accumulation of arrears on payments or revenue is reflected by higher deficit when measured on an accrual basis compared with a cash-based measure. According to Blejer and Cheasty (1991), one of the most commonly accepted measure of public deficit is the difference between current revenues and current expenditures of government[6]. Further, in terms of the association between growth and public deficit, the historical researches suggest three kinds of thought which are the Ricardian School, the Keynesian view and the neo-classical view. While the neo-classical and Ricardian schools concentrate on the long run, the Keynesian view emphasizes the short run effect.

In the standard Keynesian view, assume that an increase in government expenditures, financed by borrowing may cause output growth to expand through a multiplier process. Keynesians argue that because of the employment of unutilized resources, public deficit may stimulate savings and investment and hence economic growth. However, in the traditional Keynesian view, there is no clear budget constraint in the analysis, and thus it doesn't distinguish the usage of public deficit between government consumption and investment expenditures.

Opposite to the Keynesian view, neo-classical view suggests that public deficit may be detrimental to investment and growth. In the neo-classical perspective, the component of the revenue deficit in public deficit implies a reduction in government savings or an increase in government dis-savings. And, if the reduction in government saving is not fully offset by a rise in private savings, the overall saving rate will fall and hence output growth declines.

The third perspective of the Ricardian view claims that public deficit has no impact on the growth. According to Ricardian view, the government spending must be paid for, whether now or later. And, the present value of the government spending must be equal to the present value of tax and non-tax revenues. Therefore, public deficit doesn't have any impact on

[6] This is the measurement which we are using in this chapter

aggregate demand if individuals concern about the current value of their incomes and the present value of their future tax liabilities. In other words, the decrease of current government savings which is implied by public deficit may be offset by an increase in private savings. Consequently, the total investment remains unchanged and hence output growth is unchanged. However, one important assumption of the Ricardian view is that the individuals are foresighted, they have discount rates that are equals to government's discount rate on spending and they also have long time horizon for evaluating the present value of the future taxes.

Empirically, there is no general agreement among economists that the influence of public deficit on growth is either good or bad. While Bose, Haque and Osborn (2007) argues that there is a positive relationship between public deficit and economic growth, Ball and Mankiw (1995) argues the relationship may be negative. Yaya Keho (2010) investigates the relationship between public deficit and economic growth for seven countries over the period of 1980 – 2005. The empirical results show mixed results, that is in three countries there is no causality between public deficit and growth while in the remaining four countries, deficit had negative effect on growth. Consistent with Ricardian equivalence hypothesis, Gadong T. Dalyop (2010) examines the influence of public deficit on real GDP growth in Nigeria and finds that public deficit had little effect on the output economic growth.

In case of Brazil, public deficit is often linked with fiscal policies, interest rate and inflation. Abreu and Verner (1997) have an entire chapter to review the historical record of Brazil's fiscal deficit from 1930. Eliana Cardoso and Albert Fishlow (1990) analyze the relations between the public deficit, interest rate, domestic and foreign debt, and inflation in the 1980s. And Mario Falcao Pessoa (2004) discusses the fiscal deficit and corresponded fiscal policies in Brazil since 1997. Indeed, public deficit itself is an important fiscal indicator which will affect the design and execution of fiscal policies. However, not many papers directly answer the question of what is the influence of public deficit on output growth for Brazil. Therefore, in this chapter, we adopted three measures of public deficit which are revenues (over GDP), expenditures (over GDP) and the differences between revenues and expenditures (over GDP) in examining the relationship between public deficit and output growth in Brazil.

1.4 Data

The data set we put together for this chapter reflects the main factors identified by economic historians discussed above. The factors often associated with the economic performance of Brazil are the following: financial development, macroeconomic volatility,

trade openness, public deficit, and international financial integration.

Theoretically, as Merton and Bodie (1995) stated, in arising to ameliorate market frictions, financial system naturally influence the allocation of resources across space and time. Therefore, the financial development may impact the savings rates, investment decisions and technological innovations and hence the long-term growth rates. In this chapter, our two main measures of financial development try to capture the efficiency of the financial sector, not its relative size. The first is the commercial bank deposits over GDP. Our basic data source is "International Historical Statistics: The Americas: 1750 -- 2000" (Mitchell. B. R., 2003). However, due to the missing figures, we follow a more practicable method of Peláez and Suzigan (1976) to regenerate the series, which is the total deposits in commercial banks are defined as the summation of time deposits in commercial banks and deposits at the end of the period in commercial banks. Thus, our commercial bank deposits are quoted from IBGE[7] from 1870 – 1985 and since the year of 1985 our adopted data sets can be found IBGE[8].

The second measure of our financial development is the deposits at Banco do Brasil over GDP. Although Mitchell B.R. (2003) recorded the annual data for Brazil since 1870, the money standards of the data changed from time to time and figures are often incomplete for a given sub-period. In order to find relatively complete series to avoid bias as much as possible, we also generated the deposits at Banco do Brasil by the method of Peláez and Suzigan (1976), which is the deposit measured by the added value of time deposits and deposits at the end of the period in the central bank. Therefore, our serial of deposits at Banco do Brasil is mainly cited from IBGE[9] for the period of 1870-1985 and from the year of 1985 to the end of our examining period, our data are quoted from IBGE website[10]. Further, given more restrictive nature of deposits at Banco do Brasil, we use this variable mostly for robustness check thereby attaching greater weight to commercial bank deposits (see Figure 1)[11].

Additionally, we use the ratio of M1 to GDP as the proxy of the financial depth so as to further robustness check. Similar to our two main financial development indicators, multiple resources have been adopted to construct the serial of M1. As Mitchell.B.R (2003) only recorded the data from the year of 1948 – 1989 and from year of 1993 – 1999, we cited our M1 from IBGE for the period of 1870 – 1948. Moreover, to filling the gap between 1989 and

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[7] IBGE, 1990. Estatísticas históricas do Brasil : séries econômicas, demográficas e sociais de 1550 a 1988. Rio de Janeiro, pp 534-550.

[8] IBGE, 2007. Estatísticas Econômicas, Table MC-30, Depósitos a prazo 1901-1997. Available at: ftp://ftp.ibge.gov.br/

[9] IBGE, 1990. Estatísticas históricas do Brasil : séries econômicas, demográficas e sociais de 1550 a 1988. Rio de Janeiro, pp 534-550.

[10] IBGE, 2007. Estatísticas Econômicas, Table MC-30, Depósitos a prazo 1901-1997. Available at: ftp://ftp.ibge.gov.br/

[11] For robustness we also use two measures of financial development that reflect depth. The first indicator we use is the ratio of M2 to GDP (results are not reported). The main reason for considering this measure is that it has been used extensively in the finance-growth literature (see Campos et al. 2011). The second indicator is the M1over GDP.

1993, our data are quoted from the Banco Central do Brasil from this particular period.

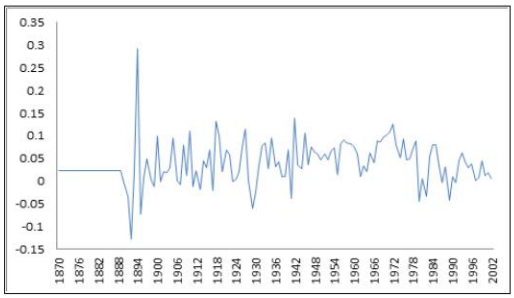

Fig 1.a: Economic Growth of Brazil

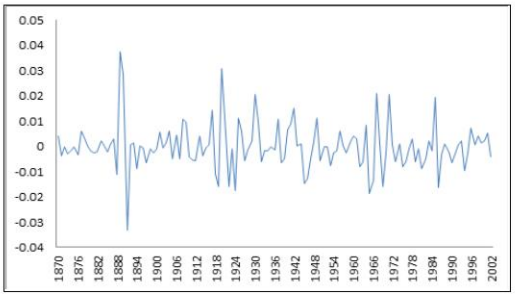

Fig 1.b: Money Supply (M1)

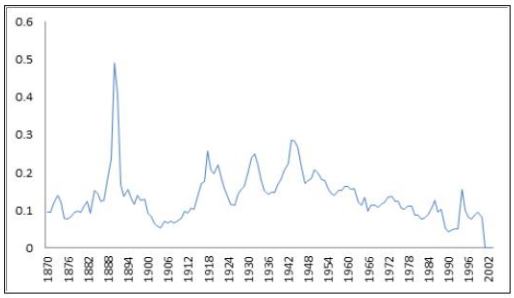

Fig 1.c: Commercial Bank Deposits

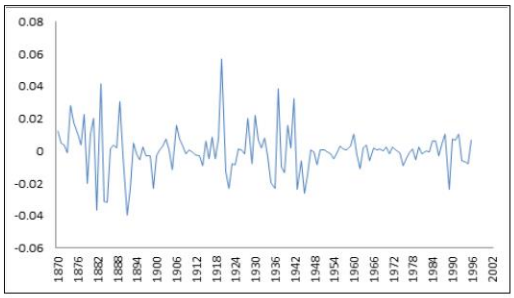

Fig 1.d: Deposits at Banco do Brasil

Figure 1 Economic Growth Rate of Brazil and Financial Development

Our next economic performance indicator of the Brazil is trade openness. As Chang, Kaltani, Loayza (2009) argued, openness promotes the efficient allocation of resources through comparative advantage, allows the dissemination of knowledge and technological progress, and encourages competition in domestic and international markets and hence economy growth. However, it is worthwhile to note that the theoretical literature has given more attention to the relationship between trade policies and growth rather than the association between trade volumes and growth[12]. Therefore, our three measures of trade openness are namely exports (over GDP), imports (over GDP) and imports plus exports (over GDP). Mitchell. B. R. (2003) recorded the three measures of trade openness yearly for both periods of 1870 – 1948 and 1981 – 2003. Nevertheless, the data sets that Mitchell provided since 1949 are recorded in millions of US dollars. In order to use the same monetary standard, we adopted the data quoted from IBGE[13] in the period of 1949 – 1980 (see Figure 2).

[12] Trade openness has two concepts – volumes and policies. Although these two concepts are closely related, their relationship with growth may differ from each other.

[13] IBGE, 1990. Estatísticas históricas do Brasil : séries econômicas, demográficas e sociais de1550 a 1988. Rio de Janeiro, p 570-571

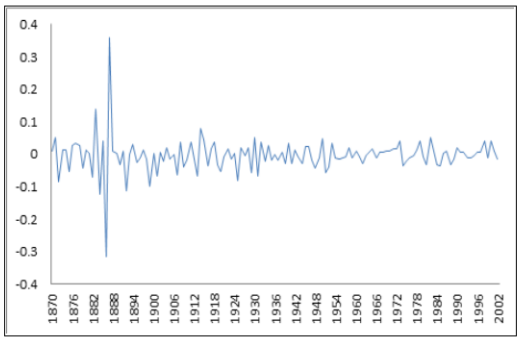

Fig 2.a: Trade Openness as a proportion of GDP

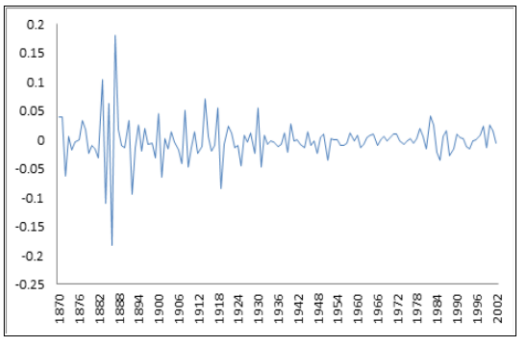

Fig 2.b: Exports as a proportion of GDP

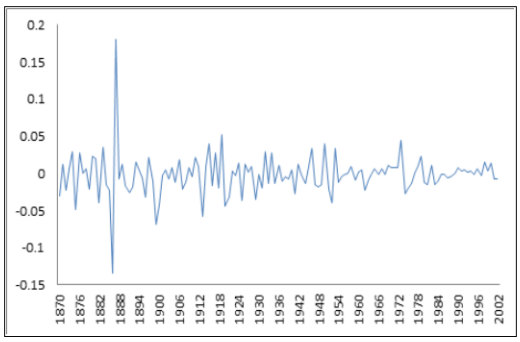

Fig 2.c: Imports as a proportion of GDP

Figure 2 Three measures of Trade Openness

The next control variables in our data sets are public deficit which are proxies as the ratio of total public deficit to GDP. According to Blejer and Cheasty (1991), one of the most commonly accepted definition of public deficit is the difference between current revenues and current expenditures of government. Therefore, in this chapter, we have three measures of public deficit: revenues (over GDP), expenditures (over GDP) and revenues minus expenditures (over GDP). Due to the missing figures of Mitchell (2003), our major source of the public deficit are Estatísticas históricas do Brasil: séries econômicas, demográficas e sociais de 1550 a 1988[14] and IBGE[15].

[14] IBGE, 1990. Estatísticas históricas do Brasil : séries econômicas, demográficas e sociais de 1550 a 1988. Rio de Janeiro, p 616 - 617.

[15] IBGE, 2007. Estatísticas Econômicas, Table FP01_Receita e despesa da União 1901-2000. Available at: ftp://ftp.ibge.gov.br/

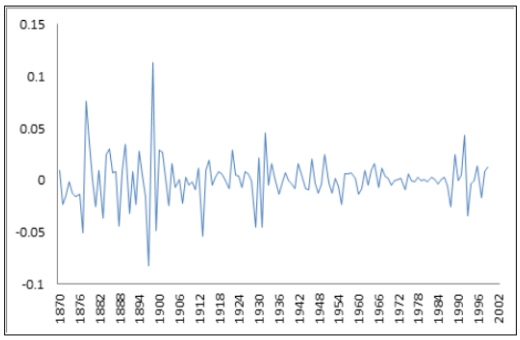

Fig 3.a: Public Deficit

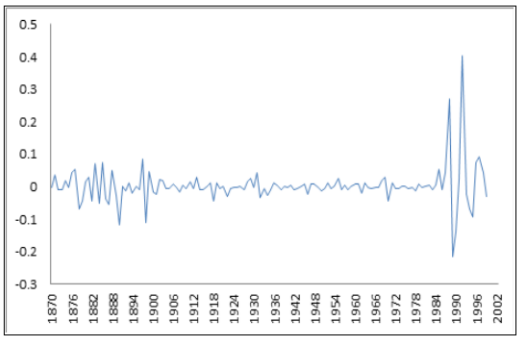

Fig 3.b: Expenditures

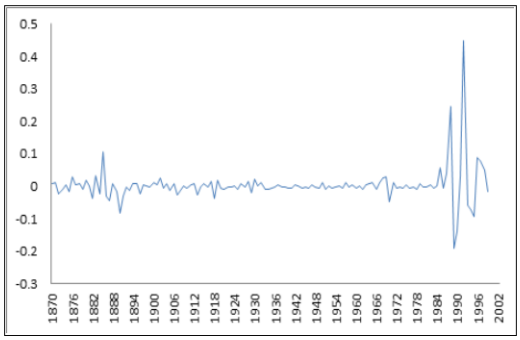

Fig 3.c: Revenues

Figure 3 Three measures of Public Deficit

Finally, international financial sector developments should also have an impact on Brazil's economic growth although for most of the period since 1930 Brazil remained a closed economy. Marcelo Abreu (1997) states that from 1930-1980 Brazil had a "cross-eyed" foreign economic orientation with bold export promotion polices and a rather closed domestic market. But Brazil, as the largest economy in Latin America, and ninth largest in the world, cannot be isolated to the world economy environment. However, it is still hard to measure the world economy environment itself, especially when we take both the depression and World War periods into account. Thus, in standard fashion in this type of study, we use the level of interest rate in US as our proxy of the global financial market. US interest rates are mainly quoted from Milton Fridman (1982)[16] (see Figure 4).

[16] Friedman, Milton and Schawartz, Anna J., 1982. Monetary Trends in the United States and United Kingdom: Their Relation to Income, Prices, and Interest Rates, 1867-1975" University of Chicago Press.

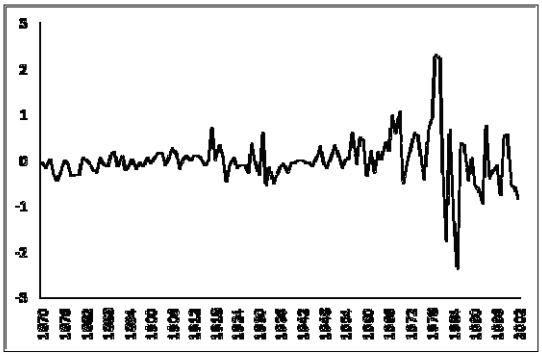

Fig 4: US Interest Rate

Figure 4 International Financial Development

1.5 General Econometric Framework

The PARCH model was introduced by Ding, Granger and Engle (1993) and quickly gained currency in the finance literature[17]. Let growth y_t follow a white noise process augmented by a risk premium defined in terms of volatility:

$$y_t = c + \text{klog}(h_t) + \lambda x_{i,t-l} + \varepsilon_t \quad , \qquad (1)^{18}$$

with

$$\varepsilon_t = e_t h_t^{\frac{1}{2}}$$

where $x_{i,t-l}$ is either the financial development variable or one of the other explanatory variables[19] and l is the order of the lag.

In addition, $\{e_t\}$ are independently and identically distributed (i.i.d) random variables with $\text{E}(e_t) = \text{E}(e_t^2 - 1) = 0$, while $(h_t)$is positive with probability one and is a measurable function of the sigma-algebra Σ_{t-l}, which is generated by $\{y_{t-1}, y_{t-2}, \ldots\}$.

In other words, h_t denotes the conditional variance of growth. In particular, h_t is specified as an asymmetric PARCH(1,1) process with lagged growth included in the variance equation:

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} f(e_{t-1}) + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi x_{i,t-l} + \gamma y_{t-n} \quad , \qquad (2)$$

With

$$f(e_{t-1}) = [|e_{t-1}| - \varsigma e_{t-1}]^{\delta} \quad ,$$

Where δ (with $\delta>0$) is the heteroscedasticity parameter, α and β are the ARCH and GARCH coefficients respectively, ς with $|\varsigma| < 1$ is the leverage term and γ is the level term for the

[17] See, for example, Karanasos and Kim (2006). Karanasos and Schurer, (2005, 2008) use this process to model output growth and inflation respectively.

[18] As a robustness check we estimate model 1 using $\sqrt{h_t}$ for the in-mean effect. The baseline results (see Appendix E) are very much similar to the results we report in the paper.

[19] Because the original deposits at Banco do Brasil and the US interest rate variables, are I(1), they enter our models in first differences.

*n*th lag of growth[20]. In order to distinguish the general PARCH model from a version in which δ is fixed (but not necessarily equal to two) we refer to the latter as (P)ARCH.

We present our main reasons in three interdependent blocs: the direct, indirect and dynamic (short and long-run) effects. We proceed with the estimation of the PARCH(1,1) model in equations (1) and (2) in order to take into account the serial correlation observed in the levels and power transformations of our time series data. The Tables below report the estimated parameters of interest for the period 1870-2003. These were obtained by quasi-maximum likelihood estimation (QMLE) as implemented in EVIEWS. The best fitting specification is chosen according to the Likelihood Ratio (LR) results and the minimum value of the Information Criteria (IC) (not reported). Once heteroscedasticity has been accounted for, our specifications appear to capture the serial correlation in the power transformed growth series.

Our set of variables tries to reflect the different explanations for the Brazilian puzzle previously put forward by economic historians. This set comprises domestic and international financial developments, the degree of openness to international trade and public deficit. In order to study the direct effects of our set of explanatory variables, we specify model 1 with $\varphi = 0$ in equation (2), while model 2 with $\lambda = 0$ in equation (1) allows us to investigate their indirect impacts on growth.

1.6 Empirical Results

Our results are presented following specific types of effects. That is, we discuss direct (on mean economic growth), indirect (via volatility), dynamic (short and long-run) and structural break effects. Moreover, in trying to satisfy both the time-series and economic growth literature traditions (the former mostly univariate and the latter multivariate), for each effect we report estimates for one variable at a time before discussing the full multivariate results.

1.6.1 Direct Growth Effects

Table 1 reports the results from our estimation of the (P) ARCH (1, 1) model for each one of the elements in our set of explanatory variables. The parameter we are most interested in is λ (in the second column.) The results reveal that the lagged direct effects of domestic financial development (any of the three measures), trade openness and public deficit (or their elements) on per capita economic growth rates are negative and statistically significant,

[20] The model imposes a Box-Cox power transformation of the conditional standard deviation process and the asymmetric absolute residuals.

whereas those of international financial development (US interest rate) are positive and statistically significant as well[21]. As we will see below the lagged direct effect on growth is equivalent to the short-run impact.

As for the in-mean parameter (k), notice that in all cases the estimates are statistically significant and positive which is in line with the theoretical argument of Black (1987). Also the power term coefficients δ are rather stable, with the Akaike IC (AIC) criteria choosing a (P)ARCH specification with power term in most of the cases equal to 1.00 (e.g., deposits at Banco do Brasil, trade openness, public deficit and US interest rate).

How robust are these baseline individual results? One robustness test would be to investigate whether or not such powerful and precise effects obtain in the presence of the other explanatory variables. In other words, we want to be sure that they remain if we add to the baseline specification any of our three additional variables[22]. Therefore, the estimated regression is as follows:

$$y_t = c + \text{klog}(h_t) + \lambda_{fd} x_{fd,t-l} + \lambda_{to} x_{to,t-l} + \lambda_{pd} x_{pd,t-l} + \lambda_{us} x_{us,t-l} + \varepsilon_t \quad , \qquad (3)$$

With

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}, \qquad (4)$$

Where $x_{fd,t-l}$ is a financial development indicator, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the tree measures) and $x_{us,t-l}$ is US interest rate. Further, while l is the order of the lag of the explanatory variables that maximum to eighth, n measures the lag of the growth (from 1 to 8).

Tables 1.1-1.3 present the results when we add all four regressors. That is, domestic financial development, trade openness, public deficit and US interest rate. The first three variables show the expected negative and statistically significant lagged direct impact (see the λ_{fd}, λ_{to}, and λ_{pd} columns)[23]. As for the effect of US interest rate, it is positive and statistically significant (see the λ_{us} columns in Tables 1.1-1.3). As we will see below the lagged direct effect on growth is equivalent to the short-run impact.

In summary, we find that the main explanatory factors, solely in terms of their direct effects on economic growth in Brazil, turn out to be domestic (mainly M1 and commercial bank deposits) and international (US interest rate) financial development. Interestingly, the effects of the later are working in the opposite direction from those of the former. Public

[21] We also estimate bivariate regressions (results not reported) to examine the joint effects of domestic and international financial development on growth. Moreover, our trivariate analysis (see Appendix A) reinforces the conclusion of the univariate one.

[22] Our trivariate analysis (see Appendix A) reinforces the conclusion of the univariate one.

[23] It is worth noting that deposits at Banco do Brasil affect growth negatively in only two out of the nine cases (see the λ_{fd} column in Table 1.3). That is, when we include as a regressor trade openness (or its elements) together with either public deficit or revenues the lagged direct impact of deposits (Banco do Brasil) disappears. Similarly, the influence of the trade openness on growth is qualitatively altered by the presence of domestic financial development and public deficit. In particular, the significance of its influence is altered by changes in the choice of these two variables. More specifically, the negative impact of trade openness on growth disappears when we include commercial bank deposits and public deficit (see the λ_{to} column in Table 1.2).

deficit and trade openness also seems to play an important role. Interestingly, we find that the direct effect of the latter (or its elements) is sensitive to the measures of the variables used in our analysis. We now turn to the investigation of the indirect effects.

1.6.2 Indirect Effects (Via Growth Volatility)

One of the main advantages of the (P)ARCH framework is that it allow us to study not only the direct growth effects from the full set of explanatory variables described above, but also their indirect effects on economic growth through the predicted component of growth volatility (conditional on its past values). As we can see from Tables 1 and 1.1-1.3 above and from Tables 2 and 2.1-2.3 in this section, the effect of conditional or predicted volatility on growth is in all cases positive ($k > 0$) and statistically significant at conventional levels. In the current section, we present our results for such indirect impacts in two parts and follow the same format as before: we first discuss the indirect effects of each one of our explanatory variables and then we present results for our complete set (that is, including all the four explanatory variables).

Table 2 reports the estimation results for each one of the elements in our data set for what we call the indirect impact, which is the effect on growth via the volatility channel[24]. The parameter we are most interested in is φ (in the fourth column.) Our results show that the effects of domestic financial development, trade openness and public deficit on the conditional volatility of per capita economic growth rates are negative and statistically significant whereas those of US interest rate are positive and significant.

Thus we find that exogenous increases in domestic financial development, public deficit and trade openness have a negative and significant indirect impact on growth (recall that the lagged direct effect is also negative). The result for the latter reflects one of the costs many economists associate with trade liberalization efforts: in the short-run, changes in the share of trade in GDP decrease the conditional or expected share of growth volatility (or, equivalently, increase the amount of growth volatility that economic agents are not able to anticipate.) Therefore such a decrease in conditional volatility driven by trade openness translates into lower rates of economic growth (because $k > 0$).

On the other hand, higher US interest rates are associated with a larger fraction of growth volatility that is anticipated by the relevant economic agents. And the larger the share of the total growth volatility that is anticipated, the higher the per capita growth rates we observe. Therefore, international financial integration register a positive lagged direct effect on growth and a positive and substantial impact on the expected or conditional share of growth

[24] In the expressions for the conditional variances reported in Table 2, various lags of growth (from 1 to 8) were considered with the best model ($l = 8$) chosen on the basis of the minimum value of the AIC.

volatility (see Tables 1, 1.1-1.3, and 2).

It is also worth noting that since the estimates for the in-mean parameter (k) and the level coefficient (γ) in Table 2 are statistically significant and positive they offer strong strong evidence for a positive bidirectional feedback relationship between growth and its volatility, which seems robust to the presence of various finance and economic variables.

We now proceed by investigating the robustness of these results. Specifically, and for comparability purposes, we ask how the results from the various aspects of domestic financial development, trade openness and public deficit change if we add to the baseline model the complete set of explanatory variables (as opposed to assess their effects one by one). Similar to the direct effects, our multivariate specification for the indirect effects is given by:

$$y_t = c + \text{klog}(h_t) + \varepsilon_t \quad , \tag{5}$$

With

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi_{fd} x_{fd,t-l} + \varphi_{to} x_{to,t-l} + \varphi_{pd} x_{pd,t-l} + \varphi_{us} x_{us,t-l} + \gamma y_{t-n}, \tag{6}$$

Where $x_{fd,t-l}$ is a financial development indicator, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the tree measures) and $x_{us,t-l}$ is US interest rate. Further, L and n are the order of the lags of explanatory variables and growth respectively (from 1 to 8).

Tables 2.1-2.3 show that after adding this full set of controls, the indirect negative effects of trade openness and public deficit remain statistically significant. Focusing our attention on the φ_{fd} and k parameters, note that two forms of financial development (in this case, M1 and deposits at Banco do Brasil) are found to affect conditional volatility negatively ($\varphi_{fd} < 0$ in Tables 2.1 and 2.3). Since $k > 0$, domestic financial development affects growth negatively as well. In other words, the negative indirect impact of commercial bank deposits on growth disappears in the multivariate analysis.

There is another additional important result from Tables 2.1-2.3. In terms of the effects of financial globalization (or, more specifically, of the international dimensions of financial development), we find that they tend to be positive and significant ($\varphi_{us} > 0$) on anticipated growth volatility when proxies by the interest rate in the US. This is intuitive as reductions in the US interest rate translate into the reduction of the price of money internationally with the latter pricing accounting for risk.

In summary, we find strong evidence that domestic financial development, trade openness and public deficit have a negative indirect (via volatility) impact on growth whereas US interest rate affects it positively.

1.6.3 Dynamic Aspects

In this section we investigate how short- and long-run considerations help us refine our baseline results. Another potential benefit from this exercise is that the required use of lags may help ameliorate any lingering concerns about endogeneity. In order to estimate short- and long- run relationships we employ the following error correction (P)ARCH form

$$\Delta y_t = \mu + \theta \Delta x_{i,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{i,t-1}\right) + \varepsilon_t \ , \tag{7}$$

where θ and ζ capture the short and long-run effects respectively, and ϕ is the speed of adjustment to the long-run relationship. This is accomplished by embedding a long-run growth regression into an ARDL model. In other words, the term in parenthesis contains the long-run growth regression, which acts as a forcing equilibrium condition

$$y_t = c + \zeta x_{it} + u_t \ , \tag{8}$$

where u_t is *I(0)*. The lag of the first difference of either the financial development variable (domestic or international) or trade openness or public deficit ($\Delta x_{i,t-l}$) characterizes the short-run effect. The condition for the existence of a long-run relationship (dynamic stability) requires that the coefficient on the error-correction term be negative and not lower than -2 (that is, $-2 < \phi < 0$). We also take into account the PARCH effects by specifying the error term u_t as follows

$$\varepsilon_t = e_t h_t^{\frac{1}{2}} \ , \tag{9}$$

Where

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \tag{10}$$

Table 3 presents the results on the estimation of short- and long-run parameters linking the four explanatory variables with growth. In all cases, the estimated coefficient on the error correction term (ϕ) lies within the dynamically stable range (-2, 0). From investigating whether dynamic considerations affect our conclusions, we find important differences in terms of short and long-run behavior of our explanatory variables, more specifically, while the negative effects of public deficit are similar in the long- and short-run, that of domestic financial development are negative in the short- but positive in the long-run (see the θ and ζ columns). Those for US interest rate are positive in the short- but negative in the long-run. Finally, the negative short-run effects of trade openness disappear in the long-run.

For the sake of space, we do not report the results for the intermediate steps[25]. Table 3.1 presents the results for the four regressors with the estimated model defined as follows

$$\Delta y_t = \mu + \theta_{fd} \Delta x_{fd,t-l} + \theta_{to} \Delta x_{to,t-l} + \theta_{pd} \Delta x_{pd,t-l} + \theta_{us} \Delta x_{us,t-l} + \varphi\left(y_{t-1} - c - \zeta_{fd} x_{fd,t-1} - \zeta_{pd} x_{pd,t-1} - \zeta_{us} x_{us,t-1}\right) + \varepsilon_t \ , \tag{11}$$

[25] See trivariate results in Appendix A.

With

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}, \quad (12)$$

Where $x_{fd,t-l}$ is a financial development indicator, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the tree measures) and $x_{us,t-l}$ is US interest rate.

The estimates of ϕ lie within the range -1.00 to -0.74. Regarding the short and long-run estimates, θ_i and ζ_i, we focus our analysis first on those obtained from the US interest rate. All estimates of the short-run coefficients (see the θ_{us} column) are highly significant and positive whereas the corresponding values for the long-run coefficients are negative (see the ζ_{us} column).

Next we discuss the results regarding the domestic financial development and trade openness variables. In the long-run, we find that financial development (in this case, M1 and commercial bank deposits) affects growth positively (see the ζ_{fd} column in Table 3.1). Interestingly, the short-run coefficients tell a very differently story: we find that the short-run impact of financial development (any of the three measures) on growth is negative and significant (see the θ_{fd} column). Thus our results square well with recent findings by Loayza and Rancière (2006), among others, in that the sign of the relationship between economic growth and financial development depends on whether the movements are temporary or permanent (the effect being negative in the former and positive in the latter). Finally, the negative short-run impact of trade openness (any of the three forms) disappears in the long-run (thus it is not included in the regression)[26]. Interestingly, the negative long-run impact of public deficit (but not of its elements) disappears as well.

In summary, in the short-run three variables have a negative effect on growth whereas that of the US interest rate is positive. In the long-run domestic financial development affects growth positively whereas the impact of US interest rate turns to negative and that of trade openness (any three aspects) disappears.

1.6.4 Structural Breaks

One final important robustness test regards the role of structural breaks. We use the methodology developed by Bai and Perron (2003) to examine whether there are any structural breaks in growth, its volatility, the three financial development variables, the various aspects of trade openness and the three forms of public deficit. Bai and Perron (2003) address the problem of testing for multiple structural changes under very general conditions on the data and the errors. In addition to testing for the existence of breaks, these statistics

[26] These results are in line with the ones from the bivariate/trivariate analysis (not reported). Thus our multivariate analysis shows that the short- and long-run effects of domestic and international financial development are not affected by the addition of two other explanatory variables to the model.

identify the number and location of multiple breaks.

In the case of the economic growth series the Bai-Perron methodology supports one structural break point which occurs for year 1918[27]. For US interest rate and, interestingly, also for growth volatility we find no structural breaks. However, our Bai-Perron results support that two measures of domestic financial development, M1 and commercial bank deposits, have two structural breaks, which are dated for years 1889 and 1930, and 1914 and 1962, respectively. In addition, we also find two structural breaks in expenditures and revenues (they are dated 1890 and 1980). Further, we also find one structural break in trade openness and public deficit (it is dated 1899 and 1965, respectively).

In what follows, we incorporate dummy variables in the equations (1), (2), (7) and (10), thus taking into account breaks in growth, domestic financial development, trade openness and public deficit. First, we introduce the following notation. D_{1t}, is an (intercept) dummy defined as $D_{1t} = 1$ in the periods 1918-2003 and $D_{1t} = 0$ otherwise. Similarly, D_{it} is a (slope) dummy indicating the period which starts from the year of the break in either the financial development or trade openness or public deficit variable (x_{it}). For example for the latter $D_{it} = 1$ in the period from 1965 to 2003 whereas for the revenues/expenditures $D_{it} = 1$ during the period from 1980 until the end of the sample, and $D_{it} = 0$ otherwise.

The augmented model is given by

$$y_t = c + k\log(h_t) + \lambda x_{i,t-l} + \lambda_d D_{i,t-l} x_{i,t-l} + \epsilon_t, \tag{13}$$

And

$$h_t^{\frac{\delta}{2}} = \omega + \omega_1 D_{1t} + \alpha h_{t-1}^{\frac{\delta}{2}} f(e_{t-1}) + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi x_{i,t-l} + \varphi_d D_{i,t-l} x_{i,t-l} + \gamma y_{t-n}, \tag{14}$$

Recall that the coefficients φ and λ capture the impacts of the variable (either financial development or trade openness or public deficit) on growth and its volatility respectively. Similarly, φ_d and λ_d correspond to the two effects from the year of the break onwards. Thus the two effects are captured by φ and λ in the period up to the year of the structural break, and by $\varphi + \varphi_d$ and $\lambda + \lambda_d$ during the period from the year of the break until the end of the sample. As above in order to study the direct effects of financial development we specify model 1 with $\varphi = \varphi_d = 0$, while model 2 with $\lambda = \lambda_d = 0$, allows us to investigate indirect impact on growth.

We also incorporate intercept dummies and level effects in the error correction equation (7) and conditional variance equation (10), as follows

$$\Delta y_t = \mu + \theta \Delta x_{i,t-l} + \theta_d D_{i,t-l} \Delta x_{i,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{i,t-1}\right) + \varepsilon_t, \tag{15}$$

$$h_t^{\frac{\delta}{2}} = \omega + \omega_1 D_{1t} + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \ , \tag{16}$$

Overall, we find our results to be quite robust to the inclusion of the structural break

[27] As a measure of volatility we use the power transformed absolute growth $|y_t|^d$.

dummies. That is, domestic financial development has negative short-run effects on growth whereas its long-run impact is positive. The short- and long-run impacts of US interest rate are opposite from those of domestic financial development. Public deficit affects growth negatively both in the short and the long-run. Trade openness has a negative short-run impact but the effect disappears in the long-run. For all four variables both lagged indirect and direct effects have the same sign, that is, positive for the US interest rate and negative for the other three. It is also noteworthy that the lagged direct effects on growth of commercial bank deposits and revenues/expenditures are stronger before 1914 and after 1980, respectively. The indirect effects of the public deficit are weaker after 1965.

1.6.5 Summary Results

This section summarizes our main results. The long-run impact of domestic financial development on growth is positive whereas its short-run effect is negative (see the first row of Table 7). Similarly to domestic financial development, for trade openness both the lagged direct/ short-run and indirect effects on growth are negative. However, in the long-run the impact disappears. The effects of the US interest rate on growth are exactly the opposite from those of domestic financial development. That is, its long-run impact is negative whereas the short-run/lagged direct as well as the indirect effects are positive (see the third row of Table 7). Finally, all four influences of public deficit (direct, indirect, short and long-run) are negative.

Table 7: Summary of Results: Direct, Indirect, Short and Long-run Effects.

	D	IND	SR	LR		D	IND	SR	LR
Financial Development	-[1]	-[2]	-	↑	Trade Openness	-[4]	-	-[5]	0
US Interest Rate	↑	↑	↑	-	Public Deficit	-	-	-[6]	-[7]

Notes: D denotes the direct effect. IND is the indirect effect. LR and SR denote the long and short-run impacts, respectively. [1]For deposits (Banco do Brasil) the effect is insignificant (see the π_{fd} column in Table 1.3). [2]The effect disappears when commercial bank deposits are used (see the ϕ_{fd} column in Table 2.2). [3]The impact is insignificant when deposits at Banco do Brasil are used (see the γ_{fd} column in Table 3.1). [4]The effect disappears when commercial bank deposits and public deficit are used (see the π_{to} column in Table 1.2). [5]The impact is insignificant when deposits (Banco do Brasil) are used. [6]The effect disappears when commercial bank deposits and either expenditures or revenues are used. [7]The impact disappears when either M1 and expenditures or public deficit are used (see the γ_{pd} column in Table 3.1).

Table 7 Summary of Results

For all four variables both lagged direct and indirect effects on growth work in the same direction and the former is equivalent to the short-run impact (see the first three columns of Table 7).

In sum, our main results suggest that financial development (domestic and international)

exhibit the most robust first-order effects on growth and its volatility. We also find that trade openness and public deficit play important yet secondary roles because the effects of the former do not extent to the long-run (that is, they are restricted to the short-run) and those of the latter are sensitive to the measures of the variables used in our analysis.

Thus the most robust results obtained for domestic and international financial development. Interestingly, the effects for the later are working in the opposite direction from those of the former.

1.7 Conclusions and Future Research

Using a PARCH framework and data for Brazil from approximately 1890 to 2003 we ask the following questions: What is the relationship between, on the one hand, financial development (domestic and international), public deficit, trade openness and, on the other hand, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations? We find that the main explanatory factors, solely in terms of their negative lagged direct/indirect effects on economic growth in Brazil, turn out to be domestic financial development, trade openness and public deficit. Further, we find robust evidence that the US interest rate affect growth positively both directly (lagged effect) and indirectly via its volatility.

From investigating whether dynamic considerations affect our conclusions, we find important differences in terms of short- and long-run behavior of our key variables, more specifically, while the effects of financial development (mainly M1 and commercial bank deposits) are negative in the short- and positive in the long-run, that of the US interest rate work in the opposite direction. Finally, public deficit has both a negative short and long-run impact.

These findings are interest in themselves but they also matter because they raise a number of new questions that we believe may be useful in motivating future research. Here we highlight two suggestions. Regarding the role of finance in the process of economic development, our finding reinforces a large body of previous research in that we also show a strong, positive impact of financial development on growth in the long-run. We cannot forget however that Brazil is unique. Put it differently, Brazil is an outlier and further research could try to replicate our analysis using the historical experience of other countries (ideally in a panel setting). That is, to study the relationship between financial development and economic growth in a panel of developing countries would strengthen what we know. Yet, the data requirements are very heavy indeed, with most developing countries lacking

historical data even on key figures, such as per capita GDP, going back to the beginning or middle of the XIXth century. This, of course, does not make this task less important.

The second suggestion refers to a possible methodological improvement, namely the application of the bivariate GARCH model to the problem at hand (albeit the relatively small number of observations). The joint estimation of the political instability-financial development-growth system in a panel of countries would clearly represent progress and is something we feel future research should try to address.

Chapter Two

Institutional Change and Economic Growth in Brazil from 1870 to 2003

2.1 Introduction

It is difficult to identify the causal effect of institutions on economic growth. In developed countries, institutions do change but they do so extremely slowly and the relevant starting point to evaluate their effect is arguably well beyond available data (e.g., early 1800s may be ideal). On the other hand, institutions do change much quicker in developing countries but the quality of the few existing data tends to be rather questionable, that is, when available. This chapter explores a new dataset and within country variation over extremely long periods of time to assess the causal effects of various types of institutions in terms of the growth rate of per capita GDP.

In terms of the definition of the political instability, Campos and Karanasos (2008) closely follow North distinction between formal and informal institutions to focus on the role of political instability. Institutional change can hence occur through changes in formal or through changes in informal political institutions. The latter includes events of political unrest like assassinations, revolutions and riots, and the former includes events such as government terminations and electoral surprises. In other words, the latter ones (termed formal political instability) are the result of the competing between different political institutions or factions while the former ones (termed informal instability) have no appropriate representation within institutional channels.

Of course there has been a lot of interest and a burgeoning literature on the relationship between political instability and economic growth. In a seminal paper, using a cross section framework, Barro (1991) finds that assassinations, number of coups and revolutions have a negative effect on growth. Campos and Nugent (2002) confirm this result by using panel data analysis. Interestingly, Campos and Nugent find that the political instabilities causes a negative impact (on growth) in Saharan African countries but have a positive effect in a sample of Middle East countries. Yet, other researches claim that there is no significant relationship between political instability and output growth. Easterly and Rebelo (1993) suggested, assassinations and war casualties have no significant effect on growth. Benhabib-Spiegel (1997) and Sala-i-Martin (1997) also support this argument by using different data and methodologies.

Within a power-ARCH (PARCH) framework and using annual time series data for Brazil covering the period from 1870 to 2003, the aim of this chapter is to put forward answers to the following questions. What is the relationship between instability of a country's key political institutions, economic growth and volatility? Are the effects of these variables direct (on economic growth) or indirect (via the conditional growth volatility)? Does the intensity and sign of these impacts vary over time? Does the intensity of these effects vary with respect to short- versus long-run considerations? Is the intensity of these effects constant across the different eras or phases of Brazilian economic history (in other words, are they independent from the main structural breaks we estimate)?

This chapter tries to contribute to our understanding of whether instability of a country's key political institutions affects output growth. We believe this further our understanding of economic growth because: (a) we study only one individual country over a very long period of time with annual frequency data. Most of the researches assess political instability from a cross-country perspective (Barro, 1991; Levine and Renelt,1992; Fosu, 2001 etc.) while others are more focused on the shorter periods trying to explain the growth rate of Brazil and Argentina (Campante et al., 2009), (b) we extensively use the economic history literature to guide our choice of potential important reasons behind the performance of the Brazilian economy over a very large time window, (c) we choose an econometric methodology that has been seldom used in the empirical growth literature despite the fact that it easily allow us to contrast the direct to the indirect (i.e., via the volatility channel) effects of each of our candidate reasons, sort out the short- from the long-run impacts, and distill the consequences of accounting for important structural breaks on the robustness of our key results. Another important, albeit more technical, benefit of our choice of econometric framework is that it helps shedding light on an important and resilient puzzle on the relationship between output growth and its volatility. While Ramey and Ramey (1995) show that growth rates are adversely affected by volatility, Grier and Tullock (1989) argue that larger standard deviations of growth rates are associated with larger mean rates. The majority of ARCH papers examining the growth-volatility link are restricted to these two key variables. That is, they seldom assess whether the effects of the presence of other variables affect the relation and, in the rare occasions that happens, they are usually inflation and its volatility that comes into play[28].

Our results are presented following specific types of effects. That is, we discuss direct (on mean economic growth), indirect (via volatility), dynamic (short and long-run) and structural break effects. As for the direct effects on economic growth, we find evidence for negative direct influences on real GDP growth from both the informal political instabilities

[28] For a comprehensive review of this literature see Fountas et al. (2007). In addition, Gillman and Kejak (2005) bring together for comparison several main approaches to modeling the inflation-growth effect by nesting them within a general monetary endogenous growth model with both human and physical capital.

(i.e, assassinations, coups and revolutions) and formal political instabilities (i.e, legislative effectiveness and number of cabinet changes). Equally importantly, we find that almost all of our political instability indicators have strong negative impacts on the output growth in the short-run. How does this set of variables affect predicted growth volatility? Or in other words, how do they affect growth indirectly through their impact on growth volatility? We find strong volatility-decreasing effects form both formal and informal political instabilities. Our investigation of the dynamic effects shows important differences in terms of the short and long-run behavior of our key variables: almost all political factors affect growth negatively in the short-run but the evidence in the long-run is weaker. Importantly, however, the negative impact of assassinations, coups, revolutions together with legislative effectiveness and cabinet changes remain strong in the long-run. Finally, we subjected all these results to the presence of structural breaks. This is a crucial exercise given the very long-term nature of our data. We find that our basic results remain once we take structural breaks into account. It is also noteworthy that the contemporaneous direct effects on growth of our explanatory variables (i.e, anti-government demonstrations and assassinations) are stronger before the structural breaks, whereas the indirect effects are weaker after the breaks.

In sum, our main results suggest that the instability of political institutions (four measures of political indicators from both formal and informal political variables) exhibit the most robust first-order effects on growth and its volatility. We also find that other political factors play important yet secondary roles because the long-run effects disappeared (that is, they are restricted to the short-run). Hence in summary the most robust results (negative direct/indirect, short and long-run impact on economic growth) are those obtained for assassinations, number of coups, legislative effectiveness and cabinet changes.

The chapter is organized as follows. Section 2.2 reviews the historical researches of political instability. Section 2.3 sets the construction of our new data set for the chapter by documenting the Brazilian political history events from 1870 to 1930. Section 2.4 provides justification for our econometric methodology. Section 2.5 has our baseline econometric results. Section 2.6 summarizes the conclusion.

2.2 Literature Review

Economic growth and political instabilities are closely interconnected. Theoretically, as Drazen (2000) states there are two main reasons for why political instability may affect economic outcomes. Firstly, political instability creates uncertainty with respect to future institutions and policymakers, which alters the behavior of private agents and firms with respect to accumulation of capital. Secondly, because political instability can disrupt market

functioning and economic relations, it has a direct effect on productivity and hence output economic growth. However, whereas economic growth is well-defined concept, political instability is not. Since the political instability itself cannot be measured directly, empirical studies often rely on indicators like the number of the revolutions (Barro, 1991) or the number of the assassinations (Easterly and Rebelo, 1993). Nevertheless, political instability is a multi-dimensional concept which cannot be captured by one or two variables. Therefore, in this chapter, we follow North distinction between formal and informal institutions to focus on the role of political instability. Institutional change can hence occur through changes in formal or through changes in informal political institutions. The latter includes events of political unrest like assassinations, and number of the coups and the former includes events such as government terminations and electoral surprises. In other words, the latter ones (termed formal political instability) are the result of the competing between different political institutions or factions while the former ones (termed informal instability) have no appropriate representation within institutional channels.

On the empirical side, historical researches on the association between political instability and output growth suggest at least three kinds of possibilities. The first aspect in the literature suggests that political instability has a significant effect on economic growth. For instance, Alesina et.al. (1996), using a sample of 113 countries from 1950 to 1982, finds that instability has a negative and significant effect on per capita GDP growth. Campos and Nugent (2002) confirm this result by using panel data analysis. Interestingly, Campos and Nugent find that the political instabilities causes a negative impact (on growth) in Saharan African countries but have a positive effect in a sample of Middle East countries. The second aspect in the literature argues that economic growth causes political stability (Zablotsky, 1996), while Kirmanoglu (2003) investigates the relationship between per capita GDP and political instability for 19 countries and gives a third suggestion that the causality runs both ways. Moreover, some researches claim that there is no significant relationship between political instabilities and output growth. As Easterly and Rebelo (1993) suggested, assassinations and war casualties have no significant effect on growth. Few years later, Benhabib-Spiegel (1997) and Sala-i-Martin (1997) also support this argument by using different political indicators and methodologies.

Focusing on our case study of Brazil, although Brazil is marked by extremely social unrest in the particular periods (e.g. 1920s and 1980s), there is little historical research that covers the case of Brazil. Luisa Blanco and Robin Grier (2009) investigate the underlying causes of political instability in a panel of 18 Latin American countries from 1971 – 2000 and find that the openness to trade has a significant negative effect on instability. Bildirici Melike (2004) investigates the link between political instability financial depth and economic growth in the

emerging countries (including Brazil) for 1985 – 2004 and suggests a short-run causality.

In sum, similar to Melike's work, we ask the questions of what is the relationship between financial development, political instability, public deficit, trade openness and output growth. Are these effects fundamentally and systematically different? Do the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations. In the section below, we will discuss our measures of all those explanatory variables.

2.3 Construction of our New Data Set on Changes of Political Institutions in Brazil since 1870

This section presents the data used in our analysis. Our political instability variables can be divided into two categories, formal political instabilities and informal ones. Both formal and informal political indicators are recorded yearly for Brazil from the year of 1919 to the year of 2003 with the exclusion of the World War II period (1940-1945). However, in order to track our political instability variables back to the year of 1870, we constructed our own informal political instability series from the year of 1870 to the year of 1919.

To achieve this goal, firstly, according to the definitions of the political instability variables, we collect the related political events from 1870 -- 1930. Then, by comparing the data we constructed to the existing ones from 1919 to 1930, we can evaluate the accuracy of the series we generated. Therefore, in the following subsections, we describe in detail the construction of the political instability indicators from 1870 to 1930. We will also discuss how those political events we generated match our existing data set.

2.3.1 Informal Political Instabilities:

Our informal political instability variables include (see figure 5) seven indicators.

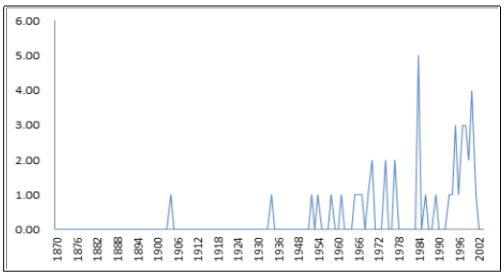

Fig 5.a: Anti-government Demonstrations

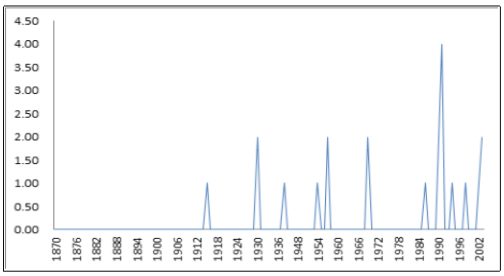

Fig 5.b: Assassinations

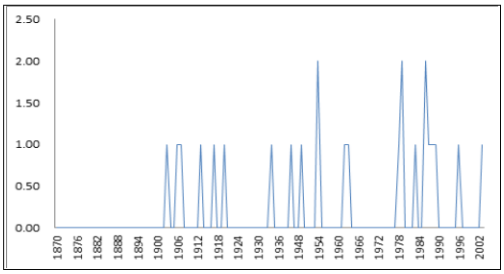

Fig 5.c: General Strikes

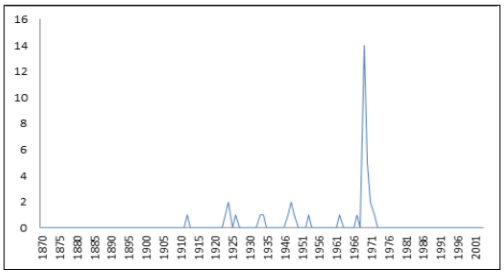

Fig 5.d: Guerrilla Warfare

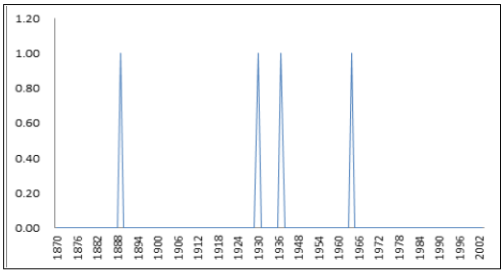

Fig 5.e: Number of Coups d'etat

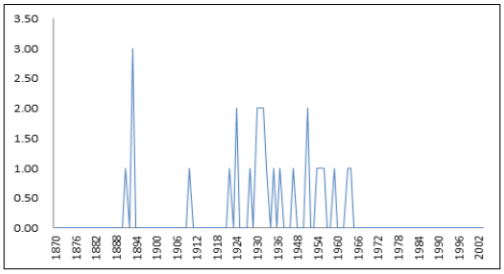

Fig 5.f: Revolutions

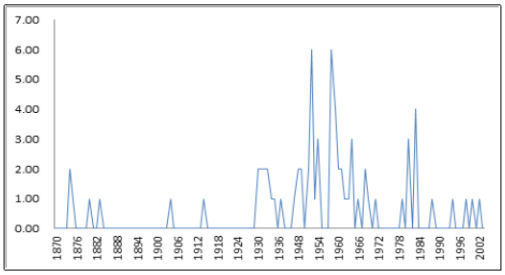

Fig 5.g: Riots

Figure 5 Informal Political Instabilities

First of all, we identify the events that related to the anti-government demonstrations. As anti-government demonstrations is defined as peaceful government gatherings of at least 100 people, we find only one related political event occurred in the year of 1904. With the approval of law of Mandatory Vaccine, an uprising against government's decisions broke out. The event began on 10th November, with a group of student demonstration (Boris Fausto, 1986)[29]. Although the movement quickly turned to riot at the end, it was a peaceful demonstration in the first few days. In the following 26 years, until the year of 1930, we cannot observe any other information about anti-government demonstrations either from the political history resources or our existing data set.

[29] Boris Fausto (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp812.

Next, assassinations are defined as any political motivated murder or attempted murder of a high government official or politician. The only related piece of event we found during the period of 1870 -- 1919 is that Jose Gomes Pinheiro Machado, who was a Brazilian republican politician, was murdered in the year of 1915 (Boris Fausto, 1986)[30]. Further, to comparing to our existing data, we also find two other assassinations in the year 1930. Earlier in February, Vice president Mello Vianna was shot three times in the neck and in the hand at Monte Claros in the states of Minas Geraes[31]. After a few months, Joao Pessoa Cavalcanti de Albuquerqu, who was the governor of the Paraiba, was murdered in July (Boris Fausto, 1986)[32].

In the case of general strikes, the identification is clear before the year of 1888 since Brazil was still under slavery. According to the definition of the general strikes(a general strike involved with at least 1000 workers and aimed at government policies), we found that the first major strike in Brazil occurred in Rio de Janeiro in 1903[33] when workers at the Aliaca Textile Mill walked off the job. This strike paralyzed Rio de Janeiro for twenty days when over 40,000 workers from all the city's textile mills went on strike demanding better conditions and pay (Michael M. Hall and Hobart A. Spalding, 1988)[34]. The next short and unsuccessful strike to shake Brazil was a general strike in the textile industry of Sao Paulo in 1907 (Michael M. Hall and Hobart A. Spalding, 1988). Six years later, the strike led by cities Federacao Operaria Syndical occurred in Rio Grande do Sal (Michael M. Hall and Hobart A. Spalding, 1988)[35]. In the year of 1917, one of the most violent general strikes[36] broke out in Sao Paulo in July. According to Michael M. Hall and Hobart A. Spalding, records show that about 50,000 people joined the movement. From the year of 1919 to 1930, our existing data set shows that one strike happened in the year of 1920 which is recorded by Steven (2011). However, this general strike[37] was called in 1920 for factory workers in Rio de Janeiro.

It is, sometimes, hard to distinguish the guerrilla warfare to the revolutions. In this chapter, we defined our guerrilla warfare as armed activity, sabotage, or bombings carried on

[30] Boris Fausto (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp817.
[31] Found the event in newspaper. Available at: http://trove.nla.gov.au/ndp/del/article/83815336.
[32] Boris Fausto. (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp827.
[33] Michael M. Hall and Hobart A. Spalding (1988). The urban working class an dearly Latin American Labour movements, 1880-1930. Volume 4 of Cambridge History of Latin American. Cambridge University Press. pp348.
[34] Michael M. Hall and Hobart A. Spalding (1988). The urban working class an dearly Latin American Labour movements, 1880-1930. Volume 4 of Cambridge History of Latin American. Cambridge University Press. pp348.
[35] Michael M. Hall and Hobart A. Spalding (1988). The urban working class an dearly Latin American Labour movements, 1880-1930. Volume 4 of Cambridge History of Latin American. Cambridge University Press. pp348.
[36] Michael M. Hall and Hobart A. Spalding (1988). The urban working class an dearly Latin American Labour movements, 1880-1930. Volume 4 of Cambridge History of Latin American. Cambridge University Press. pp332.
[37] Steven (2011). Organized Labor in Brazil 1900-1937: From Anarchist Origins to Government Control - Colin Everett. Available at: http://libcom.org/history/organized-labor-brazil-1900-1937-anarchist-origins-government-control-colin-everett

by independent bands of citizens or irregular forces and aimed at the overthrow of the present regime. According to this definition we found the Contestado War (Guerra do Contestado)[38] is a typical guerrilla war occurred in 1912 (Vinhas de Queiroz, 1966). Clashes between settlers and landowners lasted for four years. During that time, with the support by the Brazilian states' police and military forces, around 9,000 houses were burned and 20,000 people were killed. At the end, the guerrilla war was finally ended with the capture of Adeodato -- the last leader of the Contestado, in August of 1916. Further, by comparing the series we quoted from 1919 -- 1930, we found two more guerrilla wars. The first one is called revolution of 1923[39] while the second one is the movements lead by Luis Carlos Prestes in the year of 1924 (Boris Fausto, 1986)[40].

The fifth measure of our informal political instability variable is the number of the coups, which is defined as the number of extra constitutional or forced changes in the top government elites. It is very clear that in our examined period of 1870 -- 1930, only two bloodless coups occurred, in the year of 1889 and 1930 respectively. As Riordan Roett (1999) stated, the traditional resources of support for the monarchy were seriously weakened at the end of the Second Empire. Firstly, on November 15 of 1899, the Emperor was dethroned and Brazil passed from centralized Empire to federal republic by bloodless coup ever since (Boris Fausto, 1986)[41]. Secondly, in the year of 1930, after Vargas took the power, he issued a decree law which granted virtually dictatorial power to the government and dissolved the congress. This is so called a coup as Leslie Bethell (2008) mentioned in Politics in Brazil under Vargas, 1930-1945.

The definition of our sixth informal political indicator –revolutions, is as follows: illegal or forced change in the top governmental elite, any attempt at such a change, or any successful or unsuccessful armed rebellion whose aim is independence from the central government. During the six years from 1864 to 1870, Brazil, Argentina and Uruguay fought a bloody war with Paraguay. The war ended with the victory of Brazil and its allies but at a terrible price. Nevertheless, in Brazil, the war contributed to the growth of manufacturing and to increased power of the central government. Thus, there was almost no revolutionary revolt against the government during the last two decades of the Second Empire. However, due to the competition between the President Deodora da Fonseca and the vice President Floriano Peixoto, soon after the formation of the First Republic, the first revolt of the Naval (Revolta da Armada) broke out in 1891. The President dissolved the congress provoking

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[38] Vinhas de Queiroz, Mauricio (1966). Messianismo e conflito social: a guerra sertaneja do Contestado (1912-1916). Rio de Janeiro: Oxford University Press.

[39] This event has no English sources.
Flores, Moacyr (1993). História do Rio Grande do Sul. Porto Alegre: Nova Dimensão,
Also see: http://pt.wikipedia.org/wiki/Revolu%C3%A7%C3%A3o_de_1923

[40] Boris Fausto (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp820.

[41] Riordan Roett, 1999. Brazil: Politics in a Patrimonial Society. pp7.
Also see, Boris Fausto. 1986. Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press.

rebellions in the navy and in Rio Grande do Sul (June E. Hahner, 1969)[42]. One year later, a document sent by 13 generals to the president of the Republic manifesto called for new elections. President Floriano who took office since the first revolt of the Naval, suppressed the movement, and ordered the arrest of its leaders. Therefore, in the September of 1893, the second Revolta da Armada broke out at Rio de Janeiro (June E. Hahner, 1969). While the naval insurgents still threaten the capital, the Federalists rapidly approach the southern borders of Sao Paulo. The Federalist Revolution[43] which lasted two years from 1893 - 1895 was defeated in the Battle of the Pulador (June E. Hahner, 1969). Moreover, in the same year of 1893, a more bloody conflict between the state of Brazil and a group of settlers who founded their own community, named Canudos, began. The Canudos war[44] had a brutal end in the October 1897, almost all the inhabitants were killed by a large Brazilian army force (Colin M. MacLachlan, 2003). Few years later, The Revolt of the Lash (Revolta da Chibata)[45], occurred on November 1910. There were about 2400 sailors involved in this so called sailors' revolt. The rebel had been planned for about two years and triggered by severe punishment applied to the sailor Marcelino Rodriguez Menezes. The movements last from 22nd to 27th, the crews, most of them were black, deposed their white officers and threatened to bomb the city, however the mutiny was resolved within a week (Schneider Ann, 2009). Further, for the comparison reasons we mentioned above, we also investigated the revolutionary events of Brazil during the period of 1919 -- 1930. As Boris Fausto (1986) stated, the period between 1922 and 1924 was marked by many conflicts and riots. Tenente Revolts[46] occurred in 1922 and once again in 1924 which contribute significantly to the weakening of the political power of the Sao Paulo oligarchy. Few months after Tenente revolt, other revolts[47] without names broke out in various cities in Rio Grande do Sul against the government (Boris Fausto, 1986). In the year of 1928, a revolt[48] has been recorded in a newspaper without many details. "A revolutionary outbreak was reported from Mattogresso with no details." was the only piece of news can be found. Two years later, the Revolution of 1930[49] overthrew President Washington Luis and installed Getulio Vargas as Provisional President (Leslie Bethell, 2008). Few months later in 1930, Revolta de Princesa -- Paraíba occurred.

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[42] June E. Hahner, 1969. Civilian -- Military Relations in Brazil 1889-1898. University of South Carolina Press. P133
Also see: http://en.wikipedia.org/wiki/Revolta_da_Armada

[43] June E. Hahner, 1969. Civilian -- Military Relations in Brazil 1889-1898. University of South Carolina Press. pp 143.

[44] Colin M. MacLachlan (2003). History of Modern Brazil: the past against future Rowman & Littlefield Publishers. pp50.

[45] Schneider Ann, 2009. The 1910 Sailors' Revolt Against the Lash. University of Chicago Press.

[46] Alain Rouquie and Stephen Suffern (1995). The military in Latin American politics since1930.. Volume 6 of Cambridge History of Latin American. Cambridge University Press. pp240.

[47] Boris Fausto (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp820.

[48] Asuncion (1928, Aug. 10). Revolt in Brazil. The Straits Times.
Available at: http://newspapers.nl.sg/Digitised/Page/straitstimes19280811.1.10.aspx

[49] Leslie Bethell (2008). Politics in Brazil under Vargas, 1930-1945. Volume 9 of Cambridge History of Latin American. Cambridge University Press.

The last measure of our informal political instability variable is the riots, which defined as the violent demonstration or clash of more than 100 citizens involving. The Riots before the First Republic have been documented in several books (Bethell, Leslie, 1985, Maecdo, M. K, 1998 and Carneiro David, 1960). From 1873 to 1874 in the southern Brazil, a clash which is called Revolt of the Muckers (Revolta dos Muckers)[50] between two groups in one German community arisen. From the end of 1874 to the middle of 1875, in the northeast of Brazil, a revolt which called Quebra -- Quilos revolt (Revolta do Quebra-Quilos)[51] against a new system of measures and weights broke out. In the year of 1875, about 300 women went through the streets (armed with stones and sticks) in order to protest against the compulsory military draft on August 30th (Guerra das Mulheres)[52]. During the last decade of the Empire, Revolt of the penny (Revolta do Vintem)[53] took place from December 28 1879 to January 4 of 1880 on the street of Rio de Janeiro. And once again, the revolt occurred between March 27 and March 30 in the city of Curitiba in 1883. Although the statistics of injuries and death is inaccurate, the sure thing is shoots are fired from both sides, several injured on both sides, and numerous arrested. Ten years after the first civilian president of republic assumed power, in 1904, an uprising to against government decision broke out. On the 13th November, the center of Rio de Janeiro became battlefield (Boris Fausto, 1986)[54]. In the year of 1914, with the policy of bailouts, President's attempted to intervene the northeast region, neutralized the political power of the oligarchy in state of Ceara. However, the attempt of replacing states governor quickly triggered the clash called Sedicao de Juazeiro[55] (Boris Fausto, 1986). From the year of 1919 till the year of 1930, our existing data set shows three riots. First one occurred in the year of 1920. Boris Fausto (1986) recorded a revolt without many details in the "Brazil: the social and political structure of the First Republic, 1889-1930". Another two riots took place in the year of 1930. Stated by Boris Fausto (1986), Revolta de Princesa -- Paraiba occurred. Soon after this event, Joao Pessoa, who was the governor of Paraiba, was murdered in July. After his death, there were more riots.

2.3.2 Formal Political Instabilities:

Our formal political instability variables include eight measures (see figure 6): Changes in

[50] Bethell, Leslie, ed.(1985) Brazil: Empire and Republic 1822-1930. Volume 5 of Cambridge History of Latin America. Cambridge University Press. PP.170-171. Also see: http://pt.wikipedia.org/wiki/Revolta_dos_Muckers

[51] Maecdo, M. K. de (1998). Revoltas populares na Provincia do Rio Grande: o "Quebra-Quilos" e o "Motim das Mulheres". Historia do RN. Available from : www.seol.com.br/rnnaweb/ridiculo de mais

[52] Geraldo Maia (2003). O motim das mulheres
Available at: http://www2.uol.com.br/omossoroense/120904/nhistoria.htm

[53] Carneiro David (1960). Historia do periodo provincial do Parana galeria de presidentes, 1853-1889. Curitiba: Tipografia Max Roesner Press.
Also see: http://pt.wikipedia.org/wiki/Revolta_do_Vint%C3%A9m_(Rio_de_Janeiro)

[54] It is recorded as a demonstration in the book, however, the movement turned to riot at the end. Boris Fausto (1986). Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp812.

[55] Boris Fausto. 1986. Brazil: the social and political structure of the First Republic, 1889-1930. Volume 5 of Cambridge History of Latin American. Cambridge University Press. pp816-817.

effective executive (the number of times in a year that effective control of the executive power changes hands. Such a change requires that the new executive be independent of his predecessor), government crisis (any rapidly developing situation that threatens to bring the downfall of the present regime - excluding situations of revolt aimed at such overthrow), legislative effectiveness (the definition is as follows: (0) None. No legislature exists. (1) Ineffective. There are three possible bases for this coding: first, legislative activity may be essentially of a "rubber stamp" character; second, domestic turmoil may make the implementation of legislation impossible; third, the effective executive may prevent the legislature from meeting, or otherwise substantially impede the exercise of its functions. (2) Partially Effective. A situation in which the effective executives power substantially outweighs, but does not completely dominate, that of the legislature. (3) Effective. The possession of significant governmental autonomy by the legislature, including substantial authority in regard to taxation and disbursement, and the power to override executive vetoes of legislation.), legislative selection (which is defined as follows: (0) None. No legislature exists. (1) Nonelective. Examples would be the selection of legislators by the effective executive, or by means of heredity or ascription. (2) Elective. Legislators (or members of the lower house in a bicameral system) are selected by means of either direct or indirect popular election.), major constitutional changes[56] (the number of basic alterations in a state's constitutional structure), number of cabinet changes (the number of times in a year that a new premier is named and/or 50% of the cabinet posts are occupied by new ministers), purges, and size of cabinet (which refers to the number of ministers of "cabinet rank", excluding undersecretaries, parliamentary secretaries, ministerial alternates, etc. Include president and vice-president under a presidential system, but not under a parliamentary system. Chiefs of state excluded, except under presidential system.).

[56] There were no major constitutional changes between the year of 1891 and the Vargas Era.

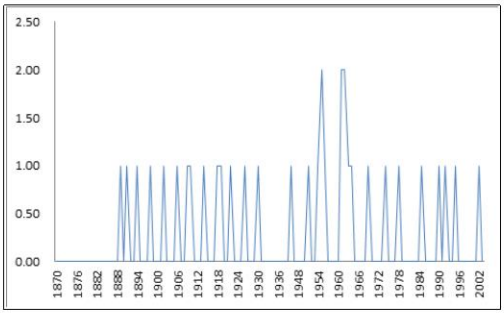

Fig 6.a: Changes in Effective Executive

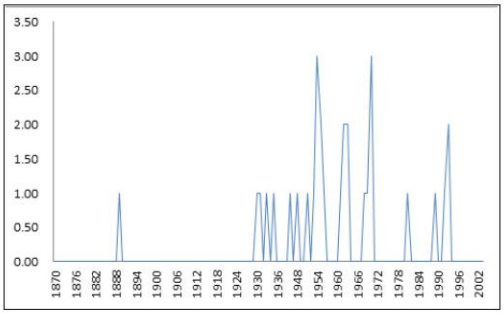

Fig 6.b: Government Crisis

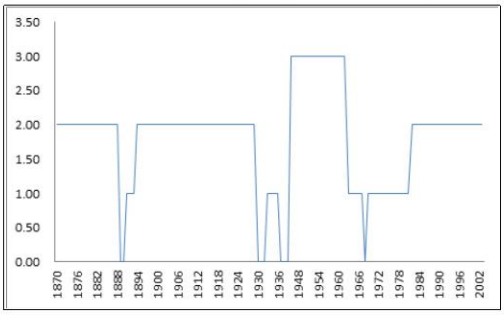

Fig 6.c: Legislative Effectiveness

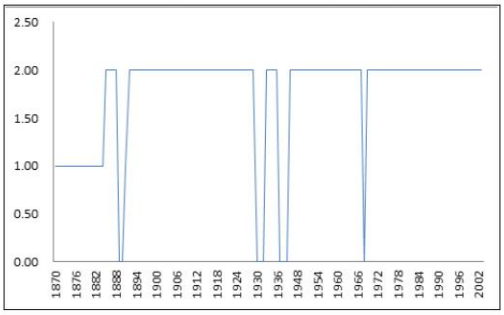

Fig 6.d: Legislative Selection

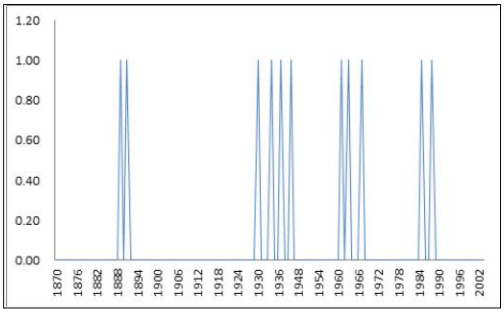

Fig 6.e: Major Constitutional Changes

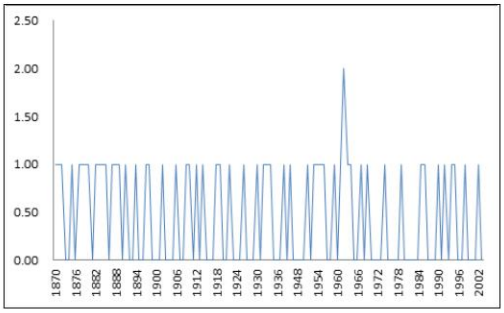

Fig 6.f: Number of Cabinet Changes

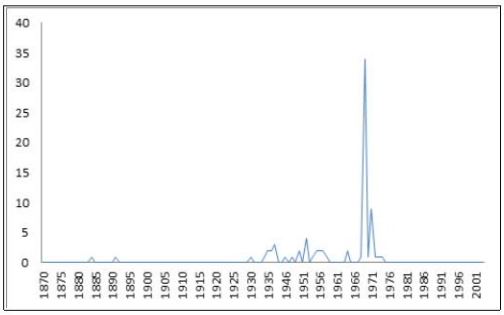

Fig 6.g: Purges

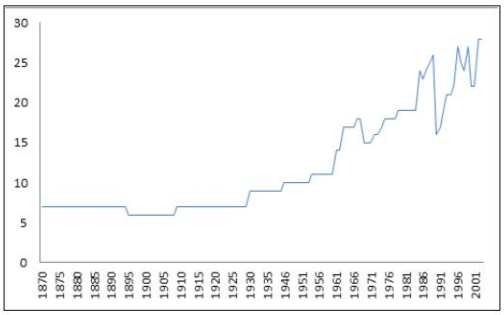

Fig 6.h: Size of the Cabinet

Figure 6 Formal Political Instabilities

With the exception of the government crisis and the purges, all other formal political events are recorded since the year of 1870[57]. Therefore, we will discuss in detail the construction of the purges and government crisis respectively.

Given the definition of the purges - any systematic elimination by jailing or execution of

[57] There were no major changes for legislative effectiveness, legislative selection and number of cabinet changes during the First World War Period.

According to the definition, the changes in effective executive are equal to the changes of the presidents.

political opposition within the ranks of the regime or the opposition we find that during the last decade of the Second Empire, the empire was marked by considerable political instability in the 1880s. In the year of 1884, records show that, out of a peacetime army of 13,500 men, more than 7526 had been jailed for insubordination (Lima Oliveira, 1986)[58]. Later, from the year of 1891 to the year of 1892, along with the rebellions and the change of the president, there were also purges and counter purges which mentioned in two books[59]. As our existing data recorded another purge activity in the year of 1930, we found the corresponded political history event in Cambridge History of Latin American (Vol.9). As pointed out by Leslie Bethell (2008)[60], soon after the 1930 revolution, a quick change among the armed forces had been adopted. The senior ranks were eliminated by a massive purge. By the end of 1930, nine of eleven major generals and eleven of twenty -- four brigadier generals retired.

Although there is a clear definition of the government crisis, it is still hard to define which events or situations are rapidly developing states that threaten to bring the downfall of the present regime. For instance, consider the Paraguay War (1864 -- 1870). While the bloody war lasted for six years, produced nearly 50,000 deaths and caused a ruinous increase of the public debt, Paraguay war, somehow, still has some positive effects to Brazil. The war centralized the government power, thus, there was almost no revolutionary revolt against the government during the 1860s. Taken all those factors in to account, we believe that in the year of 1870, Brazil was not in a situation for a government crisis. However, in the year of 1889, as Frank Colson (1981)[61] stated, the crisis of 1889 has long been seen as a turning point in Brazilian history. First of all, Paraguay War raised massive public debts that seriously reduced the growth of the country. Then, the abolition of slavery without compensation gradually weakened the firm foundation of the monarchy -- it had lost the support of vital groups like the landowners (June E. Hahner, 1969)[62]. More importantly, the war with Paraguay greatly increased the political power of the Brazilian army. Eventually, with the allowance of a discontented republican minority to grow more audacious (Republicanism), a group of army officers led by Manoel Deodoro da Fonseca launch a coup to proclaim the Republic on November 15, 1889. All in all, we believe the first government crisis in Brazil, during the time period between 1870 and 1930, occurred in the year of 1889. Another government crisis which recorded in our existing data set can be observed in the

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[58] Lima Oliveira, 1986. Imperio Brasileiro, O. Editora Universidade de Brasilia Press.

[59] There is no description of the event but a list of people who involved in.
James Woodard, 2009. A Place in Politics: Sao Paulo, Brazil, from Seigneurial Republicanism to Regionalist Revolt. Duke University Press. P254 Note 1
Joseph L. Love, 1980. Sao Paulo in the Brazilian Federation, 1889-1937. Stanford University Press.

[60] Leslie Bethell (2008). Politics in Brazil under Vargas, 1930-1945. Volume 9 of Cambridge History of Latin American. Cambridge University Press. pp24.

[61] Frank Colson (1981). On Expectation. Perspectives on the Crisis of 1889 in Brazil. Journal of Latin American Studies Vol.13, No.2, pp.265-292.

[62] June E. Hahner, 1969. Civilian -- Military Relations in Brazil 1889-1898. University of South Carolina Press. pp 2-4.

year of 1930. Similar to the crisis in 1889, the government crisis in the 1930 resulted from a joint effect of multiple factors. Politically, the tenente revolt occurred in 1922 and then in 1924 had shaken the interior of Brazil without ever being defeated by the army. Then, the old republic suffered a big hit with the economic crisis. It was in October 1929 that Great Depression began. Although there was little immediate outcome at the beginning, the problem of overproduction became serious within 4 to 5 years. Brazilian Exports fell about two thirds within 7 years' time -- from 1929 to 1935. Losing profit on the coffee exports, the Paulista oligarchy tried to stay in power of the republic without respecting the alternation with Minas Gerais. This led to the end of the "politics of coffee with milk". Those political crises together with the economic crisis led to the end of the Old Republic on October 24th 1930.

To sum up, in order to generate our own political instability series, we track all the political events yearly from 1870 to 1930. Next, we classified each event to its own category according to the definition which has been mentioned above. Finally, by comparing the data we generate to the existing ones from 1919 to 1930, we found that the series we generated from these events are basically correct.

2.4 Econometric Framework

Our general econometric framework has been discussed in the chapter 1.5. In this chapter, our set of variables comprises seven measures of informal political instabilities and eight forms of formal political factors. In order to study the direct effects of our set of explanatory variables, we specify model 1 with $\varphi = 0$ in equation (2), while model 2 $\lambda = 0$ in equation (1) allows us to investigate their indirect impacts on growth.

2.5 Empirical Results

In this section, our results are presented following specific type of effects. That is, we discuss direct (on mean economic growth), indirect (via volatility), dynamic (short and long-run) and structural break effects respectively.

2.5.1 Direct Impact on Growth

Tables 8.a and Table 8.b report the results from our estimation of the (P)ARCH(1,1) model for each one of the elements in our set of explanatory variables. The estimated regression is defined as follows:

$$y_t = c + \text{klog}(h_t) + \lambda_{pi} x_{pi,t-l} + \varepsilon_t \quad , \tag{17}$$

With

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}, \tag{18}$$

Where $x_{pi,t-l}$ is a political instability variable. Additionally, we estimate models with lagged values[63] of our explanatory variables as regressors. As we will see below the lagged direct effect on growth is equivalent to the short-run impact.

The parameter we are most interested in is λ_{pi} (in the second column). The results reveal that the direct effects of informal political instabilities on economic growth rate are mostly negative and statistically significant (five out of seven), while the effects of formal political instability variables are negative and significant as well (six out of eight). As for the in mean parameter (k), notice that in all cases the estimates are highly significant and positive, which is in line with the theoretical argument of Black (1987). Also the power term coefficients δ are rather stable, with the Akaike IC (AIC) criteria choosing a (P)ARCH specification with power terms in most of the cases equal to 1.00 (e.g., anti-government demonstrations, general strikes, riots and the size of cabinet).

How robust are these baseline results? It seems that both formal and informal political instability variables are dominant influences. One robustness test would be to investigate whether or not such powerful effects obtain in the presence of indirect (via volatility) effects. In other words, we want to be sure that direct effects remain if we allow our control variables to enter both the mean and variance equations simultaneously.

Tables 10.a and Table 10.b present the results when we include our political instability indicators in both the mean and variance equations. Informal political variables show the expected negative and statistically significant lagged direct impacts (see the λ_{pi} column in Table 10.a). However, the negative direct effect of formal political instability on growth is significant in only four out of the eight cases. That is, when we consider both effects jointly, the negative direct impact of formal political instability on growth becomes weaker but it does not disappear entirely (it disappears only for legislative selection and size of the cabinet, see Table 10.b).

In summary, we find that our two main explanatory factors, formal and informal political instabilities, affect Brazil's economic growth negatively. Interestingly, four measures of informal political instability (anti-government demonstrations, assassinations, general strikes and number of coups d'etat) and three measures of formal political factors (changes in effective executive, legislative effectiveness and number of cabinet changes) seem to play important roles in determine growth. In particular, we find that not only they have strong direct effects but also indirect effects as well. We now turn to the investigation of these indirect effects.

2.5.2 Indirect Effects (Via Growth Volatility)

[63] L and n are the order of the lags of explanatory variables and growth respectively (from 1 to 8).

One of the main advantages of the (P)ARCH framework is that it allows us to study not only the direct growth effects from the full set of explanatory variables that described above, but also their indirect effects on economic growth through the predicted component of growth volatility (conditional on its past values). Therefore, our estimated model for indirect effects is given by:

$$y_t = c + \text{klog}(h_t) + \varepsilon_t \quad , \tag{19}$$

With

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi_{pi} x_{pi,t-l} + \gamma y_{t-n}, \tag{20}$$

Where $x_{pi,t-l}$ is a political instability variable, l and n are the order of the lags of political instability variables and growth respectively (from 1 to 8). As we can see from Tables 8.a and 8.b above and from Tables 9.a and 9.b in this section, the effect of conditional or predicted volatility on growth is positive ($k > 0$) and statistically significant in all cases at conventional levels. In the current section, we present our results for such indirect impacts in two parts and follow the same format as before.

Table 9.a and Table 9.b report the estimation results for each one of the elements in our data set for what we call the indirect impact, which is the effect on growth via the volatility channel. The parameter we are most interested in is φ_{pi} (in the fourth column). Our results show that the effects of both formal and informal political instabilities are mostly negative and significant (with the exceptions of revolutions and major constitutional changes).

We find that exogenous increases in political instability have a negative and significant indirect impact on growth. That is, less political instability is associated with a larger fraction of growth volatility that is anticipated by the relevant economic agents. And the larger the share of the growth volatility that is anticipated, the higher growth rates we observe. Therefore, political instability registers a negative lagged direct effect on growth but also a substantial impact on the expected or conditional share of growth volatility and thus a negative indirect effect as well (see Tables 9.a and Table 9.b).

We now proceed by investigating the robustness of these results. Specifically, we ask how the results for the political instabilities change if we examine jointly the indirect and direct effects.

There are a number of additional important results from Tables 10.a and 10.b apart from the ones that were discussed in the previous section. Focusing our attention first on the φ and κ parameters, all measures of informal political instabilities (except the revolutions) are found to affect the conditional variance of growth negatively. Since $k > 0$, informal political factors affect growth negatively as well. Similarly, the volatility of growth is also dependent on changes in the formal political factors, since the parameter φ_{pi} is negative and statistically significant in seven out of the eight cases.

To sum up, we find strong evidence that both formal and informal political instabilities

have a negative indirect (via volatility) impact on growth.

2.5.3 Dynamic Aspects

In this section we investigate how short- and long-run considerations help us refine our baseline results. Another potential benefit from this exercise is that the required use of lags may help ameliorate any lingering concerns about endogeneity. In order to estimate short- and long- run relationships we employ the following error correction (P)ARCH form

$$\Delta y_t = \mu + \theta \Delta x_{pi,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{pi,t-1}\right) + \varepsilon_t \ , \tag{21}$$

where θ_{pi} and ζ_{pi} capture the short and long-run effects of political instability variables respectively, and ϕ is the speed of adjustment to the long-run relationship. This is accomplished by embedding a long-run growth regression into an ARDL model. In other words, the term in parenthesis contains the long-run growth regression, which acts as a forcing equilibrium condition

$$y_t = c + \zeta x_{pi,t} + u_t \ , \tag{22}$$

where u_t is *I(0)*. The lag of the first difference of either formal or informal political instability variables ($\Delta x_{pi,t-l}$) characterizes the short-run effect. The condition for the existence of a long-run relationship (dynamic stability) requires that the coefficient on the error-correction term be negative and not lower than -2 (that is, $-2 < \phi < 0$). We also take into account the PARCH effects by specifying the error term u_t as follows

$$\varepsilon_t = e_t h_t^{\frac{1}{2}} \ , \tag{23}$$

Where

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \ , \tag{24}$$

Tables 11.a and 11.b report the results on estimations of short and long-run parameters linking the explanatory variables with growth. In all cases, the estimated coefficients of error correction term (ϕ) lie within the dynamically stable range (-2,0). Generally speaking, from investigating whether dynamic considerations affect our conclusions, we find major differences in terms of short and long-run effects. To be more specifically, we find that, in total, fourteen out of the fifteen political instabilities have strong short-run effects while only five out of the fifteen explanatory variables have long-run effects.

Next we discuss the results regarding the informal political factors and formal ones separately. We first focus our analysis on those obtained from the informal political instabilities. Table 11.a presents the results. The estimated ϕ lies within the range -0.55 to -0.32, while θ_{pi} and ζ_{pi} capture the short and long-run effects respectively. With the exception of the guerrilla warfare, all other estimates of the short-run coefficients (see the θ_{pi} column) are highly significant and negative. However, the corresponding values for the

long-run coefficients tell a very different story, which is the negative short-run effects of anti-government demonstrations, general strikes and riots disappear in the long-run (see the ζ_{pi} column in Table 11.a).

Similarly, we find strong evidence that formal political factors affect economic growth negatively (estimates of the short-run coefficients are highly significant and negative), while only two out of the eight formal political indicators observed long-run effects, namely: legislative effectiveness and number of the cabinet changes.

In summary, in the short-run, fourteen political instabilities have a negative effect on Brazil's growth whereas in the long-run, only five political instabilities (three informal and two formal ones) seems to affect growth negatively

2.5.4 Structural Breaks

Considering the role of structural breaks, we adopt our final important robustness test. We use the methodology developed by Bai and Perron (2003) to observe whether or not there are any structural breaks in growth, informal political instabilities and formal ones. Under very general conditions on the data and the errors, Bai and Perron address the problem of testing for multiple structural changes. In addition to testing for the existence of breaks, these statistics identify the number and location of multiple breaks.

In the case of the economic growth series the Bai-Perron methodology supports three structural break points which occur for year 1938 and 1979 respectively.

For three measures of informal political instability (guerrilla warfare, number of Coups d'etat and revolution) and six measures of formal political indicators (changes in effective executive, government crisis, legislative effectiveness, major constitutional changes, purges and size of the cabinet), we find no structural breaks. However, our Bai-Perron results support one structural break in anti-government demonstrations (it is dated 1964), assassinations (it is dated 1978), and general strikes (it is dated 1902). Additionally, we also find two structural breaks in riots which are dated 1929 and 1964. Further, we observe one structural break for either legislative selection or number of cabinet changes, which occur in 1939 and in 1889, correspondingly.

In what follows, we incorporate dummy variables in the equations (1), (2), (21) and (24), thus taking into account breaks in growth, informal and formal political instabilities. D_{1t} and D_{2t} are (intercept) dummies defined as: D_{1t}= 1 in the period 1938-2003, D_{2t}= 1 in the period 1979-2003, and D_{1t}= 0 and D_{2t}= 0 otherwise. Similarly, D_{it} is a (slope) dummy indicating the period which starts from the year of the break in either the informal political factor or formal political variable(x_{it}). For example for the assassinations D_{1t}= 1 in the period from 1978 to 2003 and for the anti-government demonstrations D_{1t}= 1 during the period from 1964 until the end of the sample.

The augmented model is given by

$$y_t = c + k\log(h_t) + \lambda x_{i,t-l} + \lambda_d D_{i,t-l} x_{i,t-l} + \epsilon_t, \quad (25)$$

And

$$h_t^{\frac{\delta}{2}} = \omega + \omega_1 D_{1t} + \omega_2 D_{2t} + \alpha h_{t-1}^{\frac{\delta}{2}} f(e_{t-1}) + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi x_{i,t-l} + \varphi_d D_{i,t-l} x_{i,t-l} + \gamma y_{t-n} \quad .(26)$$

Recall that the coefficients φ and λ capture the impacts of the variable on growth and its volatility respectively. Similarly, λ_d and φ_d correspond to the two effects from the year of the break onwards. Thus the two effects are captured by λ and φ in the period up to the year of the structural break, and by $\lambda + \lambda_d$ and $\varphi + \varphi_d$ during the period from the year of the break until the end of the sample. As above in order to study the direct effects of political instability we specify model 1 with $\varphi = \varphi_d = 0$, while model 2 with $\lambda = \lambda_d = 0$, allows us to investigate their indirect impacts on growth.

We also incorporate intercept dummies and level effects in the error correction equation (21) and conditional variance equation (24), as follows

$$\Delta y_t = \mu + \theta \Delta x_{i,t-l} + \theta_d D_{i,t-l} \Delta x_{i,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{i,t-1}\right) + \varepsilon_t, \quad (27)$$

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \quad , \quad (28)$$

We find our results to be quite robust to the inclusion of the structural break dummies. That is, both informal and formal political instabilities have strong negative effects on the growth and its volatility (see Tables 12 and 13). As to the dynamic aspects, for three measures of informal political instability, we find strong evidence of a negative impact in both short and long-run, whereas three out of the four other measures affect growth only in the short-run (see Table 14.a). Similarly, with the exceptions of legislative effectiveness and number of cabinet changes, all other formal political instabilities have only a short-run negative effect (see Table 14.b).

Interestingly, the causal direct, indirect and short-run impacts from anti-government demonstrations and assassinations become weaker after we account for structural breaks in 1964 and 1978, respectively (see the λ_d columns in Tables 12.a, and the θ_d column in Table 14.a). Similarly, the direct effect of legislative selection is stronger before 1939 (see the λ_d column in Tables 12.b).

2.6 Conclusions

Using a PARCH framework and data for Brazil from approximately from 1870 to 2003 we ask the following questions: What is the relationship between, political instability, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction of these effects vary over time, in general and in particular, do they vary with respect to short- versus long-run considerations? Our main

results can be summarized in the following table:

Table 15: Summary of Results: Direct, Indirect, Short and Long-run Effects.

	D	IND	SR	LR		D	IND	SR	LR
Informal PI	-[1]	-[2]	-[3]	-[4]	Formal PI	-[5]	-[6]	-	-[7]

Notes: D denotes the direct effect. IND is the indirect effect. LR and SR denote the long and short-run impacts, respectively. [1]For riots and guerrilla warfare effects are insignificant (see the ψ_{pi} column in Table 8.a and 10.a). [2]The effect disappears when revolutions are used (see the Ω_{pi} column in Table 9.a and 10.a).[3]The impact is insignificant when guerrilla warfare is used (see the ϕ_{pi} column in Table 11.a).[4]The impact disappears when anti-government demonstrations, guerrilla warfare, general strikes and riots are used (see the χ_{pi} column in Table 11.a). [5]The impact is insignificant when government crisis and purges are used (see ψ_{pi} column in Table 8.b). [6]The effect disappears when major constitutional changes are used (see Ω_{pi} column in Table 9.b and 10.b). [7]only two out of the eight formal political indicators observed negative long-run effects, namely: legislative effectiveness and number of the cabinet changes (see χ_{pi} column in Table 11.a).

Table 15 Summary of Results

To be more specifically, our empirical results show that the majority of the formal and informal political instabilities have strong negative direct and indirect effects on economic growth in Brazil.

From investigating whether dynamic considerations affect our conclusions, we find important differences in terms of the short and long-run behavior of our key variables, more specifically, while strong negative impacts can be observed in the short-run (fourteen out of fifteen), the corresponding effects for the long-run are weaker (five out of fifteen).

In sum, for two informal political instabilities (assassinations and number of coups) and two formal ones (legislative effectiveness and number of cabinet changes) all four influences (direct/indirect, short and long-run) are highly significant. These findings are interest in themselves but they also matter because they raise a number of new questions that we believe may be useful in motivating future research.

Chapter Three

Finance, Political Instability and Growth:

Non-Linear Time-Series Evidence for Brazil since 1870

3.1 Introduction

During the past century, Brazil with its particular tendency of growth rate draws economists' attentions. Various hypotheses have been put forward to explain Brazil growth record in either past few decades or from a long-term horizon. In order to explain the Brazil's output growth, we have discussed the influences of macro economy indicators and political instabilities separately in the last two chapters. we note, on the one hand, both domestic and international financial development exhibit the most robust first-order effects on growth and its volatility, on the other hand, majority of political instabilities have strong negative direct and indirect effects on economic growth in Brazil.

In trying to pursue our understandings of Brazil's growth process, in this chapter, we focus on the joint determination of the financial development and political instabilities to evaluate the relative merits of the factors behind key explanatory variables with a power-ARCH (PARCH) framework and annual time series data for Brazil covering the period approximately from 1870 to 2003.

The aim of this chapter is to put forward answers to the following questions. What is the relationship between, on the one hand, financial development (domestic and international), political instability, public deficit, trade openness and, on the other hand, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations?

The results show that our main explanatory factors, solely in terms of their negative lagged direct/indirect effects and short and long-run impacts on economic growth in Brazil, turn out to be domestic financial development (mainly commercial bank deposits) and international financial development (the US interest rate). In particular, two out of the three domestic financial development indicators, that is M1 and commercial bank deposits, have negative short-run/lagged direct effects on growth whereas their long-run impacts are positive. The short and long-run impacts of US interest rate are opposite from those of domestic financial development. Interestingly, deposits at Banco do Brasil and the US

interest rate have a strong negative indirect effect on growth. We also find that political Instabilities play important secondary roles since the effect of both formal and informal political instabilities do not extend to the long-run with the existence of all other explanatory variables. For the informal political proxy, assassinations, the estimates of the short-run coefficients are highly significant and negative whereas the corresponding values for the long-run coefficients become insignificant. As to the formal political indicator, which is legislative effectiveness, our multivariate analysis shows that its short-run negative effect is not affected by the addition of other explanatory variables to the model, however, in the long-run the impact disappears when we use revenues as a regressor.

The chapter is organized as follows. Section 3.2 describes the data and Section 3.3 provides justification for our econometric methodology. Section 3.4 has our baseline econometric results. Finally, summary and conclusions are provided in Section 3.5.

3.2 Data

The data set we put together for this chapter covers the period between 1870 and 2003, excluding the Second World War period that is from 1939 to 1945. The factors that associated with the economic performance of Brazil are the following: domestic and international financial development, trade openness and public deficit. Besides, we also use four selected political indicators as a proxy of the political instability.

Our basic data source is "International Historical Statistics: The Americas: 1750 -- 2000" (B. Mitchell, 2003). Data were recorded yearly for Brazil including: Gross Domestic Product, deposits at Banco do Brasil, deposits in commercial banks and M1. However, for the informal political instability variables (see below for the distinction between informal and formal political instability), data are missing from the year of 1870 to the year of 1918 (formal ones are missing records from 1914 to 1918 as well). In order to find relatively complete series and to avoid bias as much as possible, other resources are included.

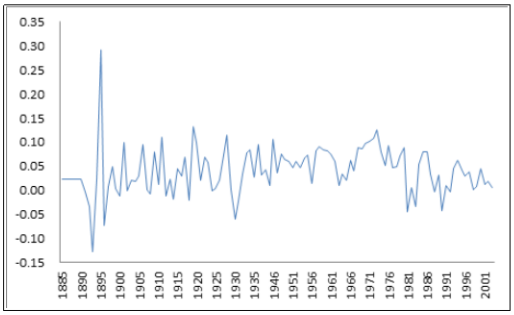

Fig 7.a: Growth Rate of Brazil

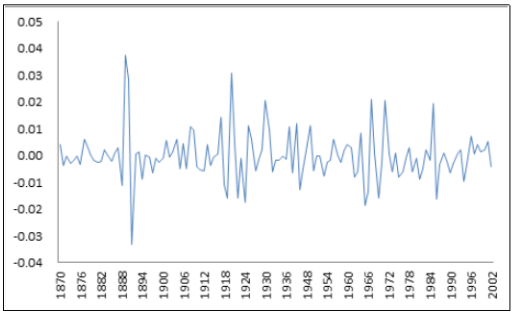

Fig 7.b: Money Supply (M1)

Fig 7.c: Commercial Bank Deposits

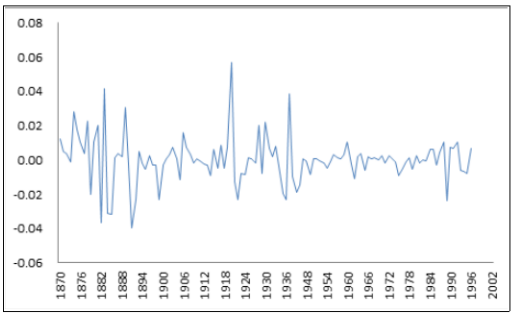

Fig 7.d: Deposits at Banco do Brasil

Figure 7 Growth Rate of Brazil and Financial Development (with the exclusion of World War Period)

Two of our main measures of financial development try to capture the efficiency of the financial sector, not its relative size. The first is the commercial bank deposits over GDP. Deposits in commercial banks are quoted by B. Mitchell (2003). However, due to the missing figures, we follow a more practicable way of Peláez and Suzigan (1976) to regenerate the series[64]. Our second measure is the deposits at Banco do Brasil over GDP. It is measured by the added value of time deposits and deposits at the end of the period in the central bank. Given its more restrictive nature we use this variable mostly for robustness check, thereby attaching greater weight to commercial bank deposits (see Figure 7)[65]. Further, our measures of trade openness and public deficit are both quoted from Mitchell (2007) and IBGE[66]. Trade openness is measured as the ratio of imports plus exports to GDP, while public deficit is the ratio of total public deficit to GDP (see Figures 8 and 9).

[64] Total deposits in commercial canks are defined as the summation of time deposits in commercial banks and deposits at the end of the period in commercial banks.

[65] For robustness we also use another measure that is M1 over GDP, to further check for the robustness of our results (Results are presented in Appendix C).

[66] Actually, Mitchell (2007) provided data from 1870 until 2004. However, data are in millions of US dollars since 1949. Further, as our GDP series that we collected is in national currency, we adopted IBGE's figures from 1949 to 1980.

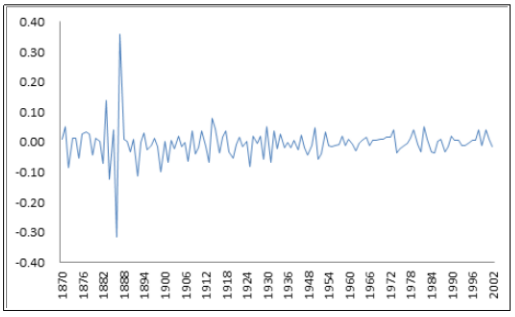

Fig 8.a: Trade Openness over GDP

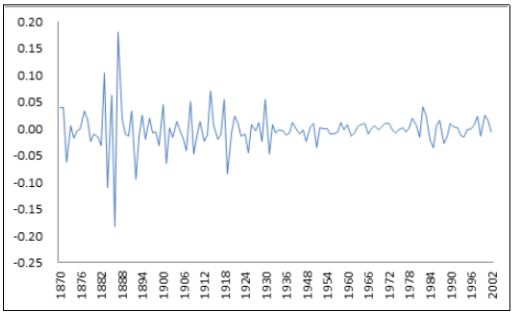

Fig 8.b: Exports over GDP

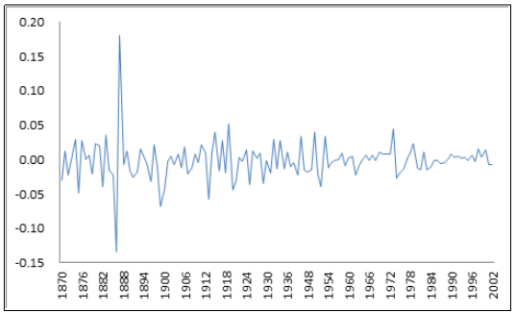

Fig 8.c: Imports over GDP

Figure 8 Three measures of Trade Openness (with the exclusion of World War Period)

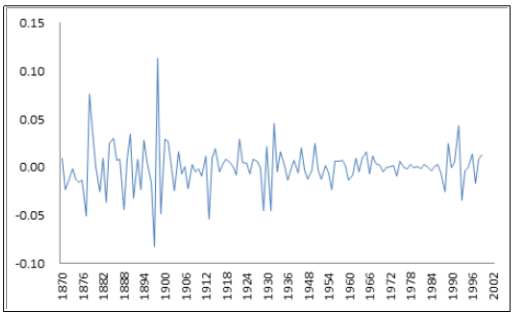

Fig 9.a: Public Deficit over GDP

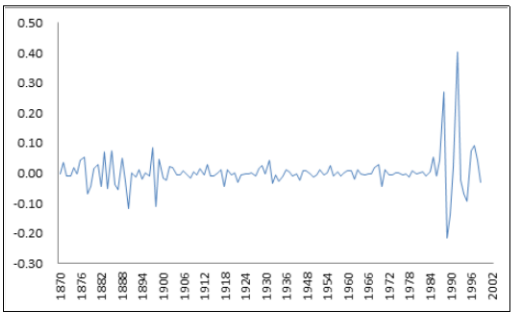

Fig 9.b: Expenditures over GDP

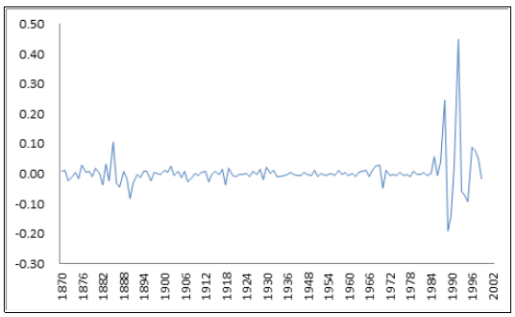

Fig 9.c: Revenues over GDP

Figure 9 Three measures of Public Deficit (with the exclusion of World War Period)

As we have mentioned in the first chapter, International financial development should also have an impact on Brazil's economic growth, although for most of the period since 1930 Brazil remained a closed economy. Marcelo Abreu states that from 1930-1980 Brazil had a "cross-eyed" foreign economic orientation, with bold export promotion policies and a rather

closed domestic market. But Brazil, as the largest economy in Latin America, and ninth largest in the world, cannot be isolated to the world economic environment. However, it is still hard to measure the world economic environment itself, especially when we take both the depression and the First World War periods into account. Thus, in standard fashion in this type of study, we use the level of interest rate in US as our proxy of the global financial market. US interest rates are quoted from Milton Fridman (1982) (see Figure 10).

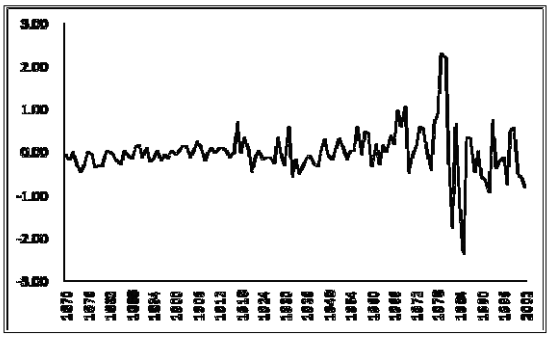

Fig 10: US Interest Rate

Figure 10 International Financial Development (with the exclusion of World War period)

Based on the distinction between formal and informal political events, we divide our political instability variables into two categories (see Figure 11). Our informal political instability variables include: assassinations and number of coups[67]. Our formal political instability variables are as follows: number of the cabinet changes and legislative effectiveness[68].

[67] See Chapter 2 – 2.3.1 for the definitions of assassinations and number of coups.
[68] See Chapter 2 – 2.3.2 for the definitions of cabinet changes and legislative effectiveness.

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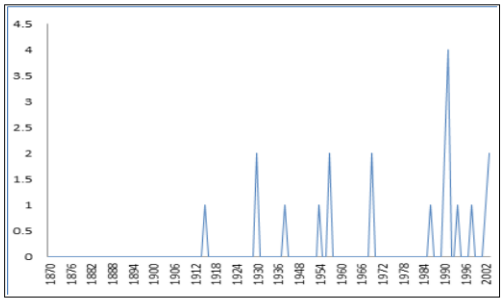

Fig 11.a: Assassinations

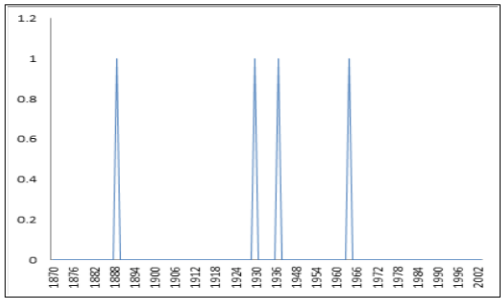

Fig 11.b: Number of Coups

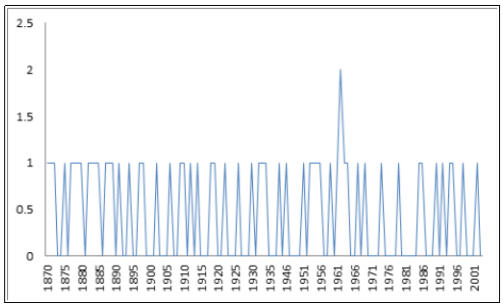

Fig 11.c: Number of Cabinet Changes

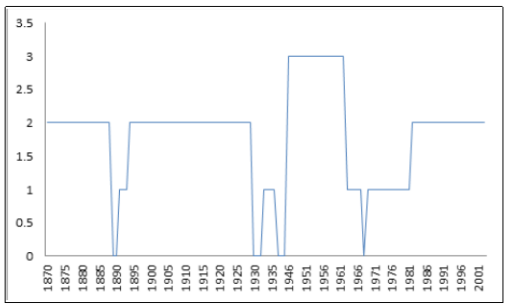

Fig 11.d: Legislative Effectiveness

Figure 11 Selected Political Instability Indicators

3.3 Econometric Framework

The general econometric framework has been discussed in the chapter 1.5. In this chapter, our set of variables[69] comprises domestic and international financial developments, four political instability variables, the degree of openness to international trade and public deficit. In order to study the direct effects of our set of explanatory variables, we specify model 1 with $\varphi = 0$ in equation (2), while model 2 with $\lambda = 0$ in equation (1) allows us to investigate their indirect impacts on growth.

3.4 Empirical Results

In this section, we present following specific types of effects. That is, we discuss direct (on mean economic growth), indirect (via volatility), dynamic (short and long-run) and structural break effects respectively. Particularly, in trying to study the roles of both domestic financial development and political instability we include both variables as regressors. Further, in this chapter, we run regressions with all five lagged explanatory variables.

3.4.1 Direct Effects

[69] Because almost all the explanatory variables are I(1), they all enter our models in first difference, with the exception of political instability variables.

In order to estimate direct effects for the joint effects of domestic financial development and political instability, we employ the following error correction (P)ARCH form:

$$y_t = c + \text{klog}(h_t) + \lambda_{fd} x_{fd,t-l} + \lambda_{pi} x_{pi,t-l} + \varepsilon_t \quad , \tag{29}$$

with

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}, \tag{30}$$

where $x_{fd,t-l}$ indicates a financial development variable and $x_{pi,t-l}$ is a political instability variable. L and n are the order of the lags of explanatory variables and growth respectively (from 1 to 8). Table 16 reports the results. The parameters we are most interested in are λ_{fd} and λ_{pi}. The results reveal that in the presence of the political instability variables, the lagged direct effect of domestic financial development (any of the three measures) on economic growth rate is negative and statistically significant, and vice versa, in the presence of financial development variables the impact of political instability (mainly assassinations and legislative effectiveness) on growth is negative and significant as well[70].

As for the in-mean parameter (k), notice that in all cases the estimates are statistically significant and positive which is in line with the theoretical argument of Black (1987). Also the power term coefficients δ are rather stable, with the Akaike IC (AIC) criteria choosing a (P)ARCH specification with power term in most of the cases equal to 1.00.

It seems that both domestic financial development and political instability are dominant influences. In testing the robustness of these baseline results, one robustness test would be to investigate whether or not such powerful effects obtain in the presence of the other explanatory variables. In other words, we want to be sure that the strong direct effects remain if we add to the baseline specification any of our three additional variables. Therefore, the estimated model is given by:

$$y_t = c + \text{klog}(h_t) + \lambda_{fd} x_{fd,t-l} + \lambda_{pi} x_{pi,t-l} + \lambda_{to} x_{to,t-l} + \lambda_{pd} x_{pd,t-l} + \lambda_{us} x_{us,t-l} + \varepsilon_t, \tag{31}$$

with

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}. \tag{32}$$

Tables 16.1 and 16.2 present selected results with all five control variables. That is, commercial bank deposits, political instability (either assassinations or legislative effectiveness), trade openness, public deficit and US interest rate[71]. Similarly to the results revealed in Table 16, both commercial bank deposits and political instability variables show the expected negative impact (see the λ_{fd} and λ_{pi} columns). As for the effect of US interest rate, it is positive and statistically significant (see the λ_{us} columns in Tables

[70] We also estimate trivariate regressions (see Appendix B) to examine the joint effects of political instability, domestic and international financial development on growth.

[71] For the results of number of the coups/number of the cabinet changes, see Appendix C.

16.1-16.2). Interestingly, when we include all five regressors, the significance of the influences of public deficit on growth is sensitive to the choice of the political indicator. Specifically, the negative impact of public deficit on growth disappears when we use assassinations as a regressor (in six out of the nine cases). Similarly, trade openness has a significant negative impact on growth only when we include legislative effectiveness and revenues as a regressor.

To sum up, most of our independent variables play an important role in explaining output growth of Brazil. Financial development (commercial bank deposits), US interest rate, and either informal (assassinations) or formal political instability (legislative effectiveness) are the dominant effects. Interestingly, the effect of the domestic financial development works in the opposite direction from that of the international financial development. The effects of trade openness and public deficit seem to be sensitive to the measure of the variables used in our analysis. We now turn to the investigation of the indirect effects.

3.4.2 Indirect Effects (Via Growth Volatility)

One of the main advantages of the (P)ARCH framework is that it allows us to study not only the direct growth effects from the full set of explanatory variables described above, but also their indirect effects on economic growth through the predicted component of growth volatility (conditional on its past values). As we can see from Table 16 above and from Table 17 in this section, the effect of conditional or predicted volatility on growth is, in all cases, positive $(k > 0)$ and statistically significant at conventional levels. In the current section, we present our results for such indirect impacts in two parts and follow the same format as before: we first discuss the indirect bivariate effect and then we present selected results for our complete set (that is, including all the five explanatory variables).

Our bivariate estimated regression is as follows:

$$y_t = c + \text{klog}(h_t) + \varepsilon_t \quad , \tag{33}$$

with

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi_{fd} x_{fd,t-l} + \varphi_{pi} x_{pi,t-l} + \gamma y_{t-n}, \tag{34}$$

where $x_{fd,t-l}$ and $x_{pi,t-l}$ indicate a financial development variable and a political instability variable respectively[72]. Table 17 reports the estimation results for the joint effects for what we call the indirect impact, which is the effect on growth via the volatility channel. The parameters we are most interested in are φ_{fd} and φ_{pi}. The results show that the effects of both financial development (any of the three measures) and political instability indicators are mainly negative and statistically significant, with the exception of the number of coups. That is, less financial development and political instability are associated with a larger fraction of growth volatility, and the larger share of the growth volatility is anticipated,

[72] L and n are the order of the lags of explanatory variables and growth respectively (from 1 to 8).

the higher growth rates we observed (since k > 0). Therefore, both financial development and political instability register negative lagged direct effects on growth and also a negative and substantial indirect impact via the expected or conditional share of growth volatility.

We now proceed by investigating the robustness of these results. Specifically, and for comparability purposes, we ask how the results from the various aspects of domestic financial development and political instability change if we add to the baseline model the complete set of explanatory variables. Similar to the bivariate model, the estimated regression is defined as follows:

$$y_t = c + \text{klog}(h_t) + \varepsilon_t \quad , \tag{35}$$

with

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi_{fd} x_{fd,t-l} + \varphi_{pi} x_{pi,t-l} + \varphi_{to} x_{to,t-l} + \varphi_{pd} x_{pd,t-l} + \varphi_{us} x_{us,t-l} + \gamma y_{t-n}, \tag{36}$$

where $x_{fd,t-l}$ indicates a financial development variable, $x_{pi,t-l}$ is a political instability variable, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate. Further, L and n are the order of the lags of explanatory variables and growth respectively (from 1 to 8).

Tables 17.1 and Table 17.2 show the selected results after adding the full set of control variables. The indirect negative effects of both domestic financial development (deposits at Banco do Brasil) and political instability (mainly assassinations and legislative effectiveness) remain highly significant whereas the international dimension of financial development proxy (US interest rate) tend to affect anticipated growth volatility positively ($\varphi_{us} > 0$). Moreover, both trade openness and public deficit appear to have negative indirect impacts on output growth (see columns φ_{to} and φ_{pd}).

In summary, we find strong evidence that domestic financial development, political instability, trade openness and public deficit have a negative indirect impact on growth whereas US interest rate affects it positively.

3.4.3 Dynamic Aspects

In this section we investigate how short- and long-run considerations help us refine our baseline results. Another potential benefit from this exercise is that the required use of lags may help ameliorate any lingering concerns about endogeneity. In order to estimate short- and long- run relationships we employ the following error correction (P)ARCH form

$$\Delta y_t = \mu + \theta \Delta x_{i,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{i,t-1}\right) + \varepsilon_t \quad , \tag{37}$$

where θ and ζ capture the short and long-run effects respectively, and ϕ is the speed of adjustment to the long-run relationship. This is accomplished by embedding a long-run growth regression into an ARDL model. In other words, the term in parenthesis contains the long-run growth regression, which acts as a forcing equilibrium condition

$$y_t = c + \zeta x_{it} + u_t \,, \tag{38}$$

where u_t is *I(0)*. The lag of the first difference of either the financial development variable (domestic or international) or political instability (formal or informal) or trade openness or public deficit (or its two components) ($\Delta x_{i,t-l}$) characterizes the short-run effect. The condition for the existence of a long-run relationship (dynamic stability) requires that the coefficient on the error-correction term be negative and not lower than -2 (that is, $-2 < \phi < 0$). We also take into account the PARCH effects by specifying the error term u_t as follows

$$\varepsilon_t = e_t h_t^{\frac{1}{2}} \,, \tag{39}$$

Where

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \,, \tag{40}$$

Table 18 presents the bivariate results of short and long-run estimations linking the financial development and political instability with growth. In all cases, the estimated coefficient on the error correction term (ϕ) lies within the dynamically stable range (-2, 0). From investigating whether dynamic considerations affect our conclusions, we find major differences in terms of short and long-run behavior of our explanatory variables. First, we focus our attention on the parameters for the political instability variables (see the θ_{pi} and ζ_{pi} columns). The negative effects of political instability (either formal or informal) are stronger and bigger in the short than in the long-run. The long-run impact disappears in five out of the twelve cases. Next, we discuss the results regarding the domestic financial development variables. Two measures of financial development, which is M1 and commercial bank deposits, affect growth negatively in the short-run whereas the effect turns to positive in the long-run. Growth is not affected by deposits at the Banco do Brasil in the long-run. These results are in line with the ones from the univariate analysis which are reported in our previous chapters.

For the sake of space, we do not discuss the results for the intermediate steps (that is the results for by three variables). Table 18.1 presents the results for the five regressors with the estimated model defined as follows:

$$\Delta y_t = \mu + \theta_{fd}\Delta x_{fd,t-l} + \theta_{pi}\Delta x_{pi,t-l} + \theta_{to}\Delta x_{to,t-l} + \theta_{pd}\Delta x_{pd,t-l} + \theta_{us}\Delta x_{us,t-l} + \varphi\left(y_{t-1} - c - \zeta_{fd}x_{fd,t-1} - \zeta_{pi}x_{pi,t-1} - \zeta_{pd}x_{pd,t-1} - \zeta_{us}x_{us,t-1}\right) + \varepsilon_t \,, \tag{41}$$

with

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}, \tag{42}$$

That is, commercial bank deposits ($x_{fd,t-l}$), US interest rate ($x_{us,t-1}$), political instability ($x_{pi,t-l}$ indicates either assassinations or legislative effectiveness), public deficit ($x_{pd,t-l}$) and trade openness ($x_{to,t-l}$).

The estimates of ϕ lie within the range -0.71 to -0.52. Regarding the short and long-run estimates, θ_i and ζ_i we focus our analysis first on those obtained from the US interest rate. All estimates of the short-run coefficients (see the θ_{us} column) are highly significant and positive whereas the corresponding values for the long-run coefficients are negative (see the ζ_{us} column). Interestingly, the estimations for our measure of domestic financial development, that is commercial bank deposits, tell a very different story: we find that the effects of domestic financial development work in the opposite direction from those of the US interest rate, which is the impact turns from negative in the short-run to positive in the long-run. These impacts depend on whether the movements are temporary or permanent, the effect being negative in the former and positive in the latter, which is in line with recent findings by Loayza and Rancière (2006). Similarly to the US interest rate, we obtain strong negative long-run effects from revenues/expenditures, however, only a very weak evidence of a short-run effect (in one out of the four cases) can be observed from Table 18.1. In sharp contrast, trade openness has only a negative short-run effect on growth.

Next we discuss the results regarding the political factors. For the informal political proxy, that is assassinations, the estimates of the short-run coefficients (see the θ_{pi} column) are highly significant and negative whereas the corresponding values for the long-run coefficients become insignificant. As to the formal political indicator, that is legislative effectiveness. Our multivariate analysis shows that its short-run negative effect is not affected by the addition of other explanatory variables to the model, however, in the long-run the impact disappears when we use revenues as a regressor (see the ζ_{pi} column).

To sum up, in the short-run, four explanatory variables have a negative effect on growth whereas that of the US interest rate is positive. In the long-run domestic financial development affects growth positively whereas the impacts of public deficit and the US interest rate are negative.

3.4.4 Structural Breaks

One final important robustness test regards the role of structural breaks. We use the methodology developed by Bai and Perron (2003) to examine whether there are any structural breaks in growth, its volatility, the four financial development variables (three domestic and one international), the various aspects of political instability and the three forms of trade openness and public deficit. Bai and Perron (2003) address the problem of testing for multiple structural changes under very general conditions on the data and the errors. In addition to testing for the existence of breaks, these statistics identify the number and location of multiple breaks.

In the case of the economic growth series the Bai-Perron methodology supports one

structural break point which occurs for year 1938[73]. Similarly, our Bai-Perron results support that assassinations and the number of cabinet changes have one break, which is dated for year 1978 and year 1889, respectively.

In what follows, we incorporate dummy variables in the equations (1), (2), (37) and (40), thus taking into account breaks in growth and the political factors. First, we introduce the following notation. D_t is an (intercept) dummies defined as: D_t= 1 in the period 1938-2003, D_t= 0 otherwise. Similarly, D_{it} is a (slope) dummy indicating the period which starts from the year of the break in the political instability variable (x_{it}). For example for the assassinations D_{it}= 0 in the period from 1870 to 1978 and D_{it}= 1 during the period from 1979 until the end of the sample.

The augmented model is given by

$$y_t = c + c_1 D_t + k\log(h_t) + \lambda x_{i,t-l} + \lambda_d D_{i,t-l} x_{i,t-l} + \epsilon_t, \quad (43)$$

And

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} f(e_{t-1}) + \beta h_{t-1}^{\frac{\delta}{2}} + \varphi x_{i,t-l} + \varphi_d D_{i,t-l} x_{i,t-l} + \gamma y_{t-n}. \quad (44)$$

Recall that the coefficients λ and φ capture the impacts of the control variables on growth and its volatility respectively. Similarly, λ_d and φ_d correspond to the two effects from the year of the break onwards. Thus the two effects are captured by λ and φ in the period up to the year of the structural break, and by $\lambda + \lambda_d$ and $\varphi + \varphi_d$ during the period from the year of the break until the end of the sample. As above in order to study the direct effects of political instability and financial development we specify model 1 with $\varphi = \varphi_d = 0$, while model 2 with $\lambda = \lambda_d = 0$ allows us to investigate the indirect impacts on growth.

We also incorporate intercept dummies and level effects in the error correction equation (37) and conditional variance equation (40), as follows

$$\Delta y_t = \mu + \mu_1 D_t + \theta \Delta x_{i,t-l} + \theta_d D_{i,t-l} \Delta x_{i,t-l} + \varphi\left(y_{t-1} - c - \zeta x_{i,t-1}\right) + \varepsilon_t, \quad (45)$$

$$h_t^{\frac{\delta}{2}} = \omega + \alpha h_{t-1}^{\frac{\delta}{2}} |e_{t-1}|^{\delta} + \beta h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n} \ . \quad (46)$$

Overall, we find our results to be quite robust to the inclusion of the structural break dummies (see Table 19 - 21). That is, two out of the three domestic financial development indicators, that is M1 and commercial bank deposits, have negative short-run/lagged direct effects on growth whereas their long-run impacts are positive. The short and long-run impacts of US interest rate are opposite from those of domestic financial development. Public deficit affects growth negatively in both the short and long-run.

Political instability and trade openness play a less important role. Both formal and

[73] The two measures of financial development, that is M1 and commercial bank deposits, have two structural breaks, which are dated for years 1889 and 1930, and 1915 and 1962, respectively. In addition, we also find two structural breaks in expenditures and revenues (they are dated 1892 and 1982). Further, we also find one structural break in trade openness (or any of its two components) and public deficit (it is dated 1901 and 1967, respectively). For US interest rate and, interestingly, also for growth volatility we find no structural breaks. As a measure of volatility we use the power transformed absolute growth $|y_t|^d$

informal political variables have only short-run effects. Similarly, the negative short-run impact of trade openness disappears in the long run. Interestingly, the causal direct, indirect and short-run impacts from assassinations become weaker after we account for the structural break in 1978, respectively (see the λ_{pid}, φ_{pid} and θ_{pid} columns in Tables 18-20, respectively).

3.5 Conclusion

Using a PARCH framework and data for Brazil from approximately 1870 to 2003 we ask the following questions: What is the relationship between, on the one hand, financial development (domestic and international), political instability, public deficit, trade openness and, on the other hand, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations? Our main results can be summarized in the following table:

Table 22: Summary of Results: Direct, Indirect, Short and Long-run Effects.

	D	IND	SR	LR		D	IND	SR	LR
Financial Development	-[1]	-	-	□	Trade Openness	-[3]	-	-[4]	0
US Interest Rate	□□		□	-	Public Deficit	-[5]	-	-[6]	-
Political Instability Variables[7]									
Assassinations	-	-	-	0	Legislative Effectiveness	-	-	-	0

Notes: D denotes the direct effect. IND is the indirect effect. LR and SR denote the long and short-run impacts, respectively. [1]For deposits (Banco do Brasil) the effect is less significant. In the meanwhile, M1 and commercial bank deposits have strong negative impacts. [2]The impact is insignificant when deposits at Banco do Brasil are used (see λ_{id} column in Table 18). [3]Effects of trade openness seems to be sensitive to the measure of the variables. [4]The effect disappears when it combines with M1 (see the θ_{to} column in Table 18.5.a, 18.5.c, 18.5.d). [5]The impact is insignificant when assassinations and commercial bank deposits are used (see φ_{pd} column in Table 16.1). [6]The effects of public deficit seems to be very sensitive to the measure of the variables. [7] The effects of PI are restricted to the short-run. (see Table 16, 17, 18 and Appendix B). Further, the effects of Number of Coups and Number of Cabinet Changes are very sensitive to the measure of the variables used in the analysis (see Appendix C and D).

Table 22 Summary of Results

To sum up, we find that the main explanatory factors, solely in terms of their negative lagged direct/indirect effects and short and long-run impacts on economic growth in Brazil, turn out to be domestic financial development (mainly commercial bank deposits) and international financial development (the US interest rate). In particular, two out of the three domestic financial development indicators, that is M1 and commercial bank deposits, have negative short-run/lagged direct effects on growth whereas their long-run impacts are positive. The short and long-run impacts of US interest rate are opposite from those of domestic financial development. Interestingly, deposits at Banco do Brasil and the US interest rate have a strong indirect effect on growth. Therefore our main results suggest that

financial development (domestic and international) exhibit the most robust first-order effects on growth and its volatility. We also find that political instability, trade openness and public deficit play important yet secondary roles because the effects of the first two do not extent to the long-run (that is, they are restricted to the short-run) and those off the latter are sensitive to the measures of the variables used in our analysis

Conclusions

Brazil is unique, not only because of its particular tendency of growth rate, but also due to the frequent political/institutional changes. This study examines how macroeconomic factors and political instability affected long-term economic growth in Brazil since 1870. Using a PARCH framework and data for Brazil from approximately 1870 to 2003 we ask the following questions: What is the relationship between, on the one hand, financial development (domestic and international), political instability, public deficit, trade openness and, on the other hand, economic growth and (predicted) growth volatility? Are these effects fundamentally and systematically different? Does the intensity and the direction (the sign) of these effects vary over time, in general and, in particular, do they vary with respect to short- versus long-run considerations?

We find that the main explanatory factors, solely in terms of their negative lagged direct/indirect effects on economic growth in Brazil, turn out to be financial development (domestic and international), political instabilities, trade openness and public deficit. From investigating whether dynamic considerations affect our conclusions, we find important differences in terms of short- and long-run behavior of our key variables, more specifically, while the effects of financial development (mainly M1 and commercial bank deposits) are negative in the short- and positive in the long-run, that of the US interest rate work in the opposite direction. Further, as to the political instability indicators, while strong negative impacts can be observed in the short-run, the corresponding effects for the long-run are weaker. Importantly, however, the negative impact of assassinations, coups, revolutions together with legislative effectiveness and cabinet changes remain strong in the long-run. Finally, public deficit has both a negative short and long-run impact.

These findings are interest in themselves but they also matter because they raise a new question, how to evaluate the relative merits of the factors behind these key explanatory variables, that we believe may extend our understanding of Brazil's economic performance. To achieve this goal, in chapter three, we focus on the joint determination of the financial development and political instabilities and find that financial development (domestic and international) exhibit the most robust first-order effects on growth and its volatility. To be more specific, two out of the three domestic financial development indicators, that is M1 and commercial bank deposits, have negative short-run/lagged direct effects on growth whereas their long-run impacts are positive. The short and long-run impacts of US interest rate are opposite from those of domestic financial development. Interestingly, deposits at Banco do Brasil and the US interest rate have a strong negative indirect effect on growth.

Political Instabilities play important secondary roles since the effect of both formal and informal political instabilities do not extend to the long-run with the existence of all other explanatory variables. For the informal political proxy, assassinations, the estimates of the short-run coefficients are highly significant and negative whereas the corresponding values for the long-run coefficients become insignificant. As to the formal political indicator, which is legislative effectiveness, our multivariate analysis shows that its short-run negative effect is not affected by the addition of other explanatory variables to the model, however, in the long-run the impact disappears when we use revenues as a regressor.

Further, both trade openness and public deficit are important in explaining the output growth in Brazil. Interesting, the significance of the influences of public deficit on growth is sensitive to the choice of the political indicator. Specifically, the negative direct impact of public deficit on growth disappears when we use assassinations as a regressor. Similarly, trade openness has a significant negative direct impact on growth only when we include legislative effectiveness and revenues as a regressor.

Last but not least, we subjected all these results to the presence of structural breaks. We find that the basic results remain once structural breaks are taken into account. That is, two out of the three domestic financial development indicators have negative short-run/lagged direct effects on growth whereas their long-run impacts are positive. The short and long-run impacts of US interest rate are opposite from those of domestic financial development. Public deficit affects growth negatively in both the short and long-run. Political instability and trade openness play a less important role. Both formal and informal political variables have only short-run effects. Similarly, the negative short-run impact of trade openness disappears in the long run.

To sum up, in examining how macroeconomic factors and political instability affected long-term economic growth in Brazil since 1870, we find financial development exhibits the most robust first-order effects on growth and its volatility. Political instability, trade openness and public deficit play important yet secondary roles since the effects of the first two do not extent to the long-run (that is, they are restricted to the short-run) and those off the latter are sensitive to the measures of the variables used in our analysis.

Tables

Table 1 Direct Effect on Economic Growth

x_{it}	k					
Panel A: Financial Development						
M1	0.011 (7.05)	-0.396 (-1.78) $l=6$	0.61 (3.75)	0.39 (3.23)	0.120 (4.73) $n=8$	1.00
Commercial Bank Deposits	0.006 (4.83)	-0.016 (-0.30) $l=2$	0.59 (3.54)	0.49 (3.93)	-0.048 (-0.67) $n=4$	0.80
Deposits at Banco do Brasil	0.010 (6.90)	-0.069 (-4.41) $l=3$	0.72 (3.09)	0.32 (3.48)	0.148 (7.37) $n=8$	1.00
Panel B: Trade Openness						
Exports	0.010 (7.90)	-0.041 (-2.02) $l=3$	0.74 (3.52)	0.30 (3.41)	0.194 (7.48) $n=8$	0.90
Imports	0.010 (6.22)	-0.109 (-2.63) $l=2$	0.59 (3.52)	0.38 (4.07)	0.177 (6.04) $n=8$	0.90
Trade Openness	0.010 (6.17)	-0.038 (-1.98) $l=5$	0.69 (3.62)	0.34 (3.67)	0.150 (7.41) $n=8$	1.00
Panel C: Public Deficit						
Expenditures	0.005 (4.81)	-0.023 (-1.82) $l=1$	0.61 (3.45)	0.52 (4.61)	-0.057 (-0.76) $n=2$	1.00
Revenues	0.010 (6.70)	-0.040 (-3.70) $l=6$	0.67 (3.84)	0.35 (3.81)	0.110 (3.12) $n=8$	1.00
Public Deficit	0.009 (5.69)	-0.220 (-4.49) $l=6$	0.65 (3.82)	0.36 (3.31)	0.111 (4.86) $n=8$	1.00
Panel D: International Financial Development						
US Interest Rate	0.009 (4.93)	0.010 (2.38) $l=1$	0.60 (3.70)	0.41 (4.21)	0.124 (2.43) $n=8$	1.00

Table 1 reports parameter estimates for the following model:

$y_t = c + k \log(n_t + g + \delta) + \beta_1 x_{i,t-l} + \beta_2 h_t^{\frac{\varepsilon}{2}} + \eta_0 + \eta_1 h_{t-1}^{\frac{\varepsilon}{2}} + e_{t-1} + \varphi + \varphi_1 h_{t-1}^{\frac{\varepsilon}{2}} + \varphi_2 y_{t-n}$.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 1 Direct Effect of Economic Growth (Univariate)

Table 1.1 Direct Effect of M1, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Exports									
Expenditures	3.60 (2.66)	-0.024 (-1.71) $l=4$	-0.073 (-2.07) $l=5$	-0.002 (-2.19) $l=4$	0.001 (2.29) $l=3$	0.47 (3.02)	0.44 (2.50)	-0.09 (-0.67) $n=2$	0.80
Revenues	4.00 (1.94)	-0.028 (-2.15) $l=5$	-0.062 (-2.08) $l=4$	-0.004 (-3.31) $l=3$	0.002 (3.14) $l=5$	0.43 (2.42)	0.42 (2.04)	0.03 (0.56) $n=4$	0.80
Public Deficit	3.13 (2.61)	-0.038 (-1.29) $l=4$	-0.070 (-3.25) $l=8$	-0.002 (-2.01) $l=6$	0.003 (2.50) $l=6$	0.62 (4.13)	0.26 (1.66)	0.17 (2.45) $n=5$	0.80
Imports									
Expenditures	4.58 (1.97)	-0.037 (-4.10) $l=4$	-0.047 (-2.92) $l=5$	-0.003 (-2.61) $l=4$	0.001 (2.53) $l=4$	0.46 (3.08)	0.29 (1.66)	-0.08 (-0.54) $n=1$	0.80
Revenues	5.83 (1.91)	-0.020 (-1.96) $l=5$	-0.071 (-3.31) $l=4$	-0.003 (-3.10) $l=4$	0.002 (2.70) $l=5$	0.37 (1.96)	0.37 (1.70)	0.04 (0.16) $n=2$	1.00
Public Deficit	2.64 (1.04)	-0.030 (-4.61) $l=4$	-0.098 (-5.72) $l=8$	-0.003 (-3.48) $l=6$	0.003 (2.87) $l=6$	0.62 (4.11)	0.29 (2.07)	0.18 (3.03) $n=5$	0.80
Trade Openness									
Expenditures	3.06 (2.48)	-0.035 (-6.71) $l=4$	-0.025 (-3.00) $l=8$	-0.003 (-5.03) $l=4$	0.002 (2.38) $l=6$	0.58 (3.73)	0.33 (2.04)	0.11 (1.89) $n=5$	0.80
Revenues	1.84 (2.13)	-0.034 (-6.75) $l=4$	-0.002 (-1.89) $l=8$	-0.002 (-3.46) $l=4$	0.002 (2.77) $l=6$	0.57 (3.75)	0.43 (3.03)	-0.03 (-0.31) $n=3$	0.80
Public Deficit	2.65 (2.42)	-0.015 (-1.69) $l=5$	-0.033 (-3.67) $l=8$	-0.004 (-2.75) $l=4$	0.003 (2.46) $l=6$	0.62 (4.12)	0.31 (2.22)	0.14 (2.48) $n=5$	0.80

Table 1.1 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \theta h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \theta h_{t-1}^{\frac{\delta}{2}} + \vartheta_{t-n}$,

$x_{fd,t-l}$ is M1, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are absolute t statistics.

Table 1.1 Direct Effect of M1, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 1.2 Direct Effect of Commercial Bank Deposit, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Exports									
Expenditures	2.93 (0.51)	-0.029 (-2.60) $l=4$	-0.053 (-2.36) $l=5$	-0.003 (-4.17) $l=4$	0.002 (4.76) $l=6$	0.53 (3.44)	0.37 (2.11)	-0.04 (-0.42) $n=3$	0.80
Revenues	3.00 (3.00)	-0.030 (-1.60) $l=4$	-0.057 (-3.06) $l=5$	-0.003 (-3.34) $l=4$	0.002 (3.27) $l=6$	0.60 (3.66)	0.38 (3.28)	0.13 (3.09) $n=8$	1.00
Public Deficit	1.68 (0.60)	-0.058 (-7.16) $l=3$	0.001 (0.07) $l=3$	-0.003 (-2.62) $l=6$	0.002 (3.78) $l=6$	0.59 (4.09)	0.37 (2.86)	0.10 (1.83) $n=5$	0.80
Imports									
Expenditures	2.22 (1.83)	-0.041 (-4.69) $l=4$	-0.026 (-1.97) $l=5$	-0.002 (-2.46) $l=4$	0.002 (1.04) $l=6$	0.50 (3.26)	0.44 (2.94)	-0.04 (-0.24) $n=2$	0.80
Revenues	2.61 (2.89)	-0.047 (-4.91) $l=4$	-0.037 (-1.90) $l=8$	-0.002 (-5.88) $l=4$	0.002 (3.27) $l=6$	0.59 (3.88)	0.37 (2.97)	0.14 (2.89) $n=8$	0.90
Public Deficit	2.17 (2.22)	-0.057 (-6.73) $l=4$	-0.003 (-0.25) $l=6$	-0.003 (-2.44) $l=6$	0.002 (3.10) $l=6$	0.62 (4.03)	0.35 (2.47)	0.14 (2.24) $n=5$	0.80
Trade Openness									
Expenditures	2.61 (2.32)	-0.038 (-3.09) $l=4$	-0.019 (-2.90) $l=5$	-0.002 (-2.96) $l=4$	0.002 (3.25) $l=6$	0.53 (3.09)	0.44 (3.03)	0.12 (2.93) $n=8$	0.90
Revenues	2.18 (1.64)	-0.043 (-5.22) $l=4$	-0.026 (-2.04) $l=8$	-0.002 (-5.19) $l=4$	0.002 (3.58) $l=6$	0.53 (3.71)	0.39 (3.04)	0.04 (0.59) $n=7$	0.80
Public Deficit	2.27 (2.14)	-0.052 (-4.31) $l=4$	-0.005 (-0.31) $l=3$	-0.002 (-1.74) $l=6$	0.002 (2.08) $l=6$	0.60 (3.79)	0.37 (3.07)	0.08 (2.67) $n=8$	1.00

Table 1.2 reports parameter estimates of direct effect only for the following model:

$y_t = c + k\log(h_t) + \alpha_{fd}x_{fd,t-l} + \alpha_{to}x_{to,t-l} + \alpha_{pd}x_{pd,t-l} + \alpha_{us}x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{1}{2}} = \eta_0 + \theta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \varphi e_{t-1} + \theta h_{t-1}^{\frac{1}{2}} + \theta y_{t-n}$,

$x_{fd,t-l}$ is commercial bank deposits,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 1.2 Direct Effect of Commercial Bank Deposits, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 1.3 Direct Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Imports									
Expenditures	2.96 (0.00)	−0.017 (−2.28) $l=8$	−0.054 (−2.49) $l=8$	−0.002 (−4.23) $l=4$	0.002 (7.36) $l=6$	0.56 (0.71)	0.34 (2.41)	0.13 (2.43) $n=8$	0.80
Revenues	2.25 (2.37)	−0.008 (−1.33) $l=5$	−0.059 (−3.35) $l=8$	−0.003 (−4.12) $l=4$	0.002 (6.57) $l=6$	0.58 (0.81)	0.40 (3.22)	0.12 (2.16) $n=8$	0.80
Public Deficit	3.39 (0.67)	0.006 (0.66) $l=5$	−0.070 (−3.34) $l=8$	−0.004 (−2.06) $l=4$	0.002 (6.76) $l=6$	0.56 (4.90)	0.38 (3.02)	0.16 (3.08) $n=8$	0.80
Exports									
Expenditures	1.70 (2.05)	−0.017 (−2.59) $l=4$	−0.053 (−3.21) $l=8$	−0.002 (−4.43) $l=4$	0.003 (6.41) $l=6$	0.59 (4.10)	0.45 (3.99)	0.10 (1.98) $n=8$	0.80
Revenues	1.63 (1.99)	−0.008 (−1.18) $l=5$	−0.047 (−2.92) $l=8$	−0.004 (−3.98) $l=4$	0.002 (6.79) $l=6$	0.67 (4.15)	0.39 (3.08)	0.07 (1.88) $n=5$	1.00
Public Deficit	3.52 (3.07)	−0.001 (−0.06) $l=5$	−0.091 (−4.39) $l=8$	−0.003 (−2.76) $l=6$	0.002 (6.79) $l=6$	0.59 (3.64)	0.36 (2.58)	0.22 (4.00) $n=8$	0.80
Trade Openness									
Expenditures	2.72 (2.90)	−0.009 (−1.23) $l=5$	−0.025 (−3.42) $l=8$	−0.003 (−4.13) $l=4$	0.002 (10.69) $l=6$	0.59 (3.71)	0.38 (2.73)	0.15 (2.56) $n=8$	0.80
Revenues	2.85 (3.00)	−0.009 (−1.11) $l=5$	−0.021 (−2.32) $l=8$	−0.004 (−3.73) $l=4$	0.002 (7.47) $l=6$	0.62 (3.30)	0.40 (2.96)	0.12 (3.42) $n=8$	1.00
Public Deficit	3.77 (3.22)	0.009 (1.18) $l=5$	−0.057 (−3.93) $l=4$	−0.003 (−2.27) $l=4$	0.002 (7.74) $l=6$	0.58 (3.58)	0.36 (2.70)	0.18 (4.43) $n=8$	0.90

Table 1.3 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{1}{2}} = \gamma_0 + \gamma_1 h_{t-1}^{\frac{1}{2}} + e_{t-1} + \gamma_2 h_{t-1}^{\frac{1}{2}} + \gamma_3 y_{t-n}$,

$x_{fd,t-l}$ is deposits at Banco do Brasil,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 1.3 Direct Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 2 Indirect Effect on Economic Growth

x_{it}	k					
Panel A: Financial Development						
M1	0.010 (0.16)	0.62 (0.66)	0.38 (2.98)	-0.349 (-1.76) $l=6$	0.157 (0.22) $n=8$	0.90
Commercial Bank Deposits	0.010 (0.97)	0.66 (0.97)	0.38 (3.28)	-0.007 (-0.53) $l=8$	0.140 (0.31) $n=8$	1.00
Deposits at Banco do Brasil	0.010 (0.57)	0.53 (0.26)	0.40 (3.03)	-0.121 (-2.88) $l=3$	0.128 (0.82) $n=8$	1.00
Panel B: Trade Openness						
Exports	0.012 (0.12)	0.47 (0.75)	0.36 (2.53)	-0.134 (-3.95) $l=8$	0.117 (0.75) $n=8$	1.00
Imports	0.010 (2.22)	0.72 (0.72)	0.33 (3.44)	-0.033 (-1.73) $l=4$	0.142 (0.73) $n=8$	1.00
Trade Openness	0.012 (0.82)	0.50 (0.82)	0.33 (2.19)	-0.143 (-2.54) $l=8$	0.170 (0.78) $n=8$	0.90
Panel C: Public Deficit						
Expenditures	0.010 (0.04)	0.51 (0.35)	0.42 (3.46)	-0.044 (-2.69) $l=2$	0.107 (0.59) $n=8$	1.00
Revenues	0.007 (0.18)	0.59 (0.21)	0.43 (3.21)	-0.099 (-6.41) $l=8$	0.113 (0.20) $n=8$	1.00
Public Deficit	0.010 (0.80)	0.58 (0.78)	0.38 (3.08)	-0.098 (-2.86) $l=3$	0.195 (0.31) $n=8$	0.80
Panel D: International Financial Development						
US Interest Rate	0.010 (0.90)	0.57 (0.46)	0.33 (3.06)	0.011 (0.26) $l=2$	0.080 (0.91) $n=8$	1.00

Table 2 reports parameter estimates for the following model:

$y_t = c + k \log(n_t + g + \delta) + h_t^{\frac{\varepsilon}{2}} + \eta_0 \sum_{t=1}^{\varepsilon} h_{t-1}^{\frac{\varepsilon}{2}} + e_{t-1} + \sum_{t=1}^{\varepsilon} h_{t-1}^{\frac{\varepsilon}{2}} + \sum x_{i,t-l} + \sum y_{t-n}$.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 2 Indirect Effect on Economic Growth (Univariate)

Table 2.1 Indirect Effect of M1, Trade Openness,
Public Deficit and US Interest Rate on Economic Growth

	k	ω	α	γ_{fd}	γ_{to}	γ_{pd}	γ_{us}	ε	η
Exports									
Expenditures	0.0087	0.41	0.45	-0.347	-0.124	-0.040	0.006	0.094	1.00
	(4.11)	(4.82)	(4.59)	(-2.23)	(-2.18)	(-2.87)	(4.00)	(4.51)	
				$l=6$	$l=8$	$l=2$	$l=8$	$n=8$	
Revenues	0.0092	0.51	0.35	-0.432	-0.164	-0.029	0.008	0.108	1.00
	(3.97)	(3.56)	(3.46)	(-2.94)	(-4.91)	(-4.11)	(2.40)	(4.07)	
				$l=6$	$l=8$	$l=8$	$l=8$	$n=8$	
Public Deficit	0.0083	0.39	0.46	-0.229	-0.194	-0.136	0.013	0.097	1.00
	(3.84)	(4.07)	(4.82)	(-1.70)	(-5.08)	(-3.25)	(7.87)	(3.83)	
				$l=6$	$l=8$	$l=3$	$l=1$	$n=8$	
Imports									
Expenditures	0.0102	0.56	0.38	-0.342	-0.082	-0.021	0.014	0.100	1.00
	(3.48)	(4.49)	(4.48)	(-2.72)	(-1.69)	(-2.35)	(6.11)	(4.05)	
				$l=6$	$l=8$	$l=2$	$l=1$	$n=8$	
Revenues	0.0070	0.62	0.39	-0.333	-0.046	-0.024	0.008	0.093	1.00
	(6.64)	(3.58)	(3.32)	(-2.07)	(-2.28)	(-3.31)	(2.62)	(4.07)	
				$l=6$	$l=4$	$l=3$	$l=8$	$n=8$	
Public Deficit	0.0108	0.52	0.37	-0.457	-0.146	-0.086	0.016	0.142	0.90
	(3.26)	(3.90)	(3.52)	(-2.88)	(-2.13)	(-1.67)	(6.31)	(4.08)	
				$l=6$	$l=8$	$l=1$	$l=1$	$n=8$	
Trade Openness									
Expenditures	0.0077	0.49	0.31	-0.304	-0.134	-0.031	0.006	0.100	1.00
	(6.66)	(4.23)	(3.68)	(-1.93)	(-2.27)	(-3.64)	(2.05)	(3.45)	
				$l=6$	$l=8$	$l=5$	$l=1$	$n=8$	
Revenues	0.0067	0.49	0.38	-0.383	-0.127	-0.038	0.008	0.102	1.00
	(7.55)	(3.85)	(3.84)	(-2.28)	(-2.02)	(-4.25)	(2.34)	(3.41)	
				$l=6$	$l=8$	$l=5$	$l=1$	$n=8$	
Public Deficit	0.0098	0.44	0.39	-0.196	-0.140	-0.098	0.013	0.125	1.00
	(5.03)	(4.15)	(3.92)	(-1.71)	(-3.38)	(-2.98)	(6.36)	(3.91)	
				$l=6$	$l=8$	$l=3$	$l=1$	$n=8$	

Table 2.1 reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(\omega_t) + \alpha_t h_t^{\frac{\delta}{2}} + \eta_t h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \varepsilon_t h_{t-1}^{\frac{\delta}{2}} + \gamma_{fd} x_{fd,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \varphi y_{t-n}$,
where $x_{fd,t-l}$ is M1, $x_{to,t-l}$ is trade openness (or one of its elements),
$x_{pd,t-l}$ is public deficit (or one of its parts) and $x_{us,t-l}$ is US interest rate.
l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 2.1 Indirect Effect of M1, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 2.2 Indirect Effect of Commercial Bank Deposits, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α	β	γ_{fd}	γ_{to}	γ_{pd}	γ_{us}	δ	ε
Exports									
Expenditures	0.0092 (0.37)	0.40 (4.31)	0.34 (3.61)	0.007 (0.51) $l=8$	-0.130 (-1.75) $l=8$	-0.022 (-2.01) $l=2$	0.014 (1.38) $l=6$	0.094 (5.28) $n=8$	1.00
Revenues	0.0055 (0.56)	0.51 (3.63)	0.39 (3.24)	0.011 (0.62) $l=8$	-0.196 (-2.57) $l=8$	-0.036 (-3.60) $l=8$	0.008 (0.84) $l=8$	0.114 (3.03) $n=8$	1.00
Public Deficit	0.0084 (0.27)	0.49 (3.91)	0.35 (2.92)	0.012 (1.03) $l=8$	-0.163 (-3.66) $l=8$	-0.127 (-3.41) $l=3$	0.007 (0.72) $l=8$	0.114 (3.69) $n=8$	1.00
Imports									
Expenditures	0.0093 (0.69)	0.63 (4.40)	0.33 (2.94)	-0.013 (-0.86) $l=6$	-0.110 (-1.61) $l=8$	-0.033 (-2.55) $l=2$	0.005 (0.84) $l=8$	0.122 (3.52) $n=8$	1.00
Revenues	0.0073 (6.49)	0.49 (3.63)	0.48 (6.15)	-0.006 (-0.34) $l=8$	-0.164 (-1.63) $l=6$	-0.022 (-2.85) $l=3$	0.006 (0.79) $l=1$	0.076 (2.98) $n=8$	1.00
Public Deficit	0.0097 (0.09)	0.57 (5.60)	0.36 (3.53)	-0.003 (-0.19) $l=8$	-0.202 (-0.17) $l=6$	-0.117 (-2.92) $l=3$	0.009 (2.03) $l=1$	0.175 (6.55) $n=8$	0.90
Trade Openness									
Expenditures	0.0080 (7.40)	0.58 (4.49)	0.29 (2.32)	-0.019 (-1.45) $l=8$	-0.137 (-3.73) $l=8$	-0.027 (-3.52) $l=5$	0.007 (2.34) $l=1$	0.110 (3.65) $n=8$	1.00
Revenues	0.0120 (6.66)	0.43 (3.35)	0.37 (2.51)	-0.014 (-0.95) $l=8$	-0.112 (-2.17) $l=8$	-0.025 (-4.07) $l=5$	0.007 (2.45) $l=1$	0.098 (3.74) $n=8$	1.00
Public Deficit	0.0100 (3.02)	0.50 (4.73)	0.36 (3.67)	-0.006 (-0.57) $l=8$	-0.122 (-4.13) $l=8$	-0.069 (-2.76) $l=3$	0.013 (3.77) $l=8$	0.127 (6.76) $n=8$	1.00

Table 2.2 reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(\alpha_t) + \beta\varepsilon_t$, $h_t^{\frac{1}{2}} = \eta + \sum_{i=1}^{q}\delta_i h_{t-i}^{\frac{1}{2}} + e_{t-1} + \sum_{i=1}^{p}\gamma_{fd}x_{fd,t-i} + \sum_{i=1}^{p}\gamma_{to}x_{to,t-i} + \sum_{i=1}^{p}\gamma_{pd}x_{pd,t-i} + \sum_{i=1}^{p}\gamma_{us}x_{us,t-i} + \sum_{i=1}^{n}\varphi_i y_{t-i}$,

where $x_{fd,t-i}$ is commercial bank deposits, $x_{to,t-i}$ is trade openness (or one of its elements), $x_{pd,t-i}$ is public deficits (or one of its parts) and $x_{us,t-i}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 2.2 Indirect Effect of Commercial Bank Deposits, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 2.3 Indirect Effect of Deposits at Banco do Brasil,, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α	β	γ_{fd}	γ_{to}	γ_{pd}	γ_{us}	α	α
Exports									
Expenditures	0. 0098 (6.41)	0. 44 (4.17)	0. 37 (2.99)	-0. 299 (-4.04) l=8	-0. 123 (-3.36) l=8	-0. 058 (-3.70) l=2	0. 007 (2.28) l=8	0. 122 (6.89) n=8	0. 90
Revenues	0. 0105 (6.67)	0. 43 (4.50)	0. 37 (3.89)	-0. 201 (-2.92) l=8	-0. 100 (-3.29) l=8	-0. 053 (-4.63) l=2	0. 012 (6.19) l=1	0. 093 (2.89) n=8	1. 00
Public Deficit	0. 0060 (6.72)	0. 48 (5.53)	0. 41 (5.52)	-0. 275 (-3.44) l=8	-0. 137 (-2.69) l=8	-0. 177 (-4.29) l=3	0. 009 (2.33) l=1	0. 067 (1.94) n=8	1. 00
Imports									
Expenditures	0. 0061 (6.49)	0. 64 (6.07)	0. 32 (4.13)	-0. 248 (-5.76) l=8	-0. 113 (-2.72) l=8	-0. 054 (-5.94) l=2	0. 007 (2.72) l=8	0. 139 (7.89) n=8	1. 00
Revenues	0. 0081 (6.19)	0. 45 (5.83)	0. 38 (4.48)	-0. 390 (-7.79) l=8	-0. 058 (-1.79) l=8	-0. 142 (-9.20) l=2	0. 005 (1.85) l=6	0. 132 (4.87) n=8	1. 00
Public Deficit	0. 0057 (6.98)	0. 50 (4.21)	0. 44 (6.11)	-0. 403 (-5.96) l=5	-0. 080 (-3.79) l=8	-0. 040 (-3.63) l=3	0. 006 (4.00) l=6	0. 091 (4.18) n=8	1. 00
Trade Openness									
Expenditures	0. 0060 (6.72)	0. 48 (5.53)	0. 41 (5.52)	-0. 275 (-3.44) l=8	-0. 137 (-2.69) l=8	-0. 177 (-4.29) l=3	0. 009 (2.33) l=1	0. 067 (1.94) n=8	1. 00
Revenues	0. 0096 (7.85)	0. 55 (4.65)	0. 27 (2.28)	-0. 248 (-2.66) l=8	-0. 124 (-2.62) l=8	-0. 042 (-5.06) l=5	0. 009 (2.13) l=1	0. 146 (3.74) n=8	0. 90
Public Deficit	0. 0078 (6.03)	0. 35 (3.84)	0. 37 (5.16)	-0. 350 (-3.89) l=5	-0. 134 (-2.91) l=8	-0. 156 (-4.24) l=3	0. 018 (6.89) l=6	0. 145 (3.83) n=8	0. 90

Table 2.3 reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \varepsilon_t$, $h_t^{\frac{1}{2}} = \eta + \alpha h_{t-1}^{\frac{1}{2}} + e_{t-1} + \beta h_{t-1}^{\frac{1}{2}} + \gamma_{fd} x_{fd,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \varphi y_{t-n}$,
where $x_{fd,t-l}$ is deposits at Banco do Brasil, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (or one of its elements) and $x_{us,t-l}$ is US interest rate.
l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 2.3 Indirect Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 3 The Short and Long-run Effects on Growth

x_{it}							
Panel A: Financial Development							
M1	-0.779 (-3.47) $l=6$	0.391 (6.76)	-0.997 (-6.18)	0.48 (7.88)	0.51 (8.18)	0.019 (0.41) $n=8$	1.00
Commercial Bank Deposits	-0.385 (-2.96) $l=3$	0.018 (1.77)	-0.907 (-6.11)	0.30 (7.25)	0.60 (9.71)	0.028 (0.64) $n=8$	1.00
Deposits at Banco do Brasil	-0.218 (-2.00) $l=4$	-0.135 (-1.30)	-0.625 (-7.74)	0.50 (8.36)	0.47 (8.99)	0.024 (0.34) $n=8$	0.90
Panel C: Public Deficit							
Revenues	-0.086 (-1.88) $l=4$	-0.142 (-5.77)	-0.703 (-8.79)	0.56 (9.90)	0.54 (8.69)	0.056 (1.33) $n=8$	0.90
Expenditures	-0.049 (-2.34) $l=6$	-0.143 (-10.69)	-0.567 (-9.31)	0.96 (9.20)	0.26 (6.06)	0.148 (2.82) $n=5$	1.00
Public Deficit	-0.246 (-2.70) $l=8$	0.028 (0.70)	-0.528 (-7.29)	0.72 (9.70)	0.26 (8.32)	0.116 (3.03) $n=5$	1.00
Panel D: International Financial Development							
US Interest Rate	0.012 (0.19) $l=4$	-0.002 (-3.57)	-0.612 (-8.50)	0.52 (7.83)	0.53 (8.85)	0.044 (1.39) $n=5$	1.00

Table 3 reports parameter estimates for the following model:

$$\Delta y_t = \phi + \sum \beta_i \Delta x_{i,t-l} + \sum \gamma_j \Delta y_{t-1} + \alpha c + \alpha x_{i,t-1} + \varepsilon_t,$$

$$h_t^{\frac{\delta}{2}} = \eta_0 + \sum \theta_i |u_{t-1}|^{\delta} + \sum \theta_i h_{t-1}^{\frac{\delta}{2}} + \sum \theta_j y_{t-n}.$$

β and ϕ capture the short and long-run effects respectively.

α Indicates the speed of adjustment to the long-run relationship.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

The long-run impact of trade openness is insignificant (results not reported).

Table 3 The Short- and Long-run Effects on Growth (Univariate)

Table 3.1 The Short- and Long-run Effects of Financial Development, Public Deficit, Exports (Trade Openness) and US Interest Rate on Growth

x_{it}	α_{fd}	α_{o}	α_{pd}	α_{us}	λ_{fd}	λ_{pd}	λ_{us}	ect	ω	φ	σ^2	χ^2
Expenditures												
M1	-1.055 (-2.77) l=3	-0.168 (-1.63) l=8	-0.051 (-1.76) l=5	0.011 (0.49) l=6	0.591 (7.15)	-0.0086 (-0.709)	-0.0006 (-1.63)	-0.81 (-12.61)	0.55 (4.7)	0.37 (3.50)	0.059 (0.41) n=8	1.00 [0.00]
Commercial Bank Deposits	-0.110 (-2.21) l=3	-0.027 (-0.37) l=8	-0.057 (-1.65) l=5	0.018 (3.75) l=5	0.045 (0.80)	-0.0967 (-5.93)	-0.0029 (-4.70)	-0.72 (-13.95)	0.61 (3.10)	0.46 (4.66)	0.009 (0.14) n=8	0.80 [0.00]
Deposits at Banco do Brasil	-0.063 (-1.76) l=3	-0.043 (-0.73) l=8	-0.027 (-1.00) l=5	0.012 (3.07) l=5	-0.128 (-1.50)	-0.1025 (-4.21)	-0.0018 (-2.06)	-0.61 (-10.32)	0.67 (3.20)	0.35 (3.67)	0.159 (2.68) n=5	0.80 [0.00]
Revenues												
M1	-0.718 (-5.72) l=3	-0.031 (-2.96) l=4	-0.026 (-1.67) l=5	0.018 (5.77) l=5	0.474 (6.60)	-0.0478 (-3.57)	-0.0011 (-2.56)	-0.88 (-16.58)	0.78 (3.80)	0.36 (3.71)	0.223 (2.89) n=5	0.80 [0.00]
Commercial Bank Deposits	-0.357 (-2.70) l=3	-0.200 (-2.12) l=8	0.003 (0.05) l=5	0.022 (2.85) l=5	0.026 (2.51)	-0.0121 (-1.82)	-0.0006 (-7.10)	-1.00 (-10.16)	0.34 (3.31)	0.51 (3.88)	0.076 (0.44) n=8	0.80 [0.00]
Deposits at Banco do Brasil	-0.097 (-2.40) l=3	-0.047 (-0.74) l=8	-0.096 (-1.61) l=4	0.017 (1.95) l=5	-0.055 (-1.50)	-0.1538 (-6.79)	-0.0011 (-2.73)	-1.00 (-12.08)	0.61 (3.40)	0.40 (3.86)	0.058 (1.04) n=5	0.80 [0.00]
Public Deficit												
M1	-1.009 (-3.16) l=3	-0.142 (-1.69) l=8	-0.141 (-1.76) l=6	0.007 (2.42) l=6	0.621 (3.52)	0.0149 (0.58)	-0.0005 (-1.63)	-0.74 (-11.23)	0.63 (3.93)	0.32 (3.75)	0.053 (0.59) n=5	1.00 [0.00]
Commercial Bank Deposits	-0.439 (-3.43) l=3	-0.230 (-1.97) l=8	-0.168 (-1.81) l=6	0.021 (2.38) l=5	0.021 (7.03)	-0.0007 (-0.06)	-0.0002 (-0.30)	-1.00 (-10.64)	0.25 (2.37)	0.58 (4.25)	0.046 (0.42) n=8	1.00 [0.00]

Table 3.1 reports parameter estimates for the following model:

$\Delta y_t = \varphi + \sum \alpha_{fd,t-l} \Delta x_{fd,t-l} + \sum \alpha_{o} \Delta x_{to,t-l} + \sum \alpha_{pd} \Delta x_{pd,t-l} + \sum \alpha_{us} \Delta x_{us,t-l} + \sum ect_{t-1} + c + \lambda_{fd} x_{fd,t-1} + \lambda_{pd} x_{pd,t-1} + \lambda_{us} x_{us,t-1} + \sum \omega_i z_i + \varepsilon_t$,

$h_t^2 = \gamma_0 + \sum \varphi_i u_{t-1}^2 + \sum \vartheta_i h_{t-1}^2 + \sum \vartheta_{t-n}$.

α and λ capture the short- and long-run effects respectively.

ect indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is financial development, $x_{pd,t-l}$ is public deficit (any of the three measures),

$x_{to,t-l}$ is the exports and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 3.1 The Short- and Long-run Effects of Financial Development, Public Deficit, Export and US Interest Rate on Growth

Table 4 Direct Effect on Economic Growth with Dummy Variables

x_{it}	k	α	α_1	α_2	γ	θ	η_0	ε	R^2
Panel A: Financial Development									
M1	0.012 (0.19)	−2.968 (−3.66) $l=6$	2.486 (3.00) $l=6$	−0.727 (−3.30) $l=1$	0.51 (0.53)	0.42 (0.32)	−0.0005 (−0.10)	0.052 (0.76) $n=5$	0.80
Commercial Bank Deposits	0.002 (0.88)	−0.216 (−2.00) $l=2$	0.186 (1.20) $l=5$	−0.015 (−0.22) $l=1$	0.29 (0.56)	0.30 (0.74)	0.0068 (0.74)	−0.157 (−0.95) $n=4$	1.00
Deposits at Banco do Brasil	0.010 (0.28)	−0.175 (−3.26) $l=3$	0.143 (0.86) $l=6$		0.56 (0.73)	0.41 (0.00)	−0.0007 (−0.28)	0.129 (0.71) $n=8$	1.00
Panel B: Trade Openness									
Exports	0.006 (0.41)	−0.035 (−2.38) $l=2$	−0.019 (−0.27) $l=7$		0.62 (0.19)	0.47 (0.92)	0.0026 (0.94)	−0.058 (−0.88) $n=3$	0.80
Imports	0.004 (0.93)	−0.057 (−1.85) $l=1$	−0.056 (−0.77) $l=1$		0.63 (0.57)	0.49 (0.29)	0.0032 (0.17)	−0.087 (−1.46) $n=3$	1.00
Trade Openness	0.010 (0.23)	−0.040 (−1.75) $l=5$	0.025 (0.54) $l=5$		0.63 (0.21)	0.38 (0.10)	−0.0007 (−0.27)	0.133 (0.86) $n=8$	1.00
Panel C: Public Deficit									
Expenditures	0.006 (0.80)	−0.047 (−2.76) $l=5$	0.025 (0.61) $l=4$	−0.031 (−1.01) $l=3$	0.62 (0.87)	0.45 (0.20)	0.0003 (0.09)	0.018 (0.39) $n=6$	1.00
Revenues	0.008 (0.77)	−0.102 (−2.50) $l=6$	0.091 (2.50) $l=3$	−0.081 (−3.38) $l=4$	0.57 (0.18)	0.44 (0.47)	0.0043 (0.36)	−0.065 (−1.42) $n=4$	1.00
Public Deficit	0.010 (0.57)	−0.291 (−3.73) $l=6$	0.217 (0.56) $l=1$		0.70 (0.03)	0.32 (0.69)	0.0025 (0.77)	0.054 (0.16) $n=6$	0.90
Panel D: International Financial Development									
US Interest Rate	2.80 (2.42)	0.0011 (0.20)			0.53 (0.77)	0.52 (0.94)	0.0029 (0.03)	−0.077 (−1.13) $n=3$	1.00

Table 4 reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \alpha x_{i,t-l} + \alpha_1 D_{i1,t-l} x_{i,t-l} + \alpha_2 D_{i2,t-l} x_{i,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \eta_1 D_{1t} + \theta h_{t-1}^{\frac{\delta}{2}} + \gamma e_{t-1} + \theta h_{t-1}^{\frac{\delta}{2}} + \theta y_{t-n}$.

$D_{i1,t-l}$ is a slope dummy defined as $D_{i1,t-l} = 1$ in the period: 1889-2003 (for M1); 1914 - 2003 (for commercial bank deposits); 1911-2003 (for deposits at Bank do Brasil); 1901 - 2003 (for exports); 1899 - 2003 (for imports and trade openness); 1890 - 2003 (for expenditures and revenues) and 1965 - 2003 (for public deficit). $D_{i2,t-l} = 1$ in the period: 1930 - 2003 (for M1); 1962 - 2003 (for commercial bank deposits); 1980 - 2003 (for expenditures and revenues), and $D_{i1,t-l} = 0$, $D_{i2,t-l} = 0$ otherwise.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1918-2003 and $D_{1t} = 0$ otherwise.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 4 Direct Effect on Economic Growth with Dummy Variables

Table 5 Indirect Effect on Economic Growth with Dummy Variables

x_{it}	k								
Panel A: Financial Development									
M1	0.010 (0.60)	0.59 (2.96)	0.43 (3.11)	-0.287 (-1.62) $l=6$	0.119 (0.43) $l=7$	-0.006 (-0.02) $l=5$	0.0010 (0.39)	0.017 (0.53) $n=6$	1.00 =
Commercial Bank Deposits	0.007 (3.55)	0.53 (3.24)	0.40 (2.84)	0.038 (1.04) $l=4$	0.003 (0.06) $l=1$	=	0.0027 (0.52)	0.059 (1.39) $n=5$	1.00 =
Deposits at Banco do Brasil	0.004 (0.99)	0.62 (2.93)	0.44 (2.78)	-0.215 (-4.16) $l=3$	0.203 (1.28) $l=3$	=	0.0036 (1.08)	0.054 (1.56) $n=5$	1.00 =
Panel B: Trade Openness									
Exports	0.005 (2.26)	0.51 (3.41)	0.50 (3.16)	-0.068 (-1.65) $l=6$	0.010 (0.13) $l=3$	=	0.0047 (1.69)	-0.121 (-1.32) $n=2$	1.00 =
Imports	0.010 (7.88)	0.81 (13.14)	0.29 (3.43)	-0.034 (-1.70) $l=4$	=	=	0.0019 (0.84)	0.148 (7.51) $n=8$	1.00 =
Trade Openness	0.013 (4.61)	0.50 (3.13)	0.32 (3.11)	-0.106 (-2.68) $l=8$	-0.074 (-5.66) $l=3$	=	-0.0005 (-0.19)	0.124 (4.66) $n=8$	1.00 =
Panel C: Public Deficit									
Expenditures	0.010 (3.57)	0.54 (2.68)	0.43 (2.93)	-0.036 (-2.37) $l=5$	-0.001 (-0.05) $l=7$	-0.002 (-0.11) $l=5$	0.0003 (0.14)	0.022 (0.63) $n=6$	1.00 =
Revenues	0.008 (3.20)	0.59 (3.02)	0.44 (3.33)	-0.071 (-7.95) $l=8$	0.006 (0.49) $l=5$	0.052 (3.98) $l=4$	-0.0013 (-0.52)	0.134 (4.12) $n=8$	1.00 =
Public Deficit	0.010 (7.23)	0.64 (4.32)	0.33 (3.28)	-0.130 (-3.77) $l=1$	0.125 (1.99) $l=4$	=	0.0015 (0.70)	0.100 (2.63) $n=8$	1.00 =
Panel D: International Financial Development									
US Interest Rate	0.020 (2.16)	0.40 (2.57)	0.34 (3.01)	0.006 (2.52) $l=5$	=	=	-0.0011 (-0.39)	0.093 (3.08) $n=8$	1.00 =

Table 5 reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \varepsilon_t$

$h_t^{\frac{1}{2}} = \gamma_0 + \gamma_1 D_{1t} + \sum_{i=1}^{l} \alpha_i h_{t-i}^{\frac{1}{2}} + e_{t-1} + \sum_{i=1}^{l} \beta_i x_{i,t-i} + \sum_{i=1}^{l} \beta_1 D_{i1,t-i} x_{i,t-i} + \sum_{i=1}^{l} \beta_1 D_{i2,t-i} x_{i,t-i} + \sum_{i=1}^{n} \delta y_{t-n}$.

$D_{i1,t-i}$ is a slope dummy defined as $D_{i1,t-i} = 1$ in the period 1889-2003 (for M1); 1914-2003 (for commercial bank deposits); 1911-2003 (for deposits at Bank do Brasil); 1901-2003 (for exports); 1899-2003 (for imports and trade openness); 1890-2003 (for expenditures and revenues) and 1965-2003 (for public deficits). $D_{i2,t-i} = 1$ in the period 1930-2003 (for M1); 1962-2003 (for commercial bank deposits); 1980-2003 (for expenditures and revenues), and $D_{i1,t-i} = 0$, $D_{i2,t-i} = 0$ otherwise.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1918-2003 and $D_{1t} = 0$ otherwise..

$x_{i,t-i}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 5 Indirect Effect on Economic Growth with Dummy Variables

Table 6. The Short- and Long-run Growth Effects with Dummy Variables

x_{it}	α	α_1	α_2	θ	φ	γ_0	γ_1	γ_2	δ	μ
Panel A: Financial Development										
M1	-1.112 (-3.88) l=3	-0.370 (-1.89) l=2	-0.600 (-2.43) l=6	0.391 (6.76)	-0.062 (-7.27)	0.86 (6.98)	0.26 (3.08)	0.0048 (1.42)	-0.067 (-1.06) n=7	1.00 -
Commercial Bank Deposits	-0.116 (-1.60) l=4	0.107 (0.55) l=1	-0.089 (-2.19) l=4	0.018 (0.77)	-0.078 (-11.21)	0.54 (6.32)	0.53 (6.19)	-0.0031 (-1.44)	0.047 (0.22) n=8	1.00 -
Deposits at Banco do Brasil	-0.251 (-2.33) l=4	0.116 (0.64) l=5	-	-0.135 (-1.30)	-0.062 (-8.18)	0.52 (6.14)	0.50 (6.67)	0.0006 (0.15)	0.018 (0.24) n=8	1.00 -
Panel C: Public Deficits										
Expenditures	-0.067 (-3.95) l=6	0.323 (2.45) l=3	-0.459 (-3.34) l=3	-0.142 (-5.77)	-0.067 (-11.32)	0.91 (6.55)	0.21 (6.16)	0.0039 (0.76)	0.138 (0.73) n=5	1.00 -
Revenues	-0.088 (-2.41) l=4	-0.047 (-1.38) l=6	-0.079 (-3.03) l=3	-0.143 (-10.69)	-0.071 (-8.88)	0.71 (6.38)	0.48 (6.85)	0.0010 (0.41)	-0.014 (-0.23) n=1	1.00 -
Public Deficits	-0.243 (-2.96) l=8	-0.050 (-0.41) l=2	-	0.028 (0.70)	-0.052 (-7.26)	0.75 (6.74)	0.23 (6.16)	0.0021 (0.64)	0.118 (0.84) n=5	1.00 -
Panel D: International Financial Development										
US Interest Rate	0.015 (0.38) l=4	-	-	-0.002 (-3.57)	-0.069 (-10.80)	0.53 (6.33)	0.51 (6.26)	-0.0031 (-1.11)	0.077 (0.77) n=8	1.00 -

Table 6. reports parameter estimates for the following model:

$\Delta y_t = \theta + \sum \alpha \Delta x_{i,t-l} + \sum \alpha_1 D_{i1,t-l} \Delta x_{i,t-l} + \sum \alpha_2 D_{i2,t-l} \Delta x_{i,t-l} + \varphi ECT_{t-1} + c + \sum \gamma_{i,t-1} + \delta D_t + \mu_t$,

$h_t^{\frac{\delta}{2}} = \gamma_0 + \gamma_1 D_{1t} + \gamma_2 |u_{t-1}|^{\delta} + \varphi h_{t-1}^{\frac{\delta}{2}} + \mu_{t-n}$.

α and θ capture the short- and long-run effects respectively.

φ Indicates the speed of adjustment to the long-run relationship.

$D_{i1,t-l}$ is a slope dummy defined as $D_{i1,t-l} = 1$ in the period: 1889-2003 (for M1);

1914 - 2003 (for commercial bank deposits); 1911-2003 (for deposits at Bank do Brasil);

1890 - 2003 (for expenditures and revenues) and 1965 - 2003 (for public deficits).

$D_{i2,t-l} = 1$ in the period 1930 - 2003 (for M1); 1962 - 2003 (for commercial bank deposits);

1980 - 2003 (for expenditures and revenues), and $D_{i1,t-l} = 0$, $D_{i2,t-l} = 0$ otherwise.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1918-2003 and $D_{1t} = 0$ otherwise.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 6 The Short- and Long-run Growth Effects with Dummy Variables

Table 8.a Direct Effect of Informal Political Instability on GDP Growth

Informal Political Instability						
x_{it}	k	α_{pi}				
Anti-government Demonstrations	0.008 (4.10)	-0.038 (-2.65) $l=3$	0.69 (3.02)	0.46 (3.55)	0.287 (1.65) $n=4$	1.00
Assassinations	0.011 (6.19)	-0.120 (-5.29) $l=8$	0.78 (3.83)	0.31 (4.31)	0.281 (2.05) $n=3$	0.80
General Strikes	0.013 (3.29)	-0.209 (-3.14) $l=2$	0.70 (3.64)	0.42 (4.27)	0.198 (1.96) $n=4$	1.00
Guerrilla Warfare	0.017 (4.81)	-0.011 (-0.67) $l=8$	0.57 (3.07)	0.48 (3.80)	0.236 (1.38) $n=3$	1.00
Number of Coups d'etat	0.009 (4.12)	-0.089 (-2.04) $l=2$	0.71 (3.53)	0.19 (2.72)	0.173 (4.28) $n=6$	0.80
Revolutions	0.007 (1.68)	-0.416 (-1.83) $l=7$	0.62 (3.72)	0.52 (4.25)	0.105 (1.68) $n=8$	0.80
Riots	0.009 (1.32)	0.052 (0.93) $l=5$	0.61 (2.40)	0.47 (3.05)	0.150 (0.63) $n=4$	1.00

Table 8.a reports parameter estimates for the following model:

$$y_t = c + k\log(h_t) + \alpha_{pi}x_{pi,t-l} + \varepsilon_t,\ h_t^{\frac{\delta}{2}} = \eta_0 + \eta_1 h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \gamma_1 h_{t-1}^{\frac{\delta}{2}} + \beta_n y_{t-n}.$$

$x_{pi,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 8.a Direct Effect of Informal Political Instability on GDP Growth

Table 8.b Direct Effect of Formal Political Instability on GDP Growth

Formal Political Instability x_{it}	k	γ_{pi}				σ^2
Changes in Effective Executive	0.015 (3.84)	-0.209 (-3.75) $l=6$	0.77 (3.54)	0.36 (3.22)	0.099 (0.71) $n=3$	1.00
Government Crisis	0.008 (1.65)	0.074 (0.10)	0.65 (3.19)	0.47 (2.82)	0.338 (0.66)	0.90
		$l=2$			$n=4$	
Legislative Effectiveness	0.007 (8.26)	-1.476 (-2.12)	0.84 (4.91)	0.33 (3.46)	0.206 (2.28)	0.90
		$l=6$			$n=4$	
Legislative Selection	0.016 (3.42)	-1.547 (-2.80)	0.51 (3.41)	0.58 (6.86)	0.111 (0.49)	0.80
		$l=1$			$n=5$	
Major Constitutional Changes	0.007 (0.90)	-0.090 (-4.14)	0.55 (4.77)	0.56 (6.42)	0.036 (0.39)	0.80
		$l=2$			$n=8$	
Number of Cabinet Changes	0.012 (3.32)	-0.159 (-3.03)	0.76 (4.29)	0.31 (3.36)	0.231 (0.46)	0.90
		$l=3$			$n=3$	
Purges	0.012 (3.60)	-0.002 (-0.19)	0.55 (3.42)	0.42 (3.41)	0.385 (0.82)	0.90
		$l=6$			$n=4$	
Size of the Cabinet	0.013 (4.48)	-0.028 (-2.99)	0.59 (4.50)	0.27 (3.00)	0.217 (0.59)	1.00
		$l=4$			$n=6$	

Table 8.b reports parameter estimates for the following model:

$y_t = c + k \log(n_t) + \gamma_{pi} x_{pi,t-l} + \beta_1 h_t^2 + \alpha_0 + \alpha_1 h_{t-1}^2 + e_{t-1} + \beta_2 + \alpha_2 h_{t-1}^2 + \alpha_3 y_{t-n}$.

$x_{pi,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 8.b Direct Effect of Formal Political Instability on GDP Growth

Table 9.a Indirect Effect of Informal Political Instability on GDP Growth

Informal Political Instability x_{it}	k					
Anti-government Demonstrations	0.0088 (0.33)	0.59 (0.19)	0.52 (0.49)	-0.028 (-3.51) $l=1$	0.177 (0.92) $n=4$	1.00
Assassinations	0.0101 (0.08)	0.63 (2.95)	0.47 (0.61)	-0.056 (-2.88) $l=8$	0.307 (0.77) $n=4$	1.00
General Strikes	0.0205 (0.05)	0.45 (0.80)	0.23 (2.51)	-0.127 (-3.34) $l=2$	0.295 (2.47) $n=7$	0.80
Guerrilla Warfare	0.0136 (0.06)	0.47 (0.67)	0.37 (0.36)	-0.043 (-2.73) $l=8$	0.259 (2.06) $n=6$	0.90
Number of Coups d'etat	0.0002 (0.11)	0.23 (2.80)	0.79 (4.21)	-0.162 (-2.00) $l=1$	0.006 (0.133) $n=5$	1.00
Revolutions	0.0081 (0.64)	0.73 (4.15)	0.34 (0.62)	0.268 (1.16) $l=5$	0.088 (1.50) $n=4$	1.00
Riots	0.0050 (0.44)	0.72 (6.17)	0.51 (6.14)	-0.063 (-3.37) $l=1$	0.300 (0.56) $n=4$	1.00

Table 9.a reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \beta_t h_t^{\frac{\delta}{2}} + \gamma \beta h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \beta h_{t-1}^{\frac{\delta}{2}} + \sum_{pi} x_{pi,t-l} + \sum \varphi_{t-n}$.

$x_{pi,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 9.a Indirect Effect of Informal Political Instability on GDP Growth

Table 9.b Indirect Effect of Formal Political Instability on GDP Growth

Formal Political Instability x_{it}	k	☺	😐	α_{pi}	☹	☠
Changes in Effective Executive	0.0045 (3.80)	0.57 (3.25)	0.36 (3.01)	-0.164 (-5.07) $l=1$	0.090 (2.37) $n=7$	1.00
Government Crisis	0.0147 (8.35)	0.57 (3.79)	0.39 (3.13)	-0.082 (-1.94) $l=8$	0.347 (1.35) $n=4$	0.90
Legislative Effectiveness	0.0003 (3.81)	0.33 (2.71)	0.75 (6.47)	-0.894 (-2.20) $l=1$	0.069 (1.67) $n=7$	1.00
Legislative Selection	0.0105 (6.83)	0.46 (3.75)	0.67 (10.36)	-0.755 (-2.03) $l=1$	0.083 (1.81) $n=4$	1.00
Major Constitutional Changes	0.0070 (3.60)	0.69 (3.24)	0.37 (4.83)	0.098 (1.50) $l=5$	-0.010 (-0.16) $n=3$	1.00
Number of Cabinet Changes	0.0065 (3.49)	0.64 (3.54)	0.36 (4.36)	-0.254 (-5.83) $l=1$	0.133 (1.46) $n=2$	1.00
Purges	0.0122 (3.15)	0.71 (3.43)	0.43 (3.44)	-0.034 (-2.17) $l=7$	0.269 (1.13) $n=3$	1.00
Size of the Cabinet	0.0106 (3.02)	0.72 (3.28)	0.36 (4.16)	-0.033 (-4.38) $l=2$	0.127 (1.61) $n=3$	1.00

Table 9.b reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \beta / t + h_t^{\frac{\delta}{2}} + \eta \, h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \varepsilon_t + h_{t-1}^{\frac{\delta}{2}} + \sum \alpha_i x_{pi,t-l} + \sum \gamma_{t-n}$.

$x_{pi,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 9.b Indirect Effect of Formal Political Instability on GDP Growth

Table 10.a Direct and Indirect Effects of Informal Political Instability on GDP Growth

Informal Political Instability							
x_{it}	k	γ_{pi}	α_1	α_2	β_{pi}	δ	σ^2
Anti-government Demonstrations	0.004 (2.38)	-0.0883 (-3.69) $l=3$	0.56 (4.31)	0.28 (1.61)	-0.087 (-2.55) $l=2$	0.134 (1.20) $n=6$	0.90
Assassinations	0.008 (3.52)	-0.1858 (-2.33) $l=8$	0.83 (3.63)	0.44 (1.02)	-0.158 (-3.69) $l=3$	0.126 (1.43) $n=2$	1.00
General Strikes	0.012 (7.40)	-0.1711 (-2.69) $l=2$	0.88 (3.79)	0.38 (4.90)	-0.086 (-2.16) $l=2$	0.182 (2.46) $n=4$	1.00
Guerrilla Warfare	0.009 (3.71)	-0.0004 (-0.12) $l=8$	0.64 (3.12)	0.47 (3.94)	-0.008 (-2.40) $l=1$	0.227 (3.34) $n=6$	1.00
Number of Coups d'etat	0.015 (5.64)	-0.0744 (-8.26) $l=2$	0.86 (7.89)	0.10 (1.74)	-0.094 (-7.89) $l=7$	0.057 (2.75) $n=6$	1.00
Revolutions	0.017 (3.32)	-0.1853 (-4.93) $l=5$	0.68 (4.93)	0.24 (2.27)	-0.002 (-0.03) $l=1$	0.207 (2.15) $n=3$	1.00
Riots	0.012 (3.17)	0.0436 (1.16) $l=4$	0.77 (4.30)	0.36 (2.77)	-0.048 (-2.32) $l=1$	0.139 (3.98) $n=5$	1.00

Table 10.a reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \gamma_{pi} x_{pi,t-l} + \beta_1 h_t^{\frac{\delta}{2}} + \eta_0 + \alpha_1 h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \alpha_2 h_{t-1}^{\frac{\delta}{2}} + \beta_{pi} x_{pi,t-l} + \delta_{t-n}$.

$x_{pi,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 10.a Direct and Indirect Effects of Informal Political Instability on GDP Growth

Table 10.b Direct and Indirect Effects of Formal Political Instability on GDP Growth

Formal Political Instability							
x_{it}	k	γ_{pi}	α_0	α_1	δ_{pi}	ε_t	$\sum \beta_j$
Changes in Effective Executive	0.017 (2.65)	-0.138 (-2.00) $l=6$	0.32 (4.73)	0.73 (4.44)	-0.091 (-1.86) $l=6$	0.071 (0.65) $n=6$	0.80
Government Crisis	0.010 (4.66)	-0.002 (-0.05) $l=2$	0.89 (6.30)	0.41 (3.63)	-0.072 (-1.63) $l=1$	0.290 (4.26) $n=2$	0.90
Legislative Effectiveness	0.004 (4.13)	-1.100 (-1.97) $l=6$	0.65 (6.22)	0.52 (3.56)	-0.897 (-1.72) $l=2$	0.072 (0.83) $n=6$	1.00
Legislative Selection	0.013 (3.98)	-1.048 (-1.09) $l=1$	0.33 (3.77)	0.64 (3.41)	-1.368 (-1.99) $l=7$	0.071 (1.49) $n=8$	0.80
Major Constitutional Changes	0.011 (2.48)	-0.791 (-1.27) $l=2$	0.52 (3.75)	0.57 (4.57)	0.084 (0.54) $l=8$	-0.072 (-0.91) $n=5$	0.90
Number of Cabinet Changes	0.003 (4.67)	-0.120 (-3.61) $l=4$	0.53 (3.99)	0.37 (3.09)	-0.271 (-5.67) $l=1$	-0.010 (-0.32) $n=8$	1.00
Purges	0.011 (3.40)	0.007 (1.57) $l=4$	1.08 (2.90)	0.15 (2.00)	-0.002 (-3.09) $l=6$	-0.007 (-0.12) $n=8$	1.00
Size of the Cabinet	0.011 (3.94)	-0.013 (-0.94) $l=5$	0.69 (3.34)	0.45 (3.09)	-0.048 (-3.51) $l=3$	0.223 (4.32) $n=3$	1.00

Table 10.b reports parameter estimates for the following model:

$y_t = c + k \log(n_t) + \gamma_{pi} x_{pi,t-l} + \alpha_0 h_t^2 + \alpha_1 h_{t-1}^2 + e_{t-1} + \varepsilon_t h_{t-1}^2 + \delta_{pi} x_{pi,t-l} + \beta_j y_{t-n}$.

$x_{pi,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 10.b Direct and Indirect Effects of Formal Political Instability on GDP Growth

Table 11.a The Short- and Long-run Effects of Informal Political Instability on GDP Growth

Informal Political Instability x_{it}	ϕ_{pi}	θ_{pi}	ec_T	☺	😑	☹		
Anti-government Demonstrations	-0.040 (-1.90) $l=1$	-0.009 (-0.27)	-0.36 (-1.73)	0.52 (3.13)	0.64 (6.51)	0.036 (0.32) $n=3$	1.00	
Assassinations	-0.144 (-2.48) $l=6$	-0.147 (-2.21)	-0.32 (-3.26)	0.62 (4.37)	0.62 (4.83)	-0.027 (-0.58) $n=5$	1.00	
General Strikes	-0.201 (-5.18) $l=2$	-0.073 (-0.26)	-0.32 (-4.24)	0.62 (4.40)	0.59 (5.70)	0.037 (0.79) $n=3$	1.00	
Guerrilla Warfare	-0.005 (-0.08) $l=5$	0.064 (0.36)	-0.40 (-3.47)	0.69 (6.91)	0.46 (7.16)	0.271 (4.83) $n=4$	1.00	
Number of Coups d'etat	-0.061 (-1.86) $l=2$	-0.031 (-2.62)	-0.44 (-3.61)	0.69 (2.73)	0.47 (2.95)	0.186 (1.53) $n=4$	1.00	
Revolutions	-0.214 (-1.63) $l=3$	-0.109 (-2.14)	-0.55 (-6.50)	0.61 (2.79)	0.61 (6.14)	-0.053 (-0.73) $n=2$	1.00	
Riots	-0.022 (-2.06) $l=4$	-0.006 (-0.23)	-0.34 (-3.48)	0.60 (4.47)	0.63 (6.00)	0.002 (0.05) $n=5$	1.00	

Table 11.a reports parameter estimates for the following model:

$\Delta y_t = \phi + \sum \phi_{pi} \Delta x_{pi,t-l} + \sum \theta_{t-1} + ec + \sum \theta_{pi} x_{pi,t-1} + \sum \beta_t$,

$h_t^{\frac{s}{2}} = \gamma + \sum \alpha_{t-1} |^{s} + \sum \delta h_{t-1}^{\frac{s}{2}} + \sum \delta_{t-n}$.

ϕ_{pi} and θ_{pi} capture the short- and long-run effects respectively. ec_T indicates the speed of adjustment to the long-run relationship. $x_{pi,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 11.a The Short- and Long-run Effects of Informal Political Instability on GDP Growth

Table 11.b The Short- and Long-run Effects of Formal Political Instability on GDP Growth

Formal Political Instability

x_{it}	ϕ_{pi}	θ_{pi}	ec_t	☺	😑	☹		
Changes in Effective Executive	-0.117 (-1.77) $l=3$	0.023 (0.53)	-0.42 (-5.76)	0.92 (4.63)	0.38 (3.85)	0.242 (1.62) $n=6$	1.00 -	
Government Crisis	-0.140 (-1.86) $l=3$	0.120 (1.29)	-0.50 (-4.15)	0.94 (2.58)	0.45 (2.28)	0.081 (0.58) $n=6$	1.00 -	
Legislative Effectiveness	-3.669 (-2.36) $l=5$	-1.866 (-1.68)	-0.54 (-3.51)	0.65 (3.58)	0.57 (3.24)	0.003 (0.04) $n=4$	1.00 -	
Legislative Selection	-0.883 (-1.60) $l=8$	-3.441 (-1.43)	-0.53 (-5.93)	0.73 (3.62)	0.17 (2.13)	0.057 (1.51) $n=5$	1.00 -	
Major Constitutional Changes	-0.049 (-3.12) $l=2$	0.018 (0.26)	-0.30 (-2.06)	1.02 (3.15)	0.45 (3.28)	0.083 (0.15) $n=4$	1.00 -	
Number of Cabinet Changes	-0.067 (-1.82) $l=5$	-0.145 (-2.27)	-0.65 (-6.82)	0.24 (1.80)	0.62 (3.66)	-0.120 (-1.02) $n=8$	0.80 -	
Purges	-0.013 (-1.66) $l=6$	-0.003 (-0.11)	-0.34 (-2.57)	0.57 (3.08)	0.53 (4.45)	0.121 (0.80) $n=6$	1.00 -	
Size of the Cabinet	-0.035 (-3.01) $l=2$	0.005 (0.98)	-0.28 (-3.05)	1.14 (3.09)	0.41 (3.55)	-0.087 (-0.59) $n=1$	1.00 -	

Table 11.b reports parameter estimates for the following model:

$\Delta y_t = \alpha + \sum \phi_{pi} \Delta x_{pi,t-1} + \sum \delta_{t-1} + ec + \sum \theta_{pi} x_{pi,t-1} + \varepsilon_t$,

$h_t^2 = \gamma_0 + \sum \alpha_1 |u_{t-1}|^2 + \sum \beta_1 h_{t-1}^2 + \sum \gamma_{t-n}$.

ϕ_{pi} and θ_{pi} capture the short- and long-run effects respectively. ec indicates the speed of adjustment to the long-run relationship. $x_{pi,t-1}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 11.b The Short- and Long-run Effects of Informal Political Instability on GDP Growth

Table 12.a Direct Effect of Informal Political Instability on Economic Growth with Dummies

Informal Political Instability x_{it}	k								
Anti-government Demonstrations	0.010 (4.60)	-0.320 (-3.12) l=1	0.270 (2.56) l=1	0.72 (6.50)	0.25 (1.96)	0.041 (4.01)	-0.034 (-4.92)	-0.099 (-0.62) n=4	0.80
Assassinations	0.012 (3.57)	-0.677 (-7.95) l=1	0.560 (4.34)	0.63 (4.81)	0.37 (2.65)	0.035 (2.94)	-0.034 (-3.47)	-0.063 (-0.68) n=5	0.90
General Strikes	0.013 (3.19)	-0.316 (-6.82) l=2		0.72 (6.94)	0.18 (2.33)	0.030 (4.17)	-0.027 (-3.15)	0.043 (0.93) n=8	0.90
Guerrilla Warfare	0.015 (6.17)	0.021 (0.45) l=6		0.72 (6.36)	0.25 (1.99)	0.021 (3.33)	-0.020 (-5.80)	-0.018 (-0.34) n=5	1.00
Number of Coups d'etat	0.008 (3.33)	-0.060 (-1.69) l=8		0.84 (4.67)	0.30 (2.39)	0.012 (1.71)		-0.054 (-0.82) n=3	0.90
Revolutions	0.009 (3.09)	-0.343 (-5.23) l=7		0.54 (4.97)	0.56 (6.75)	0.014 (1.29)	-0.016 (-1.88)	-0.088 (-0.87) n=5	0.90
Riots	0.009 (4.97)	-0.022 (-0.60) l=1		0.85 (6.10)	0.25 (2.17)	0.026 (4.24)	-0.022 (-4.61)	-0.029 (-0.30) n=4	1.00

Table 12.a reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \delta_0 x_{i,t-l} + \delta_1 D_{i,t-l} x_{i,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \eta_0 + \eta_1 D_{1t} + \eta_2 D_{2t} + \alpha h_{t-1}^{\frac{s}{2}} + e_{t-1} + \beta h_{t-1}^{\frac{s}{2}} + \gamma y_{t-n}$.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period: 1964-2003 (for anti-government demonstrations); 1978-2003 (for assassinations), and $D_{it} = 0$ otherwise.

D_{1t} and D_{2t} are intercept dummies defined as $D_{1t} = 1$ and $D_{2t} = 1$ in the period 1938 - 2003 and 1979 - 2003 respectively; $D_{1t} = 0$ and $D_{2t} = 0$ otherwise.

$x_{i,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 12.a Direct Effect of Informal Political Instability on Economic Growth with Dummies

Table 12.b Direct Effect of Formal Political Instability on Economic Growth with Dummies

Formal Political Instability x_{it}	k	α	α_d	β	γ	η_1	η_2	δ	ρ
Changes in Effective Executive	0.014 (0.93)	-0.079 (-1.43) l=3		0.71 (6.43)	0.34 (3.33)	0.022 (6.50)	-0.020 (-3.97)	-0.063 (-0.91) n=7	0.90
Government Crisis	0.014 (0.77)	-0.040 (-0.86) l=1		0.77 (6.56)	0.18 (1.89)	0.019 (7.62)	-0.018 (-4.94)	0.046 (0.98) n=8	1.00
Legislative Effectiveness	0.010 (3.83)	-0.622 (-1.68) l=2		0.69 (6.03)	0.29 (7.36)	0.030 (3.52)	-0.029 (-3.59)	-0.163 (-1.24) n=1	0.80
Legislative Selection	0.010 (3.26)	-2.758 (-4.78) l=2	1.782 (4.19) l=2	0.34 (4.33)	0.77 (17.36)	-0.002 (-0.28)	-0.006 (-1.33)	0.027 (0.52) n=4	0.90
Major Constitutional Changes	0.011 (4.20)	-0.083 (-8.71) l=5		0.74 (6.59)	0.15 (2.34)	0.031 (3.32)	-0.028 (-2.55)	0.229 (3.24) n=6	0.80
Number of Cabinet Changes	0.009 (3.01)	-0.075 (-2.78) l=8	0.074 (1.39) l=8	0.76 (6.60)	0.29 (2.43)	0.017 (3.00)	-0.015 (-3.28)	-0.005 (-0.05) n=4	1.00
Purges	0.008 (3.39)	0.023 (0.80) l=1		0.87 (6.22)	0.26 (2.79)	0.024 (4.94)	-0.019 (-3.49)	-0.031 (-0.35) n=3	1.00
Size of the Cabinet	0.013 (4.22)	-0.016 (-3.03) l=7		0.77 (6.05)	0.24 (2.11)	0.032 (4.92)	-0.027 (-4.68)	-0.033 (-0.33) n=4	0.90

Table 12.b reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \alpha x_{i,t-l} + \alpha_d D_{i,t-l} x_{i,t-l} + \beta$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \eta_1 D_{1t} + \eta_2 D_{2t} + \gamma h_{t-1}^{\frac{\delta}{2}} + e_{t-1}^{\rho} + \gamma h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}$.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period: 1939-2003 (for legislative selection); 1889-2003 (for number of cabinet changes), and $D_{it} = 0$ otherwise.

D_{1t} and D_{2t} are intercept dummies defined as $D_{1t} = 1$ and $D_{2t} = 1$ in the period 1938 - 2003 and 1979 - 2003 respectively; $D_{1t} = 0$ and $D_{2t} = 0$ otherwise.

$x_{i,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 12.b Direct Effect of Formal Political Instability on Economic Growth with Dummies

Table 13.a Indirect Effect of Informal Political Instability on Economic Growth with Dummies

Informal Political Instability x_{it}	k								
Anti-government Demonstrations	0.014 (0.24)	0.72 (0.02)	0.19 (0.68)	-0.263 (-2.88) $l=5$	0.219 (2.17) $l=5$	0.019 (7.81)	-0.011 (-1.62)	0.003 (0.07) $n=7$	1.00 -
Assassinations	0.012 (0.72)	0.67 (3.00)	0.22 (1.65)	-0.235 (-3.09) $l=8$	0.156 (1.88) $l=8$	0.025 (4.59)	-0.021 (-3.00)	0.032 (0.44) $n=4$	0.90 -
General Strikes	0.011 (0.81)	0.76 (3.60)	0.27 (2.24)	-0.151 (-1.78) $l=5$	-	0.048 (3.33)	-0.040 (-6.09)	-0.108 (-0.78) $n=4$	0.80 -
Guerrilla Warfare	0.008 (0.14)	0.89 (0.38)	0.27 (2.57)	-0.024 (-0.43) $l=1$	-	0.030 (0.91)	-0.024 (-4.76)	-0.036 (-0.45) $n=3$	1.00 -
Number of Coups d'etat	0.006 (0.68)	0.79 (3.57)	0.33 (3.57)	-0.375 (-10.20) $l=1$	-	0.017 (3.57)	-0.013 (-3.42)	-0.056 (-0.70) $n=3$	1.00 -
Revolutions	0.011 (0.67)	0.70 (3.33)	0.31 (2.81)	0.120 (0.35) $l=5$	-	0.014 (0.76)	-0.013 (-1.79)	-0.062 (-0.96) $n=7$	0.90 -
Riots[a]	0.006 (0.91)	0.57 (3.40)	0.46 (3.66)	-0.106 (-4.38) $l=1$	0.034 (0.63) $l=1$	0.025 (3.56)	-0.020 (-3.31)	-0.052 (-0.49) $n=4$	0.90 -

Table 13.a reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \varepsilon_t$

$h_t^{\frac{1}{2}} = \eta_0 + \eta_1 D_{1t} + \eta_2 D_{2t} + \theta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \theta h_{t-1}^{\frac{1}{2}} + \alpha_{i,t-l} + \alpha_d D_{i,t-d} x_{i,t-d} + \gamma y_{t-n}$.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period 1964-2003 (for anti-government demonstrations); 1978-2003 (for assassinations); 1929-2003 and 1964-2003 (for riots), and $D_{it} = 0$ otherwise.

D_{1t} and D_{2t} are intercept dummies defined as D_{1t} and $D_{2t} = 1$ in the period 1938 - 2003, 1979 - 2003 respectively; D_{1t} and $D_{2t} = 0$ otherwise.

$x_{i,t-d}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

[a]The coefficient for the second dummy for riots equals to -0.109 which is insignificant.

Table 13.a Indirect Effect of Informal Political Instability on Economic Growth with Dummies

Table 13.b Indirect Effect of Formal Political Instability on Economic Growth with Dummies

Formal Political Instability x_{it}	k								
Changes in Effective Executive	0.0130 (0.84)	0.83 (0.24)	0.24 (0.07)	-0.048 (-2.14) $l=6$		0.024 (0.79)	-0.023 (-5.22)	-0.009 (-0.24) $n=6$	1.00
Government Crisis	0.0103 (0.56)	0.66 (0.08)	0.27 (0.73)	-0.167 (-2.36) $l=2$		0.036 (0.44)	-0.033 (-5.82)	-0.021 (-0.26) $n=6$	0.80
Legislative Effectiveness	0.0081 (0.53)	0.59 (0.23)	0.39 (0.08)	-2.125 (-6.04) $l=1$		0.022 (0.08)	-0.014 (-2.94)	-0.155 (-1.03) $n=3$	0.80
Legislative Selection	0.0179 (0.15)	0.27 (0.53)	0.37 (0.63)	-2.873 (-5.97) $l=2$	0.308 (0.71) $l=5$		-0.017 (-1.70)	-0.036 (-0.45) $n=4$	0.90
Major Constitutional Changes	0.0091 (0.81)	0.74 (0.53)	0.32 (0.11)	-0.246 (-1.38) $l=7$		0.032 (0.23)	-0.031 (-5.79)	-0.027 (-0.32) $n=5$	0.90
Number of Cabinet Changes	0.0031 (0.78)	0.54 (0.06)	0.38 (0.20)	-0.189 (-4.22) $l=1$	0.110 (2.08) $l=1$	0.011 (0.68)	-0.015 (-2.15)	0.023 (0.23) $n=6$	1.00
Purges	0.0122 (0.47)	0.79 (0.90)	0.30 (0.83)	-0.024 (-2.05) $l=6$		0.016 (0.61)	-0.015 (-4.20)	-0.053 (-1.00) $n=7$	1.00
Size of the Cabinet	0.0162 (0.48)	0.51 (0.40)	0.22 (0.71)	-0.078 (-3.16) $l=3$		0.026 (0.72)	-0.025 (-2.56)	0.006 (0.09) $n=5$	1.00

Table 13.b reports parameter estimates for the following model:

$y_t = c + k \log(h_t) + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \gamma_0 + \gamma_1 D_{1t} + \gamma_2 D_{2t} + \alpha(|e_{t-1}| - \gamma e_{t-1})^{\frac{\delta}{2}} + \beta h_{t-1}^{\frac{\delta}{2}} + \alpha_1 x_{i,t-l} + \alpha_2 D_{i,t-l} x_{i,t-l} + \phi y_{t-n}$.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period: 1939-2003 (for legislative selection); 1889-2003 (for number of cabinet changes), and $D_{it} = 0$ otherwise.

D_{1t} and D_{2t} are intercept dummies defined as $D_{1t} = 1$ and $D_{2t} = 1$ in the period 1938 - 2003, 1979 - 2003 respectively; $D_{1t} = 0$ and $D_{2t} = 0$ otherwise.

$x_{i,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 13.b Indirect Effect of Formal Political Instability on Economic Growth with Dummies

Table 14.a The Short- and Long-run Effects of Informal Political Instability on Economic Growth with Dummy Variables

Informal Political Instability x_{it}								
Anti-government Demonstrations	−0.079 (−7.43) $l=4$	0.052 (4.46) $l=2$	−0.009 (−0.27)	−0.42 (−4.58)	0.94 (2.52)	0.28 (0.38)	0.189 (1.53) $n=5$	1.00
Assassinations	−0.205 (−5.56) $l=8$	0.151 (3.97) $l=8$	−0.147 (−2.21)	−0.32 (−4.35)	0.77 (4.65)	0.24 (0.11)	0.023 (0.23) $n=8$	0.80
General Strikes	−0.226 (−1.78) $l=4$		0.066 (1.27)	−0.51 (−6.35)	0.73 (3.30)	0.50 (0.25)	−0.026 (−0.37) $n=8$	1.00
Guerrilla Warfare	0.273 (1.14) $l=4$		−0.023 (−0.36)	−0.83 (−10.24)	0.49 (1.85)	0.61 (2.50)	−0.217 (−1.56) $n=1$	0.80
Number of Coups d'etat	−0.384 (−2.56) $l=5$		−0.031 (−2.62)	−0.51 (−8.16)	0.59 (3.06)	0.39 (3.84)	0.181 (0.78) $n=6$	0.90
Revolutions	−0.214 (−1.63) $l=3$		−0.109 (−2.14)	−0.55 (−6.50)	0.61 (2.79)	0.61 (0.14)	−0.053 (−0.73) $n=2$	1.00
Riots[a]	−0.054 (−2.83) $l=5$	−0.005 (−0.46) $l=7$	−0.006 (−0.23)	−0.40 (−8.30)	0.95 (2.44)	0.26 (0.68)	0.160 (1.17) $n=5$	1.00

Table 14.a reports parameter estimates for the following model:

$\Delta y_t = \phi + \sum \alpha \Delta x_{i,t-l} + \sum \alpha_d D_{it} \Delta x_{i,t-l} + \sum \varphi y_{t-1} + c + \sum \lambda x_{i,t-1} + \sum u_t,$

$h_t^{\frac{\delta}{2}} = \eta_0 + \sum \theta |u_{t-1}|^{\delta} + \sum \theta h_{t-1}^{\frac{\delta}{2}} + \sum \varphi_{t-n}.$

α and λ capture the short- and long-run effects respectively.

φ Indicates the speed of adjustment to the long-run relationship.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period 1964-2003 (for anti-government demonstrations); 1978-2003 (for assassinations); 1929-2003 and 1964-2003 (for riots), and $D_{it} = 0$ otherwise.

$x_{i,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

[a] The coefficient of the second dummy for riots is -0.045 which is significant at 10% level.

Table 14.a The Short- and Long-run Effect of Informal Political Instability on Economic Growth with Dummy Variables

Table 14.b The Short- and Long-run Effects of Formal Political Instabilities on Economic Growth with Dummy Variables

x_{it}								
Formal Political Variables								
Changes in Effective Executive	-0.116 (-1.92) $l=3$		0.0236 (0.53)	-0.41 (-7.36)	0.79 (4.58)	0.31 (4.00)	0.271 (3.07) $n=6$	0.80
Government Crisis	-0.156 (-2.22) $l=3$		0.1200 (1.29)	-0.62 (-5.75)	0.85 (4.68)	0.53 (6.34)	-0.223 (-1.43) $n=1$	0.90
Legislative Effectiveness	-2.313 (-3.14) $l=5$		-1.8664 (-1.68)	-0.26 (-3.00)	0.98 (4.44)	0.43 (4.85)	0.064 (3.04) $n=5$	1.00
Legislative Selection	-4.869 (-2.43) $l=6$	-0.338 (-0.29) $l=1$	0.3970 (1.44)	-0.74 (-10.61)	0.71 (4.91)	0.54 (2.61)	-0.023 (-0.32) $n=7$	1.00
Major Constitutional Changes	-0.504 (-3.05) $l=2$		0.0181 (1.26)	-0.32 (-2.39)	0.89 (4.96)	0.51 (3.52)	-0.010 (-0.14) $n=5$	1.00
Number of Cabinet Changes	-0.112 (-3.46) $l=8$	0.073 (2.42) $l=2$	-0.1448 (-2.27)	-0.37 (-6.59)	0.92 (4.64)	0.22 (2.77)	0.247 (1.60) $n=6$	0.80
Purges	-0.013 (-1.66) $l=$		-0.0032 (-0.11)	-0.34 (-2.57)	0.57 (3.08)	0.53 (4.45)	0.121 (0.80) $n=6$	1.00
Size of the Cabinet	-0.051 (-4.64) $l=2$		0.0047 (0.98)	-0.32 (-3.17)	0.64 (3.46)	0.55 (4.63)	0.011 (0.28) $n=7$	0.90

Table 14.b. reports parameter estimates for the following model:

$\Delta y_t = \phi + \alpha_0 x_{i,t-l} + \alpha_1 D_{i,t-l} x_{i,t-l} + \varepsilon y_{t-1} + c + \lambda x_{i,t-1} + u_t$,

$h_t^{\frac{\delta}{2}} = \gamma_0 + \gamma_1 |u_{t-1}|^{\delta} + \gamma_2 h_{t-1}^{\frac{\delta}{2}} + \gamma_3 y_{t-n}$.

α and λ capture the short- and long-run effects respectively.

ε indicates the speed of adjustment to the long-run relationship.

D_{it} is a slope dummy defined as $D_{it} = 1$ in the period: 1939-2003 (for legislative selection); . 1889-2003 (for number of cabinet changes), and $D_{it} = 0$ otherwise.

$x_{i,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 14.b The Short- and Long-run Effect of Formal Political Instability on Economic Growth with Dummy Variables

Table 16 Direct Effect of Financial Development and Political Instabilities on Economic Growth

	k	α_{fd}	α_{pi}	☺	😐	☹	☠
			M1				
Assassination	0.006 (1.07)	-1.56 (-2.56) $l=6$	-0.001 (-3.31) $l=8$	0.86 (1.69)	0.41 (1.07)	0.086 (1.43) $n=5$	1.00
Number of the Coups	0.011 (1.57)	-1.09 (-3.84) $l=6$	-0.093 (-2.08) $l=7$	0.71 (1.15)	0.32 (0.97)	0.254 (0.60) $n=4$	0.90
Number of Cabinet Changes	0.013 (1.43)	-0.85 (-3.75) $l=6$	-0.414 (-3.22) $l=8$	0.73 (1.47)	0.30 (0.74)	0.244 (0.92) $n=4$	0.80
Legislative Effectiveness	0.008 (1.78)	-0.96 (-2.67) $l=6$	-1.551 (-9.99) $l=6$	0.89 (1.77)	0.21 (0.80)	0.180 (0.19) $n=4$	1.00
			Commercial Bank Deposits				
Assassination	0.012 (1.70)	-3.00 (-4.68) $l=3$	-0.012 (-2.44) $l=8$	0.57 (1.05)	0.39 (1.43)	0.226 (1.10) $n=6$	1.00
Number of the Coups	0.003 (0.72)	-0.93 (-1.73) $l=3$	-0.116 (-0.85) $l=7$	0.62 (1.29)	0.65 (1.41)	-0.051 (-0.94) $n=5$	1.00
Number of Cabinet Changes	0.016 (1.60)	-0.22 (-3.18) $l=3$	-0.055 (-0.79) $l=8$	0.33 (1.04)	0.47 (1.07)	0.217 (1.51) $n=6$	0.90
Legislative Effectiveness	0.005 (1.42)	-0.16 (-4.92) $l=3$	-2.354 (-2.88) $l=6$	0.75 (1.21)	0.39 (1.39)	0.150 (0.76) $n=4$	0.90
			Deposits at Banco do Brasil				
Assassination	0.004 (1.53)	-0.26 (-2.88) $l=2$	-0.015 (-1.68) $l=8$	0.93 (1.50)	0.28 (0.92)	0.100 (0.99) $n=3$	1.00
Number of the Coups	0.003 (0.73)	-0.30 (-5.75) $l=2$	-0.055 (-1.93) $l=1$	0.90 (1.36)	0.36 (0.88)	0.021 (0.81) $n=5$	1.00
Number of Cabinet Changes	0.003 (0.85)	-0.24 (-3.04) $l=2$	-0.087 (-2.01) $l=8$	0.99 (1.17)	0.26 (0.62)	0.088 (0.84) $n=6$	1.00
Legislative Effectiveness	0.005 (1.23)	-0.12 (-2.39) $l=2$	-1.356 (-3.90) $l=6$	0.99 (1.43)	0.20 (0.22)	0.092 (0.53) $n=6$	1.00

Table 16 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \varepsilon_t$,

$h_t^{\frac{1}{2}} = \gamma + \beta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \delta h_{t-1}^{\frac{1}{2}} + \theta y_{t-n}$,

parameter estimates $x_{fd,t-l}$ indicates a financial development variable,

$x_{pi,t-l}$ is a political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16 Direct Effect of Financial Development and Political Instability on Economic Growth

Table 16.1 Direct Effect of Assassination, Commercial Bank Deposits, Trade Openness, Public Deficits and US Interest Rate on Economic Growth

	k	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Exports										
Expenditures	0.001 (2.97)	-0.211 (-1.70) $l=3$	-0.016 (-1.86) $l=8$	-0.023 (-0.40) $l=3$	-0.001 (-0.19) $l=4$	0.0018 (3.95) $l=5$	0.55 (3.06)	0.31 (3.29)	0.148 (1.51) $n=6$	1.00
Revenues	0.003 (4.06)	-0.136 (-1.61) $l=4$	-0.013 (-2.43) $l=8$	-0.050 (-1.53) $l=3$	-0.002 (-1.01) $l=3$	0.0020 (7.91) $l=5$	1.00 (4.18)	0.40 (4.93)	0.120 (1.00) $n=3$	1.00
Public Deficits	0.006 (6.00)	-0.140 (-2.38) $l=7$	-0.014 (-2.75) $l=8$	-0.044 (-1.27) $l=3$	0.025 (0.22) $l=8$	0.0018 (7.35) $l=5$	0.91 (2.61)	0.32 (3.03)	0.037 (0.83) $n=5$	1.00
Imports										
Expenditures	0.008 (7.87)	-0.169 (-5.17) $l=7$	-0.013 (-4.51) $l=8$	0.009 (0.28) $l=3$	-0.058 (-1.96) $l=4$	0.0017 (7.59) $l=5$	0.86 (3.15)	0.30 (3.38)	0.134 (1.40) $n=3$	1.00
Revenues	0.010 (6.04)	-0.176 (-3.31) $l=7$	-0.013 (-5.63) $l=8$	0.010 (0.28) $l=3$	-0.005 (-3.81) $l=3$	0.0018 (8.75) $l=5$	0.96 (3.25)	0.24 (3.17)	0.132 (1.79) $n=3$	1.00
Public Deficits	0.009 (5.24)	-0.199 (-3.89) $l=7$	-0.015 (-3.84) $l=8$	0.054 (0.93) $l=3$	-0.044 (-0.44) $l=5$	0.0019 (6.78) $l=5$	0.74 (3.14)	0.35 (4.12)	0.078 (0.75) $n=4$	1.00
Trade Openness										
Expenditures	0.008 (6.69)	-0.148 (-2.46) $l=7$	-0.018 (-2.37) $l=8$	0.019 (0.49) $l=2$	-0.006 (-1.50) $l=4$	0.0020 (8.29) $l=5$	0.85 (3.00)	0.29 (3.65)	0.003 (0.07) $n=8$	1.00
Revenues	0.006 (9.63)	-0.194 (-3.95) $l=7$	-0.017 (-8.44) $l=8$	0.003 (0.48) $l=2$	-0.004 (-5.25) $l=3$	0.0019 (8.71) $l=5$	0.97 (4.60)	0.31 (4.39)	0.082 (1.58) $n=5$	1.00
Public Deficits	0.007 (5.65)	-0.175 (-2.80) $l=7$	-0.013 (-3.08) $l=8$	0.010 (0.56) $l=2$	0.029 (0.310) $l=8$	0.0018 (6.53) $l=5$	0.88 (2.93)	0.33 (4.07)	0.081 (0.92) $n=5$	1.00

Table 16.1 reports parameter estimates of direct effect only for the following model:

$$y_t = c + k \log(n_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t,$$

$$h_t^{\frac{1}{2}} = \gamma_0 + \gamma_{t-1}^{\frac{1}{2}} + e_{t-1} + \gamma_{t-1}^{\frac{1}{2}} + \gamma_{t-n},$$

where $x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ indicates the assassination, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.1 Direct Effect of Assassinations, Commercial Bank Deposits, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.2 Direct Effect of Legislative Effectiveness, Commercial Bank Deposits, Trade Openness, Public Deficits and US Interest Rate on Economic Growth

	k	θ_{fd}	θ_{pi}	θ_{to}	θ_{pd}	θ_{us}	☺	😐	☹	☠
Exports										
Expenditures	0.004 (4.56)	-0.165 (-3.58) $l=4$	-1.531 (-3.39) $l=6$	-0.060 (-2.27) $l=3$	-0.006 (-3.85) $l=6$	0.0013 (3.81) $l=5$	0.96 (4.58)	0.34 (3.70)	0.092 (1.85) $n=6$	1.00
Revenues	0.005 (5.02)	-0.204 (-2.65) $l=4$	-1.112 (-1.85) $l=6$	-0.071 (-2.11) $l=3$	-0.005 (-3.59) $l=6$	0.0013 (6.25) $l=5$	0.87 (3.51)	0.31 (2.81)	0.109 (2.01) $n=6$	1.00
Public Deficits	0.004 (7.45)	-0.225 (-2.49) $l=4$	-1.667 (-2.61) $l=6$	-0.044 (-0.96) $l=3$	-0.118 (-2.18) $l=8$	0.0012 (3.61) $l=5$	0.80 (4.10)	0.38 (4.55)	0.151 (3.15) $n=4$	1.00
Imports										
Expenditures	0.007 (4.39)	-0.239 (-2.65) $l=4$	-1.451 (-2.26) $l=6$	-0.014 (-0.33) $l=3$	0.002 (1.08) $l=4$	0.0009 (2.47) $l=5$	0.85 (4.15)	0.31 (2.98)	0.101 (1.91) $n=6$	1.00
Revenues	0.005 (5.02)	-0.204 (-2.65) $l=4$	-1.112 (-1.85) $l=6$	-0.071 (-2.11) $l=3$	-0.005 (-3.59) $l=6$	0.0013 (6.25) $l=5$	0.87 (3.51)	0.31 (2.81)	0.109 (2.01) $n=6$	1.00
Public Deficits	0.007 (2.43)	-0.189 (-1.76) $l=4$	-1.414 (-3.89) $l=6$	0.031 (0.33) $l=3$	-0.216 (-2.58) $l=8$	0.0012 (2.45) $l=5$	0.70 (3.75)	0.40 (4.38)	0.110 (1.77) $n=4$	1.00
Trade Openness										
Expenditures	0.007 (6.11)	-0.204 (-2.22) $l=4$	-1.318 (-2.04) $l=6$	-0.029 (-1.20) $l=3$	-0.005 (-2.62) $l=6$	0.0015 (2.48) $l=5$	0.78 (2.97)	0.36 (2.58)	0.078 (1.27) $n=6$	1.00
Revenues	0.005 (4.50)	-0.145 (-3.13) $l=4$	-1.600 (-3.54) $l=6$	-0.032 (-3.27) $l=3$	-0.005 (-5.73) $l=6$	0.0010 (4.16) $l=5$	0.97 (4.74)	0.32 (3.57)	0.127 (2.56) $n=6$	1.00
Public Deficits	0.007 (3.30)	-0.097 (-3.00) $l=2$	-1.278 (-2.30) $l=6$	0.013 (0.48) $l=3$	-0.189 (-3.76) $l=8$	0.0013 (3.50) $l=5$	1.00 (3.20)	0.28 (2.09)	0.107 (1.61) $n=3$	1.00

Table 16.2 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \theta_{fd} x_{fd,t-l} + \theta_{pi} x_{pi,t-l} + \theta_{to} x_{to,t-l} + \theta_{pd} x_{pd,t-l} + \theta_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \eta_0 + \eta_1 h_{t-1}^{\frac{s}{2}} + e_{t-1} + \eta_2 h_{t-1}^{\frac{s}{2}} + \gamma_{t-n}$.

where $x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is the legislative effectiveness, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.2 Direct Effect of Legislative Effectiveness, Commercial Bank Deposits, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17 Indirect Effect of Financial Development and Political Instabilities on Economic Growth

	k	ω	α	γ_{fd}	γ_{pi}	β	ε
			M1				
Assassination	0.009 (1.37)	0.77 (3.04)	0.37 (4.42)	-1.381 (-4.75) $l=6$	-0.019 (-4.32) $l=7$	0.203 (2.63) $n=6$	1.00
Number of the Coups	0.009 (4.12)	0.55 (3.78)	0.48 (4.84)	0.006 (0.02) $l=6$	0.169 (1.60) $l=8$	0.012 (0.33) $n=6$	1.00
Number of Cabinet Changes	0.006 (6.44)	0.39 (4.40)	0.31 (3.42)	-1.046 (-1.99) $l=6$	-0.385 (-6.32) $l=1$	-0.028 (-0.49) $n=8$	0.80
Legislative Effectiveness	0.012 (3.81)	0.55 (2.94)	0.32 (2.57)	-0.930 (-2.83) $l=6$	-0.843 (-1.89) $l=8$	0.185 (2.36) $n=7$	1.00
			Commercial Bank Deposits				
Assassination	0.013 (3.94)	0.43 (2.76)	0.43 (3.26)	-0.069 (-2.96) $l=1$	-0.008 (-2.82) $l=7$	0.259 (1.30) $n=4$	1.00
Number of the Coups	0.005 (4.54)	0.46 (4.30)	0.60 (7.77)	-0.069 (-9.34) $l=1$	0.054 (0.29) $l=3$	-0.143 (-1.41) $n=1$	0.80
Number of Cabinet Changes	0.006 (4.95)	0.33 (2.02)	0.50 (3.00)	-0.067 (-1.68) $l=1$	-0.271 (-6.75) $l=1$	-0.100 (-0.18) $n=8$	1.00
Legislative Effectiveness	0.007 (6.09)	0.59 (4.16)	0.47 (3.85)	-0.039 (-6.00) $l=1$	-1.101 (-2.32) $l=3$	0.094 (1.00) $n=1$	1.00
			Deposits at Banco do Brasil				
Assassination	0.006 (4.55)	0.56 (2.67)	0.26 (1.65)	-0.888 (-6.22) $l=4$	-0.012 (-4.32) $l=7$	0.132 (1.00) $n=4$	1.00
Number of the Coups	0.004 (4.83)	0.49 (1.81)	0.42 (1.83)	-0.768 (-2.89) $l=4$	-0.004 (-0.24) $l=8$	-0.066 (-0.48) $n=3$	1.00
Number of Cabinet Changes	0.006 (9.25)	0.68 (4.65)	0.16 (3.67)	-0.890 (-6.07) $l=4$	-0.202 (-8.73) $l=1$	-0.005 (-0.29) $n=6$	1.00
Legislative Effectiveness	0.002 (3.90)	0.55 (6.49)	0.34 (7.10)	-0.671 (-5.05) $l=4$	-1.400 (-2.67) $l=3$	0.137 (2.44) $n=5$	1.00

Table 17. reports parameter estimates of indirect effects for the following model:

$y_t = c + k \log(n_t) + \varepsilon_t$

$h_t^{\frac{\delta}{2}} = \omega + \beta h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \alpha h_{t-1}^{\frac{\delta}{2}} + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \varepsilon y_{t-n}$,

where $x_{fd,t-l}$ indicates a financial development variable, $x_{pi,t-l}$ is a political instability variable. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 17 Indirect Effect of Financial Development and Political Instability on Economic Growth

Table 17.1 Indirect Effect of Assassination, Deposits at Banco do Brasil, Trade Openness, Public Deficits and US Interest Rate on Economic Growth

	k			α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}		
Exports										
Expenditures	0.005 (1.48)	0.32 (2.33)	0.61 (3.12)	-0.537 (-2.11) $l=4$	-0.005 (-2.93) $l=5$	-0.154 (-2.35) $l=2$	-0.004 (-2.45) $l=3$	0.0015 (3.08) $l=8$	-0.047 (-1.47) $n=6$	1.00
Revenues	0.005 (1.62)	0.26 (2.29)	0.59 (6.25)	-0.558 (-2.18) $l=4$	-0.003 (-1.75) $l=5$	-0.185 (-3.85) $l=2$	-0.007 (-4.25) $l=3$	0.0016 (3.11) $l=8$	-0.076 (-1.13) $n=4$	1.00
Public Deficits	0.004 (1.07)	0.21 (2.76)	0.17 (2.79)	-0.613 (-5.45) $l=4$	-0.008 (-4.17) $l=5$	-0.433 (-6.58) $l=2$	-0.457 (-3.59) $l=3$	0.0017 (2.53) $l=8$	-0.021 (-0.43) $n=3$	0.90
Imports										
Expenditures	0.007 (3.11)	0.20 (1.98)	0.45 (3.54)	-0.734 (-5.39) $l=4$	-0.003 (-1.22) $l=5$	-0.257 (-1.35) $l=8$	-0.003 (-1.12) $l=7$	0.0009 (1.57) $l=8$	-0.029 (-0.99) $n=7$	1.00
Revenues	0.003 (1.46)	0.14 (1.61)	0.62 (6.38)	-0.491 (-2.87) $l=4$	-0.004 (-1.61) $l=5$	-0.378 (-1.91) $l=8$	-0.006 (-2.25) $l=3$	0.0013 (2.34) $l=8$	-0.037 (-1.34) $n=3$	1.00
Public Deficits	0.002 (3.06)	0.37 (3.09)	0.44 (4.81)	-0.679 (-2.50) $l=4$	-0.006 (-4.02) $l=5$	-0.431 (-3.03) $l=8$	-0.118 (-1.10) $l=8$	0.0008 (1.57) $l=8$	0.101 (1.23) $n=4$	1.00
Trade Openness										
Expenditures	0.009 (3.63)	0.28 (1.73)	0.53 (3.87)	-0.700 (-5.15) $l=4$	-0.002 (-1.69) $l=5$	-0.010 (-0.12) $l=6$	-0.010 (-6.00) $l=3$	0.0018 (3.68) $l=8$	-0.049 (-1.44) $n=6$	1.00
Revenues	0.007 (3.66)	0.42 (2.32)	0.38 (2.98)	-0.730 (-3.87) $l=4$	-0.004 (-2.99) $l=5$	-0.045 (-0.43) $l=6$	-0.004 (-3.97) $l=4$	0.0012 (1.55) $l=8$	0.001 (0.01) $n=8$	1.00
Public Deficits	0.002 (3.51)	0.16 (0.93)	0.61 (3.68)	-0.531 (-2.45) $l=4$	-0.005 (-4.76) $l=5$	-0.243 (-2.21) $l=8$	-0.168 (-2.41) $l=3$	0.0013 (2.02) $l=8$	-0.002 (-0.06) $n=3$	1.00

Table 17.1 reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(h_t) + \varepsilon_t$, $h_t^2 = \eta_0 + \theta h_{t-1}^2 + e_{t-1} + \gamma h_{t-1}^2 + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_{t-n}$, where $x_{fd,t-l}$ indicates deposits at banco do brasil, $x_{pi,t-l}$ is the assassination, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficits and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 17.1 Indirect Effect of Assassinations, Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.2 Indirect Effect of Legislative Effectiveness, Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k									
Exports										
Expenditures	0.004	0.22	0.64	−0.488	−0.635	−0.143	−0.005	0.0016	−0.021	1.00
	(1.65)	(2.20)	(6.94)	(−3.65)	(−1.61)	(−5.13)	(−6.46)	(7.95)	(−0.38)	
				$l=4$	$l=4$	$l=2$	$l=3$	$l=8$	$n=3$	
Revenues	0.002	0.40	0.51	−0.543	−0.330	−0.135	−0.006	0.0009	0.037	1.00
	(2.49)	(4.99)	(9.16)	(−3.11)	(−0.40)	(−3.82)	(−3.30)	(2.93)	(0.42)	
				$l=4$	$l=4$	$l=2$	$l=3$	$l=8$	$n=6$	
Public Deficits	0.002	0.20	0.45	−0.408	−1.543	−0.147	−0.431	0.0009	0.127	1.00
	(1.95)	(2.13)	(8.78)	(−3.66)	(−3.74)	(−3.02)	(−9.67)	(3.10)	(2.91)	
				$l=4$	$l=4$	$l=2$	$l=2$	$l=8$	$n=6$	
Imports										
Expenditures	0.006	0.16	0.52	−0.707	−0.946	−0.268	−0.008	0.0017	0.032	1.00
	(3.10)	(1.62)	(8.66)	(−4.04)	(−2.01)	(−1.60)	(−4.21)	(3.45)	(0.90)	
				$l=4$	$l=4$	$l=8$	$l=3$	$l=8$	$n=8$	
Revenues	0.002	0.16	0.61	−0.714	−1.081	−0.313	−0.006	0.0009	0.112	0.90
	(3.22)	(1.65)	(8.17)	(−3.06)	(−1.87)	(−2.31)	(−2.76)	(2.77)	(3.33)	
				$l=4$	$l=4$	$l=8$	$l=7$	$l=8$	$n=4$	
Public Deficits	0.004	0.26	0.49	−0.740	−0.785	−0.211	−0.064	0.0007	0.064	1.00
	(6.03)	(2.90)	(9.19)	(−5.80)	(−2.01)	(−1.81)	(−2.69)	(2.46)	(1.27)	
				$l=4$	$l=4$	$l=8$	$l=2$	$l=8$	$n=5$	
Trade Openness										
Expenditures	0.005	0.33	0.57	−0.473	−0.977	−0.187	−0.005	0.0018	0.063	0.90
	(6.10)	(3.42)	(7.01)	(−5.26)	(−2.50)	(−3.68)	(−4.56)	(3.60)	(1.70)	
				$l=4$	$l=4$	$l=8$	$l=3$	$l=8$	$n=8$	
Revenues	0.003	0.19	0.62	−0.616	−0.834	−0.126	−0.006	0.0014	0.044	0.90
	(3.37)	(1.63)	(8.27)	(−3.45)	(−3.60)	(−2.50)	(−4.53)	(3.00)	(1.04)	
				$l=4$	$l=4$	$l=8$	$l=3$	$l=8$	$n=6$	
Public Deficits	0.007	0.16	0.47	−0.844	−0.782	−0.179	−0.173	0.0015	0.004	1.00
	(6.33)	(2.25)	(4.72)	(−9.86)	(−1.88)	(−2.24)	(−2.47)	(4.10)	(0.16)	
				$l=4$	$l=4$	$l=8$	$l=8$	$l=8$	$n=7$	

Table 17.2 reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \varepsilon_t$, $h_t^{\frac{1}{2}} = \omega + \alpha_{fd} x_{fd,t-1} + \alpha_{pi} x_{pi,t-1} + \alpha_{to} x_{to,t-1} + \alpha_{pd} x_{pd,t-1} + \alpha_{us} x_{us,t-1} + \beta_1 h_{t-1}^{\frac{1}{2}} + \varepsilon_{t-n}$, where $x_{fd,t-1}$ indicates deposits at banco do brasil, $x_{pi,t-1}$ is legislative effectiveness, $x_{to,t-1}$ is trade openness (or one of its elements), $x_{pd,t-1}$ is public deficits and $x_{us,t-1}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 17.2 Indirect Effect of Legislative Effectiveness, Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 18 The Short- and Long-run Effects of Financial Development and Political Instabilities on Growth

x_{it}	Δ_{fd}	Δ_{pi}	γ_{fd}	γ_{pi}	$\varepsilon\tau$				
M1									
Assassination	−0.945 (−2.57) l=1	−0.011 (−7.79) l=5	0.881 (9.47)	−0.001 (−1.75)	−1.09 (−21.74)	1.25 (3.95)	0.20 (2.89)	0.146 (2.83) n=4	1.00
Number of Coups	−0.984 (−2.39) l=1	−0.021 (−4.76) l=5	0.854 (9.72)	0.001 (0.07)	−1.12 (−12.80)	1.23 (3.66)	0.21 (1.82)	0.190 (4.02) n=5	1.00
Number of Cabinet Changes	−0.809 (−4.70) l=3	−0.030 (−1.98) l=4	0.691 (1.02)	−0.009 (−2.31)	−0.66 (−14.69)	1.28 (6.46)	0.13 (2.91)	0.181 (3.22) n=5	1.00
Legislative Effectiveness	−1.210 (−4.30) l=3	−1.037 (−1.70) l=8	0.790 (6.72)	−0.792 (−2.48)	−0.80 (−8.76)	0.81 (3.20)	0.24 (2.09)	−0.035 (−0.97) n=4	1.00
Commercial Bank Deposits									
Assassination	−0.236 (−2.64) l=6	−0.015 (−3.05) l=8	0.014 (1.72)	−0.022 (−1.37)	−0.44 (−6.19)	0.87 (3.39)	0.11 (1.61)	0.040 (0.77) n=8	1.00
Number of Coups	−0.135 (−2.03) l=7	−0.053 (−15.33) l=5	0.013 (1.80)	−0.007 (−1.41)	−0.41 (−9.03)	1.36 (2.80)	0.17 (4.78)	0.339 (4.65) n=5	1.00
Number of Cabinet Changes	−0.809 (−4.70) l=3	−0.030 (−1.98) l=4	0.691 (1.02)	−0.009 (−2.32)	−0.66 (−14.69)	1.28 (6.46)	0.13 (2.91)	0.181 (3.22) n=5	1.00
Legislative Effectiveness	−0.453 (−3.59) l=3	−1.384 (−1.86) l=8	0.790 (6.72)	−0.792 (−2.48)	−0.87 (−10.45)	0.64 (3.03)	0.18 (1.67)	0.015 (0.33) n=4	1.00
Deposits at Banco do Brasil									
Assassination	−0.945 (−2.57) l=1	−0.011 (−7.79) l=5	−0.031 (−0.08)	−0.001 (−0.16)	−1.09 (−21.74)	1.25 (3.95)	0.20 (2.89)	0.146 (2.83) n=4	1.00
Number of Coups	−0.682 (−2.07) l=3	−0.040 (−7.62) l=5	0.126 (0.71)	−0.042 (−3.67)	−0.64 (−10.93)	0.84 (2.48)	0.11 (1.88)	0.141 (3.36) n=5	1.00
Number of Cabinet Changes	−0.208 (−1.61) l=3	−0.005 (−0.26) l=2	0.175 (1.05)	−0.102 (−2.07)	−0.30 (−3.13)	0.58 (4.50)	0.64 (10.03)	0.012 (0.21) n=3	1.00
Legislative Effectiveness	−0.879 (−3.32) l=3	−2.493 (−2.91) l=8	−0.065 (−0.32)	−0.141 (−0.20)	−0.44 (−5.06)	0.93 (4.25)	0.17 (2.49)	0.055 (0.84) n=4	1.00

Table 18 reports parameter estimates for the following model:

$\Delta y_t = \Phi + \Delta_{fd} x_{fd,t-l} + \Delta_{pi} x_{pi,t-l} + \varepsilon\tau_{t-1} + c + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \varepsilon_t$,

$h_t^2 = \gamma_0 + \alpha u_{t-1}^2 + \beta h_{t-1}^2 + \varepsilon_{t-n}$,

Δ_l and γ_l capture the short- and long-run effects respectively.

$\varepsilon\tau$ indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ indicates a financial development variable (any of the three measures),

and $x_{pi,t-l}$ is a political instability variable (or one of its elements).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18 The Short- and Long-run Effects of Financial Development and Political Instability on Growth

Table 18.1 The Short- and Long-run Effects of Commercial Bank Deposits, Political Instability, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	β_{fd}	β_{pi}	β_{to}	β_{pd}	β_{us}	λ_{fd}	λ_{pi}	λ_{pd}	λ_{us}	φ
Expenditures										
Assassinations	-0.090 (-2.51) l=4	-0.012 (-10.96) l=8	-0.041 (-1.67) l=5	0.001 (0.64) l=7	0.0009 (0.75) l=5	0.035 (2.53)	0.003 (1.02)	-0.011 (-6.63)	-4.1 × 10^{-4} (-9.18)	-0.61 (-9.96)
Legislative Effectiveness	-0.171 (-3.17) l=4	-1.832 (-4.48) l=5	-0.093 (-4.29) l=5	-0.003 (-1.61) l=6	0.0006 (0.77) l=7	0.030 (0.88)	-1.013 (-2.55)	-0.009 (-6.99)	-3.8 × 10^{-4} (-6.54)	-0.52 (-10.18)
Revenues										
Assassinations	-0.162 (-5.00) l=6	-0.014 (-10.10) l=8	-0.096 (-3.00) l=5	-0.013 (-3.14) l=4	0.0010 (0.32) l=5	0.064 (0.70)	0.005 (0.09)	-0.013 (-3.80)	-3.0 × 10^{-4} (-3.51)	-0.61 (-10.75)
Legislative Effectiveness	-0.202 (-3.26) l=4	-3.311 (-2.48) l=5	-0.083 (-2.19) l=5	-0.002 (-0.70) l=1	0.0006 (0.03) l=5	0.076 (0.06)	1.016 (0.37)	-0.004 (-2.41)	-9.2 × 10^{-5} (-2.75)	-0.44 (-5.39)

Table 18.1 reports parameter estimates for the following model:

$$\Delta y_t = \varphi + \beta_{fd}\Delta x_{fd,t-l} + \beta_{pi}\Delta x_{pi,t-l} + \beta_{pd}\Delta x_{pd,t-l} + \beta_{to}\Delta x_{to,t-l} + \beta_{us}\Delta x_{us,t-l} + \varepsilon_{t-1} + c + \lambda_{fd}x_{fd,t-1} + \lambda_{pi}x_{pi,t-1} + \lambda_{pd}x_{pd,t-1} + \lambda_{us}x_{us,t-1} + u_t,$$

$$h_t^{\frac{s}{2}} = \gamma_0 + \alpha_1|u_{t-1}|^s + \alpha_2 h_{t-1}^{\frac{s}{2}} + \alpha_3 y_{t-n},$$

where β_i and λ_i capture the short- and long-run effects respectively.

φ Indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is either assassinations or legislative effectiveness, $x_{pd,t-l}$ is public deficit (one of its elements), $x_{to,t-l}$ is trade openness and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively. γ_0, α_1, α_2, α_3 and s are not reported.

The numbers in parentheses are t statistics.

Table 18.1 The Short- and Long-run Effects of Commercial Bank Deposits, Political Instability, Trade Openness, Public Deficit and US Interest Rate on Growth

Table 19 Direct Effect of Financial Development and Political Instability on Economic Growth with Dummy Variables

	k	c_1	ψ_{fd}	ψ_{pi}	ψ_{pid}	☺	😐	☹	☠
				M1					
Assassinations	0.004 (0.39)	0.028 (3.02)	-0.66 (-2.61) $l=6$	-0.019 (-4.06) $l=8$	0.0079 (0.54) $l=8$	0.79 (3.45)	0.35 (2.82)	-0.223 (-1.32) $n=1$	0.80
Number of Coups	0.007 (0.75)	0.021 (2.84)	-0.53 (-1.87) $l=6$	-0.037 (-3.30) $l=8$		1.13 (3.10)	0.14 (2.46)	0.052 (1.21) $n=8$	1.00
Number of Cabinet Changes	0.005 (9.36)	0.024 (12.07)	-0.47 (-3.00) $l=6$	-0.011 (-6.28) $l=2$	0.0003 (0.11) $l=8$	1.17 (7.34)	0.14 (3.05)	0.032 (0.33) $n=8$	0.80
Legislative Effectiveness	0.005 (4.50)	0.012 (3.60)	-1.09 (-3.83) $l=6$	-1.426 (-3.16) $l=4$		1.00 (6.01)	0.25 (2.60)	0.135 (2.85) $n=4$	1.00
				Commercial Bank Deposits					
Assassinations	0.007 (4.14)	0.024 (6.69)	-0.23 (-4.64) $l=3$	-0.023 (-9.30) $l=8$	0.0068 (1.07) $l=8$	0.76 (3.89)	0.17 (2.10)	0.123 (1.73) $n=6$	0.80
Number of Coups	0.008 (0.34)	0.017 (4.57)	-0.16 (-3.31) $l=3$	-0.431 (-2.41) $l=1$		0.97 (4.14)	0.17 (2.70)	0.092 (2.47) $n=6$	1.00
Number of Cabinet Changes	0.002 (0.87)	0.020 (3.89)	-0.33 (-5.32) $l=3$	-0.009 (-2.98) $l=3$	0.0053 (1.05) $l=3$	0.85 (4.09)	0.27 (2.97)	0.050 (0.93) $n=5$	0.80
Legislative Effectiveness	0.005 (3.15)	0.017 (4.01)	-0.26 (-3.13) $l=3$	-0.936 (-1.78) $l=2$		0.77 (3.22)	0.34 (2.54)	0.070 (2.07) $n=5$	1.00
				Deposits at Banco do Brasil					
Assassinations	0.011 (3.68)	0.021 (4.32)	-0.31 (-3.67) $l=4$	-0.022 (-3.48) $l=8$	0.0052 (1.56) $l=8$	0.78 (3.75)	0.21 (1.91)	0.090 (1.33) $n=3$	0.80
Number of Coups	0.003 (1.12)	0.021 (5.44)	-0.16 (-1.78) $l=4$	-0.035 (-2.04) $l=1$		1.02 (3.29)	0.36 (2.90)	0.024 (0.31) $n=4$	1.00
Number of Cabinet Changes	0.002 (3.25)	0.018 (3.28)	-0.21 (-10.00) $l=4$	-0.007 (-3.00) $l=2$	0.0051 (0.91) $l=2$	0.91 (3.06)	0.35 (2.89)	-0.017 (-0.54) $n=7$	0.80
Legislative Effectiveness	0.005 (3.12)	0.019 (7.18)	-0.14 (-2.74) $l=4$	-0.358 (-2.01) $l=7$		1.13 (3.66)	0.23 (3.87)	0.027 (0.92) $n=6$	1.00

Table 19 reports parameter estimates for the following model:

$y_t = c + c_1 D_{1t} + k h_t + \psi_{fd} x_{fd,t-l} + \psi_{pi} x_{pi,t-l} + \psi_{pid} D_{i,t-l} x_{pi,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \theta_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \theta_{t-1}^{\frac{\delta}{2}} + \theta_{t-n}$,

$x_{fd,t-l}$ indicates a financial development variable, and $x_{pi,t-l}$ is a political instabilty variable.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003, and $D_{1t} = 0$ otherwise.

$D_{i,t}$ are intercept dummies defined as $D_{i,t} = 1$ in the period 1978 -2003 and 1889-2003 for assassinations and number of cabinet changes respectively, $D_{i,t} = 0$ otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 19 Direct Effect of Financial Development and Political Instability on Economic Growth with Dummy Variables

Table 19.1 Direct Effect of Commercial Bank Deposits, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

	k	c_1	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Exports											
Expenditures	0. 007 (0.42)	0. 019 (0.77)	-0. 142 (-2.59) l=3	-0. 005 (-1.94) l=2	0. 0003 (0.01) l=3	-0. 004 (-2.90) l=4	0. 0010 (0.33) l=5	0. 99 (0.70)	0. 16 (0.15)	0. 058 (0.64) n=6	1. 00
Revenues	0. 005 (0.12)	0. 020 (0.93)	-0. 131 (-2.36) l=3	-0. 018 (-5.44) l=8	-0. 0157 (-0.57)	-0. 007 (-3.07) l=3	0. 0015 (0.86) l=5	0. 84 (0.00)	0. 25 (2.30)	0. 082 (1.78) n=5	0. 90
Public Deficit	0. 005 (0.00)	0. 020 (1.01)	-0. 120 (-6.82) l=3	-0. 016 (-8.64) l=8	-0. 0032 (-0.14)	-0. 033 (-0.85) l=1	0. 0016 (0.66) l=5	0. 96 (4.89)	0. 19 (2.92)	0. 127 (1.95) n=6	0. 80
Imports											
Expenditures	0. 006 (0.34)	0. 014 (0.56)	-0. 099 (-2.35) l=3	-0. 016 (-6.67) l=8	0. 0549 (1.48) l=3	-0. 004 (-1.74) l=4	0. 0015 (0.65) l=5	0. 89 (2.22)	0. 26 (1.77)	0. 044 (0.80) n=6	1. 00
Revenues	0. 006 (0.42)	0. 017 (0.89)	-0. 113 (-1.65) l=7	-0. 013 (-5.92) l=8	-0. 0181 (-0.45)	-0. 004 (-3.12) l=3	0. 0013 (0.76) l=5	1. 03 (0.30)	0. 20 (1.74)	0. 032 (0.79) n=6	1. 00
Public Deficit	0. 006 (0.20)	0. 016 (0.20)	-0. 133 (-2.17) l=7	-0. 010 (-7.44) l=8	0. 0362 (1.01) l=3	-0. 027 (-6.46) l=5	0. 0012 (0.00) l=5	0. 87 (4.49)	0. 27 (3.36)	0. 184 (2.78) n=4	0. 90
Trade Openness											
Expenditures	0. 006 (0.87)	0. 012 (0.60)	-0. 144 (-3.63) l=7	-0. 013 (-11.45) l=8	-0. 0080 (-0.96) l=2	-0. 003 (-2.59) l=4	0. 0014 (0.18) l=5	1. 09 (0.38)	0. 28 (2.51)	0. 064 (0.91) n=3	1. 00
Revenues	0. 005 (0.91)	0. 015 (0.66)	-0. 108 (-2.61) l=7	-0. 014 (-7.53) l=8	-0. 0109 (-0.64) l=3	-0. 004 (-5.28) l=3	0. 0014 (0.88) l=5	0. 85 (2.39)	0. 33 (2.70)	0. 074 (1.43) n=6	1. 00
Public Deficit	0. 006 (0.77)	0. 012 (0.02)	-0. 095 (-1.69) l=7	-0. 012 (-3.74) l=8	0. 0137 (0.91) l=3	-0. 023 (-0.33) l=5	0. 0014 (0.60) l=5	0. 88 (2.15)	0. 33 (2.57)	0. 005 (0.07) n=2	1. 00

Table 19.1 reports parameter estimates for the following model:

$y_t = c + c_1 D_{1t} + k h_t + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \gamma_0 + \gamma_1 h_{t-1}^{\frac{s}{2}} + e_{t-1} + \gamma_2 h_{t-1}^{\frac{s}{2}} + \gamma_3 y_{t-n}$,

$x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is the assassinations, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003 and $D_{1t} = 0$ otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 19.1 Direct Effect of Commercial Bank Deposits, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

Table 19.2 Direct Effect of Commercial Bank Deposits, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

	k	c_1	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
					Exports						
Expenditures	0.002 (0.24)	0.014 (4.90)	-0.158 (-2.39) $l=4$	-0.959 (-2.75) $l=6$	-0.053 (-1.73) $l=3$	-0.002 (-3.01) $l=6$	0.0009 (1.35) $l=5$	0.86 (3.99)	0.37 (3.86)	-0.060 (-0.83) $n=3$	0.80
Revenues	0.003 (0.33)	0.014 (4.84)	-0.128 (-2.06) $l=4$	-0.798 (-1.77) $l=6$	-0.056 (-2.73) $l=3$	-0.003 (-1.64) $l=6$	0.0009 (1.08) $l=5$	0.96 (3.79)	0.39 (3.82)	-0.075 (-0.51) $n=1$	0.90
Public Deficit	0.003 (0.32)	0.016 (4.26)	-0.200 (-2.10) $l=4$	-0.953 (-2.42) $l=6$	-0.038 (-1.77) $l=3$	0.038 (1.11) $l=5$	0.0008 (0.63) $l=5$	0.81 (4.11)	0.32 (3.56)	-0.025 (-0.50) $n=6$	0.80
					Imports						
Expenditures	0.001 (0.46)	0.035 (6.82)	-0.130 (-2.28) $l=4$	-2.008 (-5.62) $l=6$	-0.053 (-1.37) $l=3$	-0.030 (-1.76) $l=6$	0.0013 (0.48) $l=5$	0.72 (4.32)	0.47 (4.41)	0.025 (0.23) $n=6$	0.80
Revenues	0.003 (0.27)	0.015 (3.18)	-0.150 (-2.01) $l=4$	-0.806 (-3.76) $l=6$	-0.031 (-1.27) $l=3$	-0.003 (-3.52) $l=6$	0.0008 (0.49) $l=5$	0.87 (3.84)	0.40 (4.19)	-0.057 (-0.68) $n=3$	0.80
Public Deficit	0.005 (0.61)	0.015 (3.81)	-0.310 (-3.61) $l=4$	-1.178 (-2.52) $l=6$	0.058 (1.08) $l=3$	-0.249 (-2.28) $l=8$	0.0009 (1.26) $l=5$	0.76 (3.45)	0.25 (2.83)	0.177 (1.92) $n=5$	0.80
					Trade Openness						
Expenditures	0.003 (5.46)	0.012 (4.58)	-0.131 (-2.11) $l=4$	-0.969 (-1.99) $l=6$	-0.032 (-1.63) $l=3$	-0.004 (-3.05) $l=6$	0.0011 (4.38) $l=5$	0.97 (4.08)	0.35 (4.16)	0.053 (1.18) $n=6$	1.00
Revenues	0.002 (1.43)	0.016 (6.29)	-0.146 (-2.13) $l=4$	-0.763 (-2.35) $l=6$	-0.026 (-1.35) $l=3$	-0.003 (-3.33) $l=6$	0.0010 (4.27) $l=5$	0.85 (4.27)	0.41 (4.46)	0.023 (0.36) $n=7$	0.80
Public Deficit	0.006 (0.96)	0.015 (6.52)	-0.198 (-3.01) $l=4$	-1.102 (-3.53) $l=6$	0.003 (0.15) $l=3$	-0.267 (-5.97) $l=6$	0.0007 (3.00) $l=5$	0.82 (4.84)	0.25 (2.76)	0.093 (1.44) $n=6$	0.80

Table 19.2 reports parameter estimates for the following model:

$y_t = c + c_1 D_{1t} + k h_t + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \eta_0 + \theta h_{t-1}^{\frac{s}{2}} + e_{t-1} + \theta h_{t-1}^{\frac{s}{2}} + \theta y_{t-n}$,

$x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is the legislative effectiveness, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003, and $D_{1t} = 0$ otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 19.2 Direct Effect of Commercial Bank Deposits, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

Table 20 Indirect Effect of Financial Development and Political Instability on Economic Growth with Dummy Variables

	k	c_1	☺	😐	α_{fd}	α_{pi}	α_{pid}	☹	💀
M1									
Assassinations	0.006 (5.55)	0.029 (4.75)	1.09 (7.44)	0.12 (3.59)	-0.721 (-2.89) l=6	-0.023 (-6.04) l=8	0.018 (6.38) l=8	0.140 (3.02) n=4	1.00 -
Number of Coups	0.006 (3.72)	0.021 (3.68)	0.85 (3.62)	0.32 (3.02)	-0.252 (-0.78) l=6	-0.003 (-0.16) l=8	-	0.083 (1.51) n=6	0.80 -
Number of Cabinet Changes	0.010 (3.26)	0.024 (4.62)	0.59 (3.53)	0.22 (1.92)	-0.957 (-2.21) l=6	-0.025 (-3.75) l=1	-0.005 (-0.69) l=3	-0.047 (-1.14) n=8	0.80 -
Legislative Effectiveness	0.007 (3.83)	0.022 (4.34)	0.90 (3.94)	0.28 (2.37)	0.082 (0.29) l=6	-0.369 (-1.22) l=7	-	0.041 (1.52) n=8	1.00 -
Commercial Bank Deposits									
Assassinations	0.003 (0.42)	0.034 (4.89)	0.44 (3.77)	0.41 (3.87)	-0.212 (-5.36) l=1	-0.013 (-2.17) l=5	0.010 (1.45) l=5	-0.303 (-1.54) n=1	0.80 -
Number of Coups	0.006 (4.00)	0.022 (3.76)	0.93 (3.14)	0.29 (2.62)	-0.124 (-4.39) l=1	-0.002 (-0.22) l=8	-	0.062 (0.93)	1.00 -
Number of Cabinet Changes	0.007 (3.91)	0.023 (3.11)	0.20 (3.00)	0.64 (3.57)	-0.131 (-2.48) l=1	-0.014 (-1.72) l=2	0.011 (1.24) l=1	-0.138 (-0.97) n=8	0.80 -
Legislative Effectiveness	0.009 (4.02)	0.022 (3.27)	0.84 (3.49)	0.17 (1.87)	-0.045 (-2.49) l=1	-0.347 (-2.72) l=7	-	0.024 (1.25) n=8	1.00 -
Deposits at Banco do Brasil									
Assassinations	0.006 (7.37)	0.010 (3.19)	0.67 (3.25)	0.24 (2.25)	-0.836 (-4.36) l=4	-0.013 (-3.09) l=8	0.012 (4.04) l=8	0.006 (0.21) n=6	1.00 -
Number of Coups	0.001 (3.07)	0.027 (4.06)	0.81 (3.19)	0.39 (3.08)	-0.771 (-4.01) l=4	-0.039 (-2.18) l=7	-	-0.052 (-0.67) n=4	0.90 -
Number of Cabinet Changes	0.003 (8.31)	0.019 (3.78)	0.84 (2.94)	0.35 (3.66)	-0.348 (-2.81) l=4	-0.004 (-1.71) l=1	-0.002 (-0.24) l=3	0.025 (0.35) n=3	1.00 -
Legislative Effectiveness	0.006 (3.33)	0.014 (2.37)	0.33 (2.90)	0.44 (3.86)	-0.981 (-2.95) l=4	-1.075 (-2.44) l=6	-	0.008 (0.24) n=8	0.90 -

Table 20 reports parameter estimates for the following model:

$y_t = c + c_1 D_{1t} + k h_t +$

$h_t^{\frac{s}{2}} = \gamma_0 + \sum h_{t-1}^{\frac{s}{2}} + e_{t-1} + \sum \alpha_{fd} x_{fd,t-l} + \sum \alpha_{pi} x_{pi,t-l} + \sum \alpha_{pid} D_{i,t-l} x_{pi,t-l} + \sum \gamma_{t-n}$,

where $x_{fd,t-l}$ indicates a financial development variable, $x_{pi,t-l}$ is a political instability variable,

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003 and $D_{1t} = 0$ otherwise.

$D_{i,t}$ are intercept dummies defined as $D_{i,t} = 1$ in the period 1978 -2003 and 1889-2003 for assassinations and number of cabinet changes respectively, $D_{i,t} = 0$ otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 20 Indirect Effect of Financial Development and Political Instability on Economic Growth with Dummy Variables

Table 20.1 Indirect Effect of Deposits at Banco do Brasil, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

	k	c_1	☺	😐	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☹	
Exports											
Expenditures	0.005 (0.71)	0.011 (0.74)	0.17 (0.86)	0.32 (0.22)	-1.600 (-14.04) l=4	-0.011 (-4.53) l=5	-0.400 (-4.98) l=2	-0.008 (-3.57) l=4	0.0011 (0.87) l=8	0.312 (3.77) n=4	0.80
Revenues	0.003 (0.69)	0.019 (0.58)	0.10 (0.61)	0.49 (0.62)	-0.794 (-2.52) l=4	-0.019 (-4.07) l=5	-0.548 (-3.27) l=2	0.002 (0.49) l=3	0.0021 (2.47) l=8	-0.059 (-0.76) n=5	0.80
Public Deficit	0.004 (0.81)	0.021 (0.69)	0.10 (0.71)	0.44 (0.86)	-0.527 (-2.61) l=4	-0.010 (-3.67) l=5	-0.599 (-6.08) l=2	-0.844 (-6.04) l=3	0.0021 (3.12) l=8	-0.073 (-1.02) n=6	0.80
Imports											
Expenditures	0.004 (0.72)	0.021 (0.50)	0.46 (0.60)	0.37 (0.75)	-0.723 (-2.65) l=4	-0.011 (-3.15) l=5	-0.398 (-1.81) l=8	0.006 (0.38) l=4	0.0019 (2.50) l=8	0.011 (0.11) n=8	0.80
Revenues	0.006 (0.27)	0.019 (0.98)	0.36 (0.91)	0.39 (0.75)	-0.477 (-1.91) l=4	-0.007 (-1.75) l=5	-0.464 (-2.01) l=8	-0.008 (-2.62) l=8	0.0023 (2.42) l=8	0.045 (0.48) n=8	0.80
Public Deficit	0.005 (0.81)	0.019 (0.99)	0.58 (0.19)	0.29 (0.24)	-0.855 (-2.96) l=4	-0.010 (-3.88) l=5	-0.300 (-1.54) l=8	-0.212 (-3.34) l=6	0.0019 (2.53) l=8	-0.023 (-0.30) n=8	0.80
Trade Openness											
Expenditures	0.006 (0.07)	0.018 (0.89)	0.22 (0.26)	0.30 (0.74)	-0.782 (-4.95) l=4	-0.009 (-6.12) l=5	-0.143 (-0.69) l=8	-0.003 (-1.57) l=4	0.0014 (2.45) l=8	-0.051 (-1.53) n=4	1.00
Revenues	0.006 (0.78)	0.020 (0.78)	0.66 (0.88)	0.26 (0.14)	-0.795 (-4.38) l=4	-0.009 (-3.35) l=5	0.075 (0.80) l=5	-0.005 (-2.42) l=6	0.0014 (0.76) l=8	-0.004 (-0.06) n=8	0.80
Public Deficit	0.007 (0.89)	0.020 (0.41)	0.22 (0.55)	0.54 (0.25)	-0.125 (-2.23) l=1	-0.011 (-5.01) l=5	-0.254 (-1.73) l=8	-0.629 (-3.11) l=8	0.0019 (3.04) l=8	-0.027 (-0.73) n=8	0.80

Table 20.1 reports parameter estimates for the following model:

$y_t = c + c_1 D_{1t} + kh_t + h_t^{\frac{z}{2}} + \eta_0 h_{t-1}^{\frac{z}{2}} + e_{t-1} + \eta_1 h_{t-1}^{\frac{z}{2}} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \gamma y_{t-n}$,

where $x_{fd,t-l}$ indicates deposits at banco do brasil, $x_{pi,t-l}$ is the assassinations, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate. D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003, and $D_{1t} = 0$ otherwise. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 20.1 Indirect Effect of Deposits at Banco do Brasil, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

Table 20.2 Indirect Effect of Deposits at Banco do Brasil, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

	k	c_1	☺	☺	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☹	☠
Exports											
Expenditures	0.007 (0.94)	0.010 (2.56)	0.42 (4.80)	0.34 (4.87)	−1.193 (−9.83) l=4	−1.218 (−3.12) l=4	−0.127 (−1.97) l=2	−0.010 (−5.05) l=3	0.0016 (0.11) l=8	−0.027 (−0.45) n=4	0.80 –
Revenues	0.003 (0.82)	0.022 (4.70)	0.14 (2.12)	0.47 (4.55)	−0.777 (−3.20) l=4	−1.766 (−2.49) l=4	−0.195 (−1.58) l=2	−0.012 (−7.01) l=3	0.0018 (2.32) l=8	0.108 (1.51) n=6	0.80 –
Public Deficit	0.001 (0.91)	0.022 (3.43)	0.27 (4.21)	0.35 (3.88)	−1.013 (−12.59) l=5	−1.911 (−11.69) l=4	−0.523 (−9.63) l=2	−0.716 (−13.05) l=3	0.0013 (3.78) l=8	0.089 (1.18) n=5	0.80 –
Imports											
Expenditures	0.004 (4.72)	0.017 (4.65)	0.33 (4.43)	0.49 (6.81)	−0.888 (−4.20) l=4	−1.038 (−2.11) l=4	−0.223 (−1.70) l=8	−0.014 (−6.90) l=3	0.0014 (1.87) l=8	−0.118 (−0.28) n=8	0.80 –
Revenues	0.001 (2.22)	0.022 (10.86)	0.27 (3.78)	0.27 (4.23)	−1.207 (−5.80) l=4	−2.072 (−10.57) l=4	−0.384 (−4.04) l=8	−0.009 (−5.86) l=2	0.0013 (2.13) l=8	0.238 (4.33) n=5	0.80 –
Public Deficit	0.001 (2.19)	0.022 (4.38)	0.34 (3.53)	0.59 (7.50)	−0.965 (−4.20) l=4	−1.074 (−2.18) l=4	−0.221 (−2.19) l=8	−0.172 (−2.78) l=5	0.0017 (2.44) l=8	0.0010 (0.02) n=8	0.80 –
Trade Openness											
Expenditures	0.005 (0.57)	0.017 (4.31)	0.55 (3.56)	0.38 (3.06)	−0.392 (−3.70) l=4	−0.693 (−2.00) l=4	−0.063 (−2.06) l=8	−0.006 (−2.06) l=3	0.0011 (1.95) l=8	0.014 (0.68) n=8	1.00 –
Revenues	0.006 (7.68)	0.008 (2.07)	0.28 (3.68)	0.26 (2.45)	−0.743 (−9.24) l=4	−0.993 (−2.66) l=4	−0.079 (−2.24) l=8	−0.009 (−10.41) l=3	0.0020 (7.02) l=8	0.001 (0.05) n=8	1.00 –
Public Deficit	0.002 (2.46)	0.013 (3.79)	0.31 (4.29)	0.54 (6.43)	−0.291 (−5.92) l=4	−0.912 (−2.44) l=2	−0.156 (−4.81) l=8	−0.035 (−3.37) l=8	0.0007 (2.19) l=8	0.150 (3.82) n=5	1.00 –

Table 20.2 reports parameter estimates for the following model:

y_t = c + $c_1 D_{1t}$ + $k h_t$ + $\beta_1 h_t^2$ + $\gamma_1 \sum_{i=1}^{l} h_{t-i}^2$ + e_{t-1} + $\sum_{i=1}^{l} \alpha_i$

$\alpha_{fd} x_{fd,t-i}$ + $\alpha_{pi} x_{pi,t-i}$ + $\alpha_{to} x_{to,t-i}$ + $\alpha_{pd} x_{pd,t-i}$ + $\alpha_{us} x_{us,t-i}$ + $\sum_{i=1}^{n} \gamma_{t-i}$,

where $x_{fd,t-i}$ indicates deposits at banco do brasil, $x_{pi,t-i}$ is the assassinations, $x_{to,t-i}$ is trade openness (or one of its elements), $x_{pd,t-i}$ is public deficit (any of the three measures) and $x_{us,t-i}$ is US interest rate.

D_{1t} is an intercept dummy defined as D_{1t} = 1 in the period 1938 - 2003, and D_{1t} = 0 otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 20.2 Indirect Effect of Deposits at Banco do Brasil, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth with a Dummy Variable

Table 21 The Short- and Long-run Effects of Financial Development and Political Instability on Growth with Dummy Variables

x_{it}	ϕ_1	λ_{fd}	λ_{pi}	λ_{pid}	γ_{fd}	γ_{pi}	α				
					M1						
Assassinations	0. 015 (0.23)	-0. 54 (-2.84) l=6	-0. 005 (-3.33) l=2	-0. 0008 (-0.54) l=1	0. 881 (3.47)	-0. 001 (-1.74)	-1. 18 (-20.50)	0. 99 (3.35)	0. 18 (0.93)	0. 098 (2.44) n=5	1. 00 <
Number of Coups	0. 015 (0.10)	-0. 93 (-4.79) l=6	-0. 040 (-16.26) l=5	<	0. 854 (3.72)	0. 001 (0.07)	-0. 91 (-15.79)	0. 88 (3.91)	0. 25 (2.77)	0. 188 (4.80) n=5	1. 00 <
Number of Cabinet Changes	0. 012 (2.13)	-1. 03 (-5.30)	-0. 048 (-2.18)	0. 0048 (0.29)	0. 691 (1.02)	-0. 009 (-2.32)	-1. 15 (-11.73)	0. 84 (3.47)	0. 30 (2.60)	0. 014 (0.32)	1. 00 <
		l=6	l=3	l=5						n=6	
Legislative Effectiveness	0. 011 (0.90)	-0. 71 (-3.29)	-1. 742 (-3.86)	<	0. 790 (0.72)	-0. 792 (-2.48)	-0. 74 (-5.57)	0. 76 (4.02)	0. 30 (2.30)	0. 061 (1.20)	1. 00 <
		l=6	l=8							n=5	
					Commercial Bank Deposits						
Assassinations	0. 016 (0.14)	-0. 12 (-1.75)	-0. 013 (-5.50)	-0. 0066 (-4.50)	0. 014 (0.72)	-0. 022 (-1.37)	-1. 00 (-11.82)	0. 85 (3.59)	0. 42 (3.71)	0. 027 (0.53)	1. 00 <
		l=6	l=2	l=1						n=8	
Number of Coups	0. 015 (0.68)	-0. 36 (-5.60)	-0. 033 (-3.92)	<	0. 013 (0.80)	-0. 006 (-1.41)	-0. 65 (-6.77)	0. 84 (3.72)	0. 23 (2.29)	0. 252 (2.78)	0. 80 <
		l=3	l=5							n=5	
Number of Cabinet Changes	0. 013 (2.00)	-0. 14 (-3.38)	-0. 029 (-2.46)	-0. 0003 (-0.09)	0. 222 (2.19)	-0. 145 (-2.06)	-0. 72 (-5.65)	0. 98 (4.14)	0. 28 (3.72)	0. 166 (3.07)	1. 00 <
		l=6	l=3	l=8						n=5	
Legislative Effectiveness	0. 025 (0.59)	-0. 22 (-3.12)	-0. 631 (-1.74)	<	0. 180 (0.37)	-1. 73 (-2.39)	-1. 02 (-20.14)	0. 69 (3.34)	0. 27 (3.15)	0. 244 (3.38)	0. 80 <
		l=3	l=6							n=5	
					Deposits at Banco do Brasil						
Assassinations	0. 013 (0.57)	-0. 38 (-2.05)	-0. 007 (-2.94)	-0. 0003 (-2.04)	-0. 031 (-0.08)	-0. 001 (-0.16)	-1. 12 (-12.02)	0. 83 (4.27)	0. 34 (3.61)	0. 098 (2.13)	1. 00 <
		l=4	l=2	l=1						n=5	
Number of Coups	0. 032 (0.47)	-0. 24 (-2.42)	-0. 033 (-2.70)	<	0. 126 (0.71)	-0. 042 (-3.67)	-0. 85 (-12.50)	1. 02 (3.57)	0. 23 (2.61)	0. 125 (2.69)	1. 00 <
		l=3	l=5							n=5	
Number of Cabinet Changes	0. 021 (2.45)	-0. 04 (-1.94)	-0. 016 (-1.87)	-0. 0068 (-2.34)	0. 175 (1.05)	-0. 102 (-2.07)	-1. 15 (-8.85)	1. 27 (7.20)	0. 20 (3.35)	0. 072 (1.59)	1. 00 <
		l=3	l=3	l=2						n=8	
Legislative Effectiveness	0. 020 (2.22)	-0. 15 (-2.01)	-1. 799 (-2.43)	<	-0. 065 (-0.32)	-0. 141 (-0.20)	-0. 72 (-7.12)	0. 84 (3.83)	0. 34 (3.59)	0. 160 (3.01)	0. 90 <
		l=3	l=8							n=5	

Table 21 reports parameter estimates for the following model: $\Delta y_t = \phi + \phi_1 D_{1t} + \lambda_{fd} \Delta x_{fd,t-l} + \lambda_{pi} \Delta x_{pi,t-l} + \lambda_{pid} D_{i,t-l} \Delta x_{pi,t-l} + \alpha ECT_{t-1} + c + \gamma_{fd} x_{fd,t-1} + \gamma_{pi} x_{pi,t-1} + \varepsilon_t$, $h_t^{\frac{1}{2}} = \gamma_0 + \sum \gamma_n |u_{t-1}|^{\frac{1}{2}} + \sum \delta_n h_{t-1}^{\frac{1}{2}} + \sum \delta_n y_{t-n}$.

λ and γ capture the short- and long-run effects respectively. α Indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is a financial development variable (any of the three measures), and $x_{pi,t-l}$ is a political instability variable.

D_{1t} is an intercept dummy defined as D_{1t} = 1 in the period 1938 - 2003 and D_{1t} = 0 otherwise.

$D_{i,t}$ are slope dummies defined as $D_{i,t}$ = 1 in the period 1978 -2003 and 1889-2003 for the assassinations and number of cabinet changes respectively, $D_{i,t}$ = 0 otherwise.

l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 21 The Short- and Long-run Effects of Financial Development and Political Instability on Growth with Dummy Variables

Table 21.1 The Short- and Long-run Effects of Commercial Bank Deposits, Political Instabilities, Trade Openness Public Deficit and US Interest Rate on Growth with a Dummy Variable

x_{it}	ϕ_1	δ_{fd}	δ_{pi}	δ_{to}	δ_{pd}	δ_{us}	λ_{fd}	λ_{pi}	λ_{pd}	λ_{us}	α	ω	ε	ε^2	ε^3
Expenditures															
Assassinations	0. 025 (3.21)	-0. 246 (-11.04) $l=4$	-0. 007 (-4.50) $l=2$	-0. 038 (-1.64) $l=5$	-0. 004 (-2.35) $l=6$	0. 0007 (3.01) $l=5$	0. 035 (2.53)	0. 003 (1.02)	-0. 011 (-6.63)	-4.1×10^{-4} (-9.18)	-0. 86 (-26.83)	0. 84 (3.16)	0. 36 (4.70)	0. 114 (1.48) $n=8$	0. 80
Legislative Effectiveness	0. 013 (1.81)	-0. 116 (-6.63) $l=4$	-1. 057 (-2.24) $l=8$	-0. 022 (-2.16) $l=3$	-0. 005 (-2.44) $l=6$	0. 0005 (1.87) $l=7$	0. 030 (1.88)	-1. 013 (-2.55)	-0. 009 (-6.99)	-3.8×10^{-4} (-6.54)	-0. 74 (-11.69)	0. 80 (4.91)	0. 37 (4.90)	0. 092 (1.61) $n=8$	0. 80
Revenues															
Assassinations	0. 029 (1.82)	-0. 171 (-1.69) $l=2$	-0. 004 (-2.00) $l=2$	-0. 046 (-1.58) $l=5$	-0. 012 (-2.50) $l=4$	0. 0007 (2.75) $l=5$	0. 064 (1.70)	0. 005 (1.09)	-0. 013 (-3.80)	-3.0×10^{-4} (-3.51)	-1. 05 (-23.51)	0. 86 (6.25)	0. 18 (1.95)	0. 041 (0.81) $n=7$	0. 80
Legislative Effectiveness	0. 020 (1.24)	-0. 259 (-4.56) $l=4$	-2. 580 (-2.14) $l=8$	-0. 109 (-2.11) $l=5$	-0. 002 (-1.74) $l=3$	0. 0007 (2.56) $l=4$	0. 076 (1.06)	1. 016 (1.37)	-0. 004 (-2.41)	-9.2×10^{-5} (-2.75)	-0. 68 (-10.12)	0. 66 (3.55)	0. 50 (4.77)	0. 125 (1.38) $n=3$	0. 80

Table 21.1 reports parameter estimates for the following model:

$\Delta y_t = \phi + \phi_1 D_{1t} + \delta_{fd} x_{fd,t-l} + \delta_{pi} x_{pi,t-l} + \delta_{to} x_{to,t-l} + \delta_{pd} x_{pd,t-l} + \delta_{us} x_{us,t-l} + \varepsilon_{t-1} + c + \lambda_{fd} x_{fd,t-1} + \lambda_{pi} x_{pi,t-1} + \lambda_{pd} x_{pd,t-1} + \lambda_{us} x_{us,t-1} + \eta_t h_t^{\frac{1}{2}} + \eta_t \left| u_{t-1} \right|^{\frac{1}{2}} + \varepsilon h_{t-1}^{\frac{1}{2}} + \varepsilon_{t-n}.$

δ_i and λ_i capture the short- and long-run effects respectively.

α indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is either assassinations or legislative effectiveness, $x_{to,t-l}$ is trade openness, $x_{pd,t-l}$ is public deficit (one of its elements) and $x_{us,t-l}$ is US interest rate.

D_{1t} is an intercept dummy defined as $D_{1t} = 1$ in the period 1938 - 2003, and $D_{1t} = 0$ otherwise.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 21.1 The Short- and Long-run Effects of Commercial Bank Deposits, Political Instability, Trade Openness Public Deficit and US Interest Rate on Growth with a Dummy Variable

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Appendix A: Selected Results From Trivariate Estimations – Financial Development, Trade Openness and Public Deficit

Table 1.1.a Direct Effect of M1, Trade Openness, Public Deficit on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	☺	😐	☹	
				Expenditures				
Exports	0.008 (0.79)	-0.341 (-1.63) $l=6$	-0.057 (-3.03) $l=3$	-0.025 (-2.63) $l=5$	0.69 (4.15)	0.34 (3.22)	0.119 (3.49) $n=8$	1.00
Imports	0.006 (2.70)	-0.541 (-2.38) $l=6$	-0.078 (-2.50) $l=2$	-0.013 (-1.70) $l=3$	0.56 (4.31)	0.47 (4.15)	0.034 (0.62) $n=5$	0.80
Trade Openness	0.005 (4.32)	-0.476 (-2.04) $l=6$	-0.021 (-2.74) $l=2$	-0.027 (-1.83) $l=5$	0.63 (4.39)	0.52 (3.62)	-0.094 (-0.99) $n=1$	1.00
				Revenues				
Exports	0.007 (0.44)	-0.603 (-3.34) $l=6$	-0.053 (-2.64) $l=3$	-0.022 (-1.69) $l=5$	0.55 (3.74)	0.43 (3.10)	0.034 (0.61) $n=5$	0.80
Imports	0.007 (0.50)	-0.529 (-2.19) $l=6$	-0.078 (-2.66) $l=2$	-0.031 (-2.14) $l=1$	0.57 (4.08)	0.49 (4.72)	-0.017 (-0.20) $n=2$	0.90
Trade Openness	0.008 (0.46)	-0.439 (-2.04) $l=6$	-0.039 (-4.00) $l=2$	-0.037 (-2.79) $l=1$	0.57 (3.49)	0.43 (3.32)	0.143 (3.00) $n=8$	0.80
				Public Deficit				
Exports	0.008 (4.69)	-0.460 (-1.83) $l=6$	-0.059 (-1.97) $l=3$	-0.101 (-1.22) $l=8$	0.55 (3.70)	0.43 (3.44)	0.016 (0.31) $n=5$	0.80
Imports	0.009 (3.87)	-0.535 (-2.28) $l=6$	-0.129 (-2.68) $l=2$	-0.092 (-1.90) $l=8$	0.56 (3.05)	0.45 (3.94)	0.119 (3.91) $n=8$	0.90
Trade Openness	0.008 (1.33)	-0.510 (-3.05) $l=6$	-0.068 (-2.95) $l=2$	-0.164 (-3.32) $l=8$	0.56 (4.70)	0.47 (3.77)	0.132 (2.92) $n=8$	0.80

Table 1.1.a reports parameter estimates of direct effect only for the following model: $y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \varepsilon_t$, $h_t^{\frac{1}{2}} = \gamma_0 + \gamma_1 h_{t-1}^{\frac{1}{2}} + e_{t-1} + \gamma_2 h_{t-1}^{\frac{1}{2}} + \gamma_3 y_{t-n}$, parameter estimates $x_{fd,t-l}$ is M1,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 1.1.a Direct Effect of M1, Trade Openness, Public Deficit on Economic Growth

Table 1.2.a Direct Effect of Commercial Bank Deposits, Trade Openness, Public Deficit on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	☺	😐	☹	
				Expenditures				
Exports	0.010 (4.50)	0.053 (1.15) $l=2$	-0.124 (-1.66) $l=8$	-0.026 (-1.90) $l=5$	0.63 (3.48)	0.33 (2.22)	0.115 (3.92) $n=8$	1.00 -
Imports	0.005 (3.27)	0.026 (0.46) $l=2$	-0.085 (-2.76) $l=2$	-0.028 (-1.89) $l=5$	0.61 (3.17)	0.51 (3.98)	0.035 (1.07) $n=5$	1.00 -
Trade Openness	0.010 (4.62)	0.051 (0.99) $l=2$	-0.047 (-3.87) $l=2$	-0.033 (-1.77) $l=3$	0.60 (3.90)	0.37 (2.96)	0.123 (3.43) $n=8$	1.00 -
				Revenues				
Exports	0.013 (6.18)	0.011 (0.18) $l=2$	-0.175 (-2.67) $l=8$	-0.044 (-2.00) $l=1$	0.41 (2.16)	0.44 (1.89)	0.150 (3.30) $n=8$	0.80 -
Imports	0.009 (3.39)	0.036 (0.69) $l=2$	-0.079 (-1.95) $l=2$	-0.031 (-2.54) $l=6$	0.45 (3.04)	0.51 (3.19)	-0.098 (-0.81) $n=1$	0.80 -
Trade Openness	0.007 (3.45)	0.040 (0.77) $l=2$	-0.036 (-2.40) $l=2$	-0.029 (-2.70) $l=6$	0.49 (3.28)	0.52 (3.95)	-0.060 (-0.70) $n=3$	0.80 -
				Public Deficit				
Exports	0.018 (2.20)	-0.132 (-0.96) $l=2$	-0.428 (-1.94) $l=8$	-0.285 (-2.32) $l=6$	0.20 (2.50)	0.61 (2.16)	0.011 (0.11) $n=3$	0.80 -
Imports	0.006 (4.17)	0.042 (0.78) $l=2$	-0.121 (-2.17) $l=2$	-0.071 (-1.73) $l=8$	0.55 (3.50)	0.51 (4.26)	0.003 (0.10) $n=5$	1.00 -
Trade Openness	0.005 (6.12)	0.047 (1.07) $l=2$	-0.066 (-2.87) $l=2$	-0.154 (-3.50) $l=8$	0.51 (4.72)	0.55 (6.80)	-0.155 (-1.56) $n=1$	0.80 -

Table 1.2.a reports parameter estimates of direct effect only for the following model: $y_t = c + k \log(n_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \varepsilon_t$

$h_t^{\frac{\delta}{2}} = \omega + \beta h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \gamma h_{t-1}^{\frac{\delta}{2}} + \gamma y_{t-n}$,

parameter estimates $x_{fd,t-l}$ is commercial bank deposits,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 1.2.a Direct Effect of Commercial Bank Deposits, Trade Openness, Public Deficit on Economic Growth

Table 1.3.a Direct Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit on Economic Growth

	k	α_{fd}	α_{to}	α_{pd}	☺	😐	☹	☠
Expenditures								
Exports	0.005 (0.50)	-0.096 (-1.96) $l=3$	-0.048 (-2.22) $l=2$	-0.030 (-1.91) $l=5$	0.64 (0.75)	0.54 (0.26)	-0.062 (-0.85) $n=2$	1.00
Imports	0.008 (0.22)	-0.075 (-2.86) $l=3$	-0.098 (-3.18) $l=2$	-0.028 (-3.03) $l=5$	0.66 (0.96)	0.38 (0.09)	0.156 (0.54) $n=8$	0.90
Trade Openness	0.009 (0.74)	-0.144 (-2.90) $l=3$	-0.048 (-2.51) $l=2$	-0.029 (-2.93) $l=5$	0.63 (0.47)	0.35 (0.37)	0.117 (0.64) $n=8$	1.00
Revenues								
Exports	0.009 (0.24)	-0.112 (-2.10) $l=3$	-0.041 (-1.68) $l=2$	-0.029 (-2.53) $l=6$	0.43 (0.77)	0.51 (0.43)	-0.076 (-0.59) $n=2$	0.80
Imports	0.008 (0.00)	-0.163 (-2.65) $l=6$	-0.082 (-2.58) $l=2$	-0.023 (-2.14) $l=5$	0.61 (0.31)	0.42 (0.20)	0.149 (0.83) $n=8$	0.90
Trade Openness	0.009 (0.20)	-0.153 (-2.10) $l=3$	-0.053 (-2.00) $l=2$	-0.028 (-2.64) $l=5$	0.56 (0.64)	0.39 (0.39)	0.110 (0.53) $n=8$	1.00
Public Deficit								
Exports	0.009 (0.24)	-0.173 (-2.46) $l=2$	-0.181 (-2.58) $l=8$	-0.144 (-2.50) $l=8$	0.65 (0.06)	0.36 (0.57)	0.196 (0.67) $n=8$	0.90
Imports	0.010 (0.89)	-0.135 (-1.65) $l=6$	-0.102 (-2.78) $l=2$	-0.136 (-2.79) $l=6$	0.63 (0.89)	0.37 (0.20)	0.123 (0.37) $n=8$	1.00
Trade Openness	0.010 (0.08)	-0.232 (-2.53) $l=6$	-0.052 (-3.54) $l=2$	-0.310 (-7.26) $l=6$	0.64 (0.84)	0.35 (0.03)	0.122 (0.79) $n=8$	0.90

Table 1.3.a reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(x_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \varepsilon_t$

$h_t^{\frac{1}{2}} = \omega + \beta_1 h_{t-1}^{\frac{1}{2}} + e_{t-1} + \gamma_1 h_{t-1}^{\frac{1}{2}} + \gamma_2 y_{t-n}$,

parameter estimates $x_{fd,t-l}$ is deposits at Banco do Brasil,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 1.3.a Direct Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit on Economic Growth

Table 2.1.a Indirect Effect of M1, Trade Openness,
Public Deficit on Economic Growth

	k	α	β	γ_{fd}	γ_{to}	γ_{pd}	δ	ε
					Expenditures			
Exports	0.010 (0.65)	0.48 (0.88)	0.38 (0.74)	-0.263 (-1.71)	-0.150 (-4.72)	-0.024 (-1.81)	0.121 (0.62)	1.00
				$l=6$	$l=8$	$l=8$	$n=8$	
Imports	0.010 (0.30)	0.56 (0.67)	0.38 (0.95)	-0.295 (-1.90)	-0.130 (-1.82)	-0.028 (-1.84)	0.123 (0.82)	1.00
				$l=6$	$l=8$	$l=2$	$n=8$	
Trade Openness	0.008 (0.54)	0.52 (0.93)	0.32 (0.55)	-0.305 (-1.90)	-0.126 (-2.32)	-0.045 (-5.15)	0.107 (0.57)	1.00
				$l=6$	$l=8$	$l=5$	$n=8$	
					Revenues			
Exports	0.012 (0.41)	0.36 (0.93)	0.44 (0.08)	-0.350 (-2.55)	-0.162 (-3.01)	-0.044 (-6.09)	0.108 (0.21)	1.00
				$l=6$	$l=8$	$l=8$	$n=8$	
Imports	0.008 (0.19)	0.47 (0.31)	0.43 (0.94)	-0.553 (-2.20)	-0.305 (-1.85)	-0.040 (-2.02)	0.174 (0.92)	0.80
				$l=6$	$l=8$	$l=8$	$n=8$	
Trade Openness	0.014 (0.50)	0.40 (0.67)	0.41 (0.67)	-0.507 (-2.00)	-0.162 (-2.86)	-0.015 (-0.75)	0.042 (0.97)	0.80
				$l=6$	$l=8$	$l=6$	$n=6$	
					Public Deficit			
Exports	0.006 (0.21)	0.39 (0.08)	0.50 (0.22)	-0.330 (-1.74)	-0.201 (-5.19)	-0.267 (-3.55)	0.131 (0.42)	1.00
				$l=6$	$l=8$	$l=3$	$n=8$	
Imports	0.011 (0.83)	0.52 (0.66)	0.34 (0.20)	-0.336 (-1.96)	-0.164 (-1.87)	-0.252 (-5.48)	0.181 (0.95)	0.90
				$l=6$	$l=8$	$l=1$	$n=8$	
Trade Openness	0.009 (0.61)	0.65 (0.09)	0.19 (0.36)	-0.375 (-2.42)	-0.114 (-4.28)	-0.137 (-2.42)	0.153 (0.47)	1.00
				$l=6$	$l=8$	$l=8$	$n=8$	

Table 2.1.a reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(h_t) + \beta_t$, $h_t^{\frac{1}{2}} = \eta_0 + \sum_{i=1}^{l} \alpha_i h_{t-i}^{\frac{1}{2}} + e_{t-1} + \sum \gamma_i h_{t-i}^{\frac{1}{2}} + \sum \gamma_{fd} x_{fd,t-i} + \sum \gamma_{to} x_{to,t-i} + \sum \gamma_{pd} x_{pd,t-i} + \sum \delta_{t-n}$,

where $x_{fd,t-i}$ indicates M1, $x_{to,t-i}$ is trade openness (or one of its elements),

$x_{pd,t-i}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 2.1.a Indirect Effect of M1, Trade Openness, Public Deficit on Economic Growth

Table 2.2.a Indirect Effect of Commercial Bank Deposits, Trade Openness, Public Deficit on Economic Growth

	k			α_{fd}	α_{to}	α_{pd}		
					Expenditures			
Exports	0.011	0.50	0.33	-0.009	-0.148	-0.028	0.099	1.00
	(0.33)	(0.08)	(0.52)	(-0.64)	(-4.18)	(-3.97)	(0.07)	
				l=8	l=8	l=5	n=8	
Imports	0.009	0.54	0.44	-0.008	-0.144	-0.074	0.093	1.00
	(0.66)	(0.54)	(0.23)	(-0.49)	(-2.55)	(-7.18)	(2.46)	
				l=6	l=6	l=3	n=8	
Trade Openness	0.007	0.63	0.27	-0.008	-0.142	-0.033	0.127	1.00
	(0.19)	(0.15)	(0.08)	(-0.51)	(-3.04)	(-3.55)	(0.36)	
				l=8	l=8	l=5	n=8	
					Revenues			
Exports	0.017	0.24	0.50	0.012	-0.173	-0.026	0.095	1.00
	(0.10)	(0.10)	(0.82)	(0.69)	(-2.12)	(-3.08)	(0.72)	
				l=8	l=8	l=8	l=8	
Imports	0.009	0.64	0.35	-0.004	-0.133	0.011	0.127	1.00
	(0.83)	(0.42)	(0.79)	(-0.20)	(-1.95)	(0.86)	(2.84)	
				l=8	l=6	l=8	n=8	
Trade Openness	0.010	0.58	0.26	-0.007	-0.133	-0.021	0.124	1.00
	(0.47)	(0.25)	(0.85)	(-0.48)	(-3.81)	(-2.69)	(0.75)	
				l=8	l=8	l=3	n=8	
					Public Deficit			
Exports	0.008	0.41	0.43	-0.005	-0.187	-0.186	0.124	1.00
	(0.62)	(0.75)	(0.02)	(-0.34)	(-3.56)	(-3.78)	(0.99)	
				l=8	l=8	l=3	n=8	
Imports	0.009	0.62	0.36	-0.002	-0.144	-0.058	0.143	1.00
	(0.13)	(0.96)	(0.90)	(-0.14)	(-2.06)	(-2.06)	(0.97)	
				l=8	l=6	l=3	n=8	
Trade Openness	0.006	0.35	0.28	-0.018	-0.185	-0.272	0.195	1.00
	(0.09)	(0.79)	(0.49)	(-1.12)	(-2.99)	(-5.19)	(0.42)	
				l=8	l=8	l=3	n=8	

Table 2.2a reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_{ts} h_t^{\frac{s}{2}} + \eta_0 \theta h_{t-1}^{\frac{s}{2}} + e_{t-1} + \varepsilon_t + \theta h_{t-1}^{\frac{s}{2}} + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \theta y_{t-n}$,

where $x_{fd,t-l}$ indicates commercial bank deposits, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 2.2.a Indirect Effect of Commercial Bank Deposits, Trade Openness, Public Deficit on Economic Growth

Table 2.3.a Indirect Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit on Economic Growth

	k			α_{fd}	α_{to}	α_{pd}		
					Expenditures			
Exports	0.002 (0.61)	0.40 (2.65)	0.66 (7.54)	-0.351 (-6.72)	-0.067 (-4.47)	-0.086 (-5.80)	-0.006 (-0.18)	1.00
				$l=8$	$l=5$	$l=2$	$n=5$	
Imports	0.007 (0.84)	0.60 (4.62)	0.36 (3.90)	-0.304 (-5.26)	-0.087 (-3.45)	-0.049 (-5.60)	0.153 (0.80)	1.00
				$l=8$	$l=8$	$l=2$	$n=8$	
Trade Openness	0.008 (0.21)	0.55 (3.82)	0.28 (2.14)	-0.468 (-2.99)	-0.141 (-1.62)	-0.069 (-5.79)	0.026 (0.77)	0.80
				$l=8$	$l=8$	$l=5$	$n=8$	
					Revenues			
Exports	0.010 (0.35)	0.36 (3.23)	0.44 (3.41)	-0.245 (-3.45)	-0.104 (-1.84)	-0.042 (-4.05)	0.113 (0.16)	1.00
				$l=8$	$l=8$	$l=2$	$n=8$	
Imports	0.005 (0.81)	0.52 (5.05)	0.43 (4.97)	-0.238 (-3.04)	-0.245 (-1.66)	-0.056 (-4.92)	0.076 (0.32)	1.00
				$l=8$	$l=6$	$l=6$	$n=7$	
Trade Openness	0.003 (0.16)	0.17 (0.69)	0.69 (6.47)	-0.802 (-13.90)	-0.141 (-6.62)	-0.138 (-10.49)	0.131 (0.66)	1.00
				$l=5$	$l=8$	$l=2$	$n=8$	
					Public Deficit			
Exports	0.007 (0.31)	0.51 (2.52)	0.41 (3.26)	-0.242 (-4.78)	-0.093 (-1.66)	-0.151 (-4.22)	0.112 (0.08)	1.00
				$l=8$	$l=8$	$l=3$	$n=8$	
Imports	0.007 (0.76)	0.59 (6.18)	0.37 (6.24)	-0.243 (-6.47)	-0.034 (-1.04)	-0.109 (-4.40)	0.157 (0.66)	1.00
				$l=8$	$l=8$	$l=3$	$n=8$	
Trade Openness	0.007 (0.44)	0.54 (6.55)	0.38 (6.16)	-0.404 (-8.21)	-0.066 (-7.50)	-0.044 (-2.56)	0.154 (0.48)	1.00
				$l=5$	$l=8$	$l=3$	$n=8$	

Table 2.3.a reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_t$, $h_t^{\frac{1}{2}} = \eta_0 + \theta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \varepsilon + \theta h_{t-1}^{\frac{1}{2}} + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \delta y_{t-n}$,

where $x_{fd,t-l}$ indicates deposits at Banco do Brasil, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures).

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 2.3.a Indirect Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit on Economic Growth

Table 3.1.a The Short- and Long-run Effects of Financial Development, Public Deficit and US Interest Rate on Growth

x_{it}	θ_{fd}	θ_{pd}	θ_{us}	λ_{fd}	λ_{pd}	λ_{us}	α				
Expenditures											
M1	-0.870 (-2.14) $l=3$	-0.062 (-2.25) $l=5$	0.008 (0.35) $l=6$	0.591 (7.15)	-0.009 (-0.71)	-0.0006 (-1.63)	-0.74 (-9.35)	0.57 (4.69)	0.40 (3.21)	0.051 (0.11) $n=6$	1.00
Commercial Bank Deposits	-0.110 (-4.22) $l=4$	-0.014 (-1.01) $l=2$	0.010 (0.71)	0.045 (0.80)	-0.097 (-5.93)	-0.0029 (-4.70)	-0.66 (-10.55)	0.68 (6.03)	0.40 (3.01)	0.193 (3.55) $n=5$	0.80
Deposits at Banco do Brasil	-0.046 (-1.65) $l=4$	-0.035 (-1.47) $l=5$	0.005 (0.23)	-0.128 (-1.50)	-0.103 (-4.21)	-0.0018 (-2.06)	-0.69 (-7.75)	0.68 (4.68)	0.42 (3.80)	0.056 (0.68) $n=4$	0.80
Revenues											
M1	-0.699 (-2.25) $l=3$	-0.062 (-2.74) $l=6$	0.015 (0.09)	0.474 (0.60)	-0.048 (-3.57)	-0.0011 (-2.56)	-0.82 (-1.53)	0.62 (4.86)	0.42 (3.93)	0.173 (3.07) $n=5$	0.80
Commercial Bank Deposits	-0.102 (-1.86) $l=4$	-0.052 (-2.96) $l=6$	0.020 (3.30) $l=5$	0.026 (2.51)	-0.012 (-1.82)	-0.0006 (-7.10)	-0.75 (-10.99)	0.60 (6.20)	0.39 (4.46)	0.212 (3.19) $n=5$	0.80
Deposits at Banco do Brasil	-0.081 (-2.95) $l=4$	-0.045 (-0.80) $l=5$	0.010 (3.78) $l=5$	-0.055 (-1.50)	-0.154 (-6.79)	-0.0011 (-2.73)	-0.63 (-10.21)	0.67 (4.80)	0.40 (3.90)	0.103 (1.27) $n=6$	0.80
Public Deficit											
M1	-0.874 (-2.80) $l=3$	-0.218 (-2.58) $l=6$	0.009 (0.95)	0.621 (3.52)	0.015 (1.58)	-0.0005 (-1.63)	-0.80 (-11.95)	0.67 (6.53)	0.33 (3.14)	0.041 (0.99) $n=6$	1.00
Commercial Bank Deposits	-0.244 (-2.27) $l=3$	-0.235 (-2.86) $l=6$	0.018 (2.78)	0.021 (7.03)	-0.001 (-0.06)	-0.0002 (-0.30)	-0.98 (-10.27)	0.44 (4.04)	0.37 (3.27)	0.113 (3.19) $n=5$	0.80
Deposits at Banco do Brasil	-0.073 (-2.10) $l=3$	0.020 (0.95) $l=5$	0.011 (4.01) $l=5$	-0.242 (-5.41)	0.007 (0.78)	-0.0053 (-5.46)	-0.62 (-9.24)	0.81 (6.65)	0.40 (3.78)	0.076 (1.36) $n=3$	1.00

Table 3.1.a reports parameter estimates for the following model: $\Delta y_t = \phi + \theta_{fd}\Delta x_{fd,t-l} + \theta_{pd}\Delta x_{pd,t-l} + \theta_{us}\Delta x_{us,t-l} + \alpha ECT_{t-1} + c + \lambda_{fd}x_{fd,t-1} + \lambda_{pd}x_{pd,t-1} + \lambda_{us}x_{us,t-1} + \varepsilon_t$, $h_t^{\frac{\varepsilon}{2}} = \eta_0 + \eta_1 u_{t-1}|^{\varepsilon} + \eta_2 h_{t-1}^{\frac{\varepsilon}{2}} + \eta_3 D_{t-n}$.

θ and λ capture the short- and long-run effects respectively. α indicates the speed of adjustment to the long-run relationship. $x_{fd,t-l}$ is financial development (any of the three measures), $x_{pd,t-l}$ is public deficit (or one of its elements) and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 3.1.a The Short- and Long-run Effects of Financial development, Public Deficit and US Interest Rate on Growth

Appendix B: Selected Results From Trivariate Estimations – Financial Development, Political Instability and US Interest Rate

Table 16.a Direct Effect of Financial Development, Political Instability and US Interest Rate on Economic Growth

	k	α_{fd}	α_{pi}	α_{us}	☺	😐	☹	☠
				M1				
Assassinations	0.008 (0.12)	-1.65 (-3.10) $l=6$	-0.018 (-2.14) $l=8$	0.002 (0.99) $l=4$	0.84 (4.03)	0.36 (3.14)	0.030 (0.72) $n=5$	1.00
Number of Coups	0.015 (0.74)	-0.70 (-3.76) $l=6$	-0.057 (-3.24) $l=8$	0.002 (5.80) $l=5$	0.84 (4.51)	0.24 (4.01)	0.073 (2.71) $n=8$	0.90
Number of Cabinet Changes	0.013 (0.42)	-0.80 (-3.37) $l=6$	-0.496 (-2.73) $l=8$	0.002 (6.08) $l=5$	0.81 (3.23)	0.23 (2.01)	0.016 (0.31) $n=5$	0.80
Legislative Effectiveness	0.006 (7.50)	-1.66 (-3.15) $l=6$	-0.914 (-4.36) $l=6$	0.002 (8.00) $l=5$	1.00 (4.02)	0.22 (2.92)	0.159 (1.65) $n=4$	1.00
				Commercial Bank Deposits				
Assassinations	0.002 (1.22)	-2.43 (-4.07) $l=3$	-0.026 (-1.60) $l=1$	0.002 (2.29) $l=4$	0.63 (2.62)	0.57 (3.52)	0.156 (0.44) $n=4$	0.90
Number of Coups	0.018 (3.20)	-1.58 (-1.75) $l=3$	0.079 (1.03) $l=3$	0.0001 (0.81) $l=4$	0.21 (0.95)	0.54 (4.00)	0.145 (1.76) $n=6$	1.00
Number of Cabinet Changes	0.008 (4.14)	-0.28 (-4.95) $l=3$	-0.049 (-1.08) $l=8$	0.0018 (2.26) $l=7$	0.67 (4.11)	0.28 (2.90)	0.253 (3.71) $n=6$	0.90
Legislative Effectiveness	0.002 (0.84)	-0.12 (-2.08) $l=3$	2.628 (1.58) $l=7$	0.0002 (0.24) $l=7$	0.65 (3.83)	0.60 (3.67)	-0.141 (-1.28) $n=2$	1.00
				Deposits at Banco do Brasil				
Assassinations	0.005 (2.96)	-0.24 (-4.42) $l=2$	-0.017 (-2.26) $l=8$	0.0008 (2.90) $l=4$	0.96 (3.11)	0.28 (2.47)	0.102 (0.94) $n=3$	1.00
Number of Coups	0.003 (2.90)	-0.18 (-4.80) $l=2$	-0.043 (-2.16) $l=1$	0.0009 (2.64) $l=3$	0.63 (4.12)	0.34 (3.50)	0.177 (1.36) $n=4$	1.00
Number of Cabinet Changes	0.007 (4.90)	-0.13 (-2.28) $l=2$	-0.060 (-2.43) $l=8$	0.0007 (1.60) $l=6$	0.84 (3.46)	0.26 (1.87)	0.268 (1.28) $n=4$	0.90
Legislative Effectiveness	0.005 (0.05)	-0.10 (-1.76) $l=2$	-1.044 (-3.16) $l=7$	0.0006 (0.93) $l=6$	0.91 (3.36)	0.27 (2.37)	0.023 (0.65) $n=6$	0.90

Table 16.a reports parameter estimates of direct effect only for the following model:

$y_t = c + kh_t + \alpha_{fd}x_{fd,t-l} + \alpha_{pi}x_{pi,t-l} + \alpha_{us}x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \gamma_0 + \sum \gamma_{t-1} h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \sum \gamma_{t-1} h_{t-1}^{\frac{\delta}{2}} + \sum \gamma_{t-n}$,

parameter estimates $x_{fd,t-l}$ is a financial development variable.

$x_{pi,t-l}$ is a political instability variable, $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.a Direct Effect of Financial Development, Political Instability and US Interest Rate on Economic Growth

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Table 17.a Indirect Effect of Financial Development, Political Instability and US Interest Rate on Economic Growth

	k	☺	😐	α_{fd}	α_{pi}	α_{us}	☹	
				M1				
Assassinations	0.012 (1.64)	0.52 (2.26)	0.29 (1.66)	-1.295 (-1.92) l=6	-0.004 (-1.94) l=7	0.0014 (1.49) l=6	0.129 (0.98) n=6	1.00
Number of Coups	0.010 (1.70)	0.58 (3.90)	0.41 (4.28)	-0.511 (-2.28) l=6	0.161 (1.55)	0.0007 (2.05) l=8	0.049 (1.22) n=7	1.00
Number of Cabinet Changes	0.005 (0.79)	0.29 (2.38)	0.45 (4.84)	-1.280 (-2.97) l=6	-0.394 (-3.62) l=1	0.0025 (1.66) l=8	-0.068 (-0.44) n=2	0.80
Legislative Effectiveness	0.013 (1.71)	0.60 (3.99)	0.18 (2.11)	-1.115 (-3.88) l=6	-1.238 (-1.96) l=8	0.0012 (1.64) l=6	0.212 (2.10) n=8	1.00
				Commercial Bank Deposits				
Assassinations	0.015 (2.26)	0.39 (2.94)	0.36 (2.84)	-0.134 (-4.37) l=1	-0.010 (-3.67) l=7	0.0003 (0.58) l=8	0.261 (1.35) n=4	0.90
Number of Coups	0.014 (2.12)	0.44 (2.94)	0.42 (3.18)	-0.074 (-3.84) l=1	0.144 (1.40)	0.0007 (1.64) l=8	0.035 (0.69) n=7	0.90
Number of Cabinet Changes	0.004 (0.95)	0.42 (3.14)	0.42 (5.03)	-0.032 (-2.43) l=1	-0.273 (-5.49) l=1	0.0011 (1.85) l=8	0.054 (0.94) n=4	1.00
Legislative Effectiveness	0.012 (3.76)	0.57 (4.36)	0.22 (3.98)	-0.078 (-3.25) l=1	-1.677 (-7.58) l=8	0.0012 (2.78) l=8	0.253 (4.98) n=8	1.00
				Deposits at Banco do Brasil				
Assassinations	0.014 (3.07)	0.42 (4.24)	0.32 (3.66)	-0.966 (-4.36) l=4	-0.010 (-3.96) l=7	0.0017 (3.22) l=8	0.021 (0.192) n=2	0.90
Number of Coups	0.005 (3.12)	0.52 (4.02)	0.51 (7.26)	-0.463 (-5.76) l=4	0.146 (1.38)	0.0009 (2.70) l=8	-0.024 (-0.56) n=5	0.90
Number of Cabinet Changes	0.005 (3.24)	0.56 (4.24)	0.29 (3.81)	-0.560 (-5.54) l=4	-0.178 (-3.80) l=1	0.0012 (2.60) l=8	0.026 (0.62) n=6	1.00
Legislative Effectiveness	0.010 (2.15)	0.38 (3.13)	0.14 (2.60)	-0.927 (-6.57) l=4	-1.330 (-1.79) l=6	0.0019 (3.13) l=6	0.040 (1.26) n=6	1.00

Table 17.a reports parameter estimates of indirect effects for the following model: $y_t = c + kh_t + \beta_1 h_t^{\frac{1}{2}} + \eta_0 + \theta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \varepsilon_t + \theta h_{t-1}^{\frac{1}{2}} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{us} x_{us,t-l} + \phi y_{t-n}$,

where $x_{fd,t-l}$ indicates a financial development variable, $x_{pi,t-l}$ is a political instability variable and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 17.a Indirect Effect of Financial Development, Political Instability and US Interest Rate on Economic Growth

Table 18.a The Short- and Long-run Effects of Financial Development, Political instability and US Interest Rate on Economic Growth

x_{it}	Δ_{fd}	Δ_{pi}	Δ_{us}	λ_{fd}	λ_{pi}	λ_{us}	ec_{t-1}				
					M1						
Assassinations	-1.082	-0.0036	0.0016	0.663	0.0003	-0.00008	-0.93	1.04	0.26	-0.026	1.00
	(-4.19)	(-1.65)	(0.29)	(0.89)	(0.12)	(-4.35)	(-10.88)	(2.73)	(2.02)	(-1.63)	
	$l=3$	$l=2$	$l=5$							$n=7$	
Number of Coups	-0.848	-0.0350	0.0008	0.854	0.0002	-0.00005	-0.88	1.36	0.12	0.270	1.00
	(-2.63)	(-8.84)	(0.57)	(0.18)	(0.02)	(-2.76)	(-9.96)	(3.92)	(0.76)	(0.90)	
	$l=1$	$l=5$	$l=1$							$n=5$	
Number of Cabinet Changes	-0.921	-0.0156	0.0015	0.665	-0.0094	-0.00007	-0.95	0.88	0.40	0.027	1.00
	(-3.89)	(-1.40)	(0.02)	(7.27)	(-2.50)	(-13.35)	(-9.48)	(2.11)	(2.22)	(0.35)	
	$l=3$	$l=5$	$l=5$							$n=3$	
Legislative Effectiveness	-1.080	-1.0551	0.0017	0.730	-0.7078	-0.00012	-0.69	1.14	0.06	0.210	1.00
	(-4.57)	(-2.24)	(7.47)	(0.74)	(-2.37)	(-5.65)	(-7.67)	(3.40)	(0.81)	(3.30)	
	$l=3$	$l=8$	$l=5$							$n=5$	
					Commercial Bank Deposits						
Assassinations	-0.246	-0.0038	0.0023	0.134	0.0164	-0.00050	-0.58	1.02	0.28	0.078	1.00
	(-3.18)	(-1.71)	(0.46)	(0.98)	(0.52)	(-8.50)	(-8.30)	(3.20)	(2.71)	(1.22)	
	$l=5$	$l=2$	$l=5$							$n=4$	
Number of Coups	-0.167	-0.0189	0.0020	0.140	-0.0831	-0.00058	-0.64	0.87	0.19	-0.034	1.00
	(-1.95)	(-2.73)	(7.80)	(2.48)	(-1.76)	(-4.11)	(-8.57)	(3.17)	(2.59)	(-1.29)	
	$l=4$	$l=5$	$l=5$							$n=8$	
Number of Cabinet Changes	-0.261	-0.0607	0.0007	0.122	-0.0631	-0.00061	-0.55	1.13	0.10	0.130	1.00
	(-4.75)	(-3.77)	(3.39)	(2.72)	(-1.98)	(-6.05)	(-15.96)	(3.15)	(2.51)	(3.20)	
	$l=4$	$l=4$	$l=2$							$n=5$	
Legislative Effectiveness	-0.406	-1.0460	0.0016	0.061	-1.6560	-0.00045	-0.85	0.82	0.14	0.054	1.00
	(-4.00)	(-1.96)	(3.54)	(2.53)	(-10.52)	(-3.36)	(-11.46)	(3.06)	(2.62)	(1.28)	
	$l=3$	$l=8$	$l=2$							$n=4$	
					Deposits at Banco do Brasil						
Assassinations	-0.202	-0.1282	0.0010	-0.069	0.0014	-0.00014	-0.54	1.09	0.11	0.150	1.00
	(-2.38)	(-2.13)	(3.74)	(-0.65)	(0.18)	(-0.91)	(-8.66)	(3.37)	(2.33)	(3.12)	
	$l=3$	$l=8$	$l=5$							$n=5$	
Number of Coups	-0.257	-0.0207	0.0020	-0.117	-0.0498	-0.00068	-0.57	1.14	0.18	0.029	1.00
	(-1.69)	(-3.80)	(0.21)	(-0.96)	(-1.65)	(-3.74)	(-3.39)	(3.37)	(3.55)	(0.62)	
	$l=3$	$l=5$	$l=5$							$n=3$	
Number of Cabinet Changes	-0.055	-0.0157	0.0010	-0.249	-0.0136	-0.00032	-0.54	1.10	0.28	0.476	0.80
	(-1.81)	(-2.89)	(4.34)	(-1.42)	(-0.15)	(-1.75)	(-7.96)	(3.84)	(2.25)	(1.64)	
	$l=3$	$l=4$	$l=1$							$n=4$	
Legislative Effectiveness	-0.654	-1.6196	0.0013	-0.086	0.0417	-0.00017	-0.52	0.92	0.14	0.045	1.00
	(-2.23)	(-2.72)	(3.99)	(-0.90)	(0.05)	(-1.00)	(-6.58)	(2.95)	(1.70)	(0.69)	
	$l=3$	$l=8$	$l=2$							$n=6$	

Table 18.a reports parameter estimates for the following model:

$\Delta y_t = \phi + \sum \Delta_{fd} \Delta x_{fd,t-l} + \sum \Delta_{pi} \Delta x_{pi,t-l} + \sum \Delta_{us} \Delta x_{us,t-l} + \sum ec\beta_{t-1} + c + \lambda_{fd} x_{fd,t-1} + \lambda_{pi} x_{pi,t-1} + \lambda_{us} x_{us,t-1} + \sum \theta_i \varepsilon_{t-i}$,

$h_t^2 = \gamma_0 + \sum \gamma_i u_{t-i}^2 + \sum \delta_i h_{t-i}^2 + \sum \gamma_i \varepsilon_{t-n}$.

Δ and λ capture the short- and long-run effects respectively.

ec indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is financial development (any of the three measures), $x_{pi,t-l}$ is a political instability variable (or one of its elements) and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.a The Short- and Long-run Effects of Financial Development, Political Instability and US Interest Rate on Economic Growth

Appendix C: Selected Results for Number of the Coups and Number of Cabinet Changes

Table 16.3 Direct Effect of Commercial Bank Deposits, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	γ_{fd}	γ_{pi}	γ_{to}	γ_{pd}	γ_{us}	☺	😐	☹	
					Exports					
Expenditures	0.010 (0.06)	-0.211 (-4.67) $l=7$	0.050 (0.19) $l=2$	-0.067 (-2.58) $l=3$	-0.005 (-4.89) $l=6$	0.0019 (0.29) $l=5$	0.78 (3.90)	0.34 (2.80)	0.052 (0.21) $n=6$	1.00 ✓
Revenues	0.005 (0.24)	-0.163 (-2.61) $l=2$	0.057 (0.44) $l=2$	-0.072 (-1.88) $l=3$	-0.006 (-4.70) $l=6$	0.0022 (0.25) $l=5$	0.91 (4.60)	0.32 (3.53)	-0.029 (-0.29) $n=1$	1.00 ✓
Public Deficit	0.008 (0.33)	-0.164 (-2.54) $l=7$	0.052 (0.41) $l=2$	-0.086 (-2.82) $l=3$	-0.066 (-0.84) $l=5$	0.0022 (0.46) $l=5$	0.93 (7.02)	0.25 (3.76)	0.040 (0.88) $n=6$	1.00 ✓
					Imports					
Expenditures	0.005 (3.56)	-0.082 (-2.53) $l=7$	0.050 (0.18) $l=2$	-0.137 (-1.17) $l=3$	-0.005 (-4.10) $l=6$	0.0018 (0.74) $l=5$	0.83 (3.94)	0.33 (3.14)	0.087 (0.12) $n=5$	1.00 ✓
Revenues	0.009 (3.56)	-0.116 (-1.71) $l=7$	0.046 (0.06) $l=2$	-0.113 (-1.03) $l=3$	-0.006 (-5.91) $l=6$	0.0020 (0.59) $l=5$	0.82 (3.65)	0.25 (2.30)	0.045 (0.99) $n=6$	1.00 ✓
Public Deficit	0.011 (4.16)	-0.234 (-2.52) $l=4$	0.058 (0.48) $l=2$	-0.057 (-0.35) $l=3$	-0.282 (-2.91) $l=8$	0.0016 (0.51) $l=5$	0.68 (3.70)	0.40 (3.21)	0.010 (0.22) $n=5$	1.00 ✓
					Trade Openness					
Expenditures	0.011 (3.44)	-0.155 (-4.19) $l=7$	0.049 (0.49) $l=2$	-0.020 (-0.83) $l=2$	-0.006 (-3.15) $l=4$	0.0018 (2.11) $l=5$	0.94 (4.14)	0.29 (3.37)	0.004 (0.18) $n=6$	1.00 ✓
Revenues	0.008 (7.01)	-0.101 (-5.60) $l=7$	-0.098 (-1.74) $l=2$	-0.107 (-1.79) $l=2$	-0.004 (-3.09) $l=6$	0.0022 (1.75) $l=5$	1.04 (4.93)	0.20 (1.88)	0.133 (2.40) $n=3$	1.00 ✓
Public Deficit	0.010 (7.13)	-0.058 (-1.65) $l=2$	-0.088 (-1.36) $l=2$	-0.062 (-2.48) $l=2$	-0.255 (-4.37) $l=8$	0.0017 (3.10) $l=5$	0.93 (4.44)	0.19 (2.48)	0.095 (2.40) $n=3$	1.00 ✓

Table 16.3 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \nu_0 + \alpha_1 \varepsilon_{t-1}^{\frac{s}{2}} + e_{t-1} + \beta_1 h_{t-1}^{\frac{s}{2}} + \alpha_n y_{t-n}$.

parameter estimates $x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is the number of the coups, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.3 Direct Effect of Commercial Bank Deposits, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.4 Direct Effect of Commercial Bank Deposits, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	R^2	$\bar{R}^2$	F-stat.	Durbin-Watson
Exports										
Expenditures	0.006 (0.40)	-0.120 (-2.39) $l=7$	-0.023 (-0.55) $l=8$	-0.042 (-2.24) $l=3$	-0.006 (-2.27) $l=6$	0.0023 (0.91) $l=5$	0.89 (0.94)	0.28 (0.33)	0.190 (0.12) $n=4$	1.00
Revenues	0.007 (0.27)	-0.233 (-2.12) $l=4$	0.024 (0.11) $l=8$	-0.102 (-3.07) $l=3$	-0.006 (-2.95) $l=6$	0.0022 (0.13) $l=5$	0.94 (0.54)	0.36 (0.11)	0.199 (0.33) $n=4$	1.00
Public Deficit	0.012 (0.76)	-0.313 (-1.94) $l=4$	0.055 (0.04) $l=8$	0.020 (0.27) $l=3$	-0.383 (-2.29) $l=8$	0.0017 (0.48) $l=5$	0.28 (0.51)	0.81 (1.61)	-0.067 (-1.43) $n=7$	1.00
Imports										
Expenditures	0.004 (0.16)	-0.183 (-4.64) $l=7$	-0.062 (-1.25) $l=8$	-0.009 (-0.14) $l=3$	-0.006 (-2.17) $l=4$	0.0021 (0.36) $l=5$	0.95 (0.27)	0.25 (0.57)	0.228 (0.50) $n=4$	1.00
Revenues	0.009 (0.17)	-0.033 (-0.37) $l=8$	-0.071 (-1.16) $l=8$	-0.003 (-0.50) $l=3$	-0.006 (-4.68) $l=6$	0.0016 (0.39) $l=5$	0.68 (0.84)	0.32 (0.11)	0.134 (0.85) $n=6$	1.00
Public Deficit	0.010 (0.53)	-0.108 (-1.94) $l=7$	-0.118 (-4.03) $l=8$	-0.065 (-0.74) $l=4$	-0.307 (-3.07) $l=8$	-0.0004 (-0.99) $l=8$	0.90 (0.45)	0.34 (0.14)	0.241 (0.34) $n=4$	1.00
Trade Openness										
Expenditures	0.004 (0.28)	-0.074 (-1.75) $l=7$	-0.028 (-0.82) $l=8$	-0.028 (-1.56) $l=3$	-0.006 (-1.99) $l=6$	0.0024 (1.05) $l=5$	1.01 (0.67)	0.31 (2.65)	0.204 (0.23) $n=4$	1.00
Revenues	0.008 (0.14)	-0.098 (-1.88) $l=7$	-0.021 (-0.32) $l=8$	0.017 (1.05) $l=2$	-0.005 (-2.16) $l=6$	0.0020 (0.29) $l=5$	0.82 (0.26)	0.39 (0.13)	0.024 (0.27) $n=2$	1.00
Public Deficit	0.007 (0.75)	-0.150 (-2.04) $l=7$	-0.015 (-0.25) $l=8$	-0.025 (-0.56) $l=3$	0.061 (1.50) $l=8$	0.0018 (0.51) $l=5$	0.87 (0.74)	0.34 (0.46)	0.172 (0.26) $n=3$	1.00

Table 16.4 reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \beta_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \beta_{t-1}^{\frac{\delta}{2}} + \gamma_{t-n}$.

parameter estimates $x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is number of cabinet changes, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.4 Direct Effect of Commercial Bank Deposits, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.3 Indirect Effect of Deposits at Banco do Brasil, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k			α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}		
						Exports				
Expenditures	0.005 (3.78)	0.61 (2.23)	0.34 (2.14)	−0.622 (−2.06)	−0.023 (−2.15)	−0.057 (−1.90)	−0.007 (−6.09)	0.0014 (6.34)	0.044 (1.13)	1.00
				$l=4$	$l=8$	$l=2$	$l=3$	$l=8$	$n=8$	
Revenues	0.005 (4.26)	0.26 (2.63)	0.45 (6.11)	−0.526 (−2.91)	0.012 (2.91)	−0.278 (−5.64)	−0.011 (−10.56)	0.0018 (6.34)	−0.042 (−1.41)	1.00
				$l=4$	$l=8$	$l=2$	$l=3$	$l=8$	$n=6$	
Public Deficit	0.002 (4.64)	0.26 (2.85)	0.60 (6.65)	−0.095 (−3.86)	0.077 (1.18)	−0.216 (−6.91)	−0.320 (−6.99)	0.0006 (1.96)	−0.028 (−1.05)	1.00
				$l=4$	$l=2$	$l=2$	$l=3$	$l=8$	$n=5$	
						Imports				
Expenditures	0.006 (7.31)	0.27 (2.64)	0.33 (1.98)	−0.782 (−4.00)	−0.021 (−1.51)	−0.295 (−2.27)	−0.008 (−5.98)	0.0020 (6.69)	−0.006 (−0.13)	1.00
				$l=4$	$l=8$	$l=8$	$l=3$	$l=8$	$n=5$	
Revenues	0.004 (2.84)	0.16 (1.79)	0.50 (3.31)	−0.537 (−2.48)	−0.009 (−0.54)	−0.374 (−2.23)	−0.008 (−4.13)	0.0016 (2.66)	−0.027 (−0.92)	1.00
				$l=4$	$l=8$	$l=8$	$l=3$	$l=8$	$n=6$	
Public Deficit	0.002 (3.27)	0.18 (1.64)	0.49 (3.19)	−0.677 (−2.05)	0.003 (0.11)	−0.479 (−1.96)	−0.156 (−1.53)	0.0016 (2.16)	0.004 (0.05)	0.90
				$l=4$	$l=8$	$l=8$	$l=3$	$l=8$	$n=8$	
						Trade Openness				
Expenditures	0.004 (6.13)	0.27 (3.12)	0.67 (10.63)	−0.206 (−10.60)	0.042 (0.61)	−0.137 (−4.12)	−0.004 (−3.92)	0.0010 (6.76)	−0.041 (−1.19)	1.00
				$l=4$	$l=2$	$l=8$	$l=3$	$l=8$	$n=4$	
Revenues	0.003 (3.79)	0.27 (2.64)	0.54 (6.07)	−0.470 (−3.24)	0.044 (0.85)	−0.195 (−4.19)	−0.007 (−6.34)	0.0017 (6.16)	0.008 (0.18)	1.00
				$l=4$	$l=8$	$l=8$	$l=3$	$l=8$	$n=7$	
Public Deficit	0.003 (3.46)	0.22 (2.25)	0.69 (6.93)	−0.225 (−11.60)	0.040 (0.79)	−0.232 (−10.90)	−0.024 (−3.40)	0.0012 (7.28)	−0.031 (−0.76)	1.00
				$l=4$	$l=2$	$l=8$	$l=8$	$l=8$	$n=4$	

Table 17.3 reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_1 h_t^{\frac{\delta}{2}} + \eta_0 + \sum_{t-1}^{\delta} h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \sum_{t-1}^{\delta} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_{t-n}$, where $x_{fd,t-l}$ indicates deposits at Banco do Brasil, $x_{pi,t-l}$ is the number of the coups, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 17.3 Indirect Effect of Deposits at Banco do Brasil, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.4 Indirect Effect of Deposits at Banco do Brasil, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k			α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}		
Exports										
Expenditures	0.004	0.47	0.45	-0.590	-0.120	-0.073	-0.003	0.0013	-0.007	1.00
	(0.39)	(4.60)	(7.46)	(-5.63)	(-2.31)	(-2.35)	(-3.18)	(1.75)	(-0.24)	
				$l=4$	$l=1$	$l=2$	$l=3$	$l=8$	$n=5$	
Revenues	0.003	0.32	0.48	-0.943	-0.191	-0.201	-0.009	0.0027	-0.064	0.80
	(0.92)	(3.01)	(6.94)	(-4.90)	(-3.15)	(-3.05)	(-6.95)	(2.78)	(-0.86)	
				$l=4$	$l=1$	$l=2$	$l=3$	$l=8$	$n=8$	
Public Deficit	0.006	0.46	0.34	-0.712	-0.277	0.009	-0.065	0.0015	-0.029	1.00
	(6.32)	(3.24)	(5.27)	(-4.54)	(-14.97)	(0.25)	(-2.44)	(3.41)	(-0.86)	
				$l=4$	$l=1$	$l=2$	$l=8$	$l=8$	$n=5$	
Imports										
Expenditures	0.003	0.30	0.49	-0.305	-0.198	-0.246	-0.010	0.0018	0.015	1.00
	(0.51)	(2.33)	(5.21)	(-5.67)	(-4.06)	(-4.54)	(-5.54)	(0.31)	(0.37)	
				$l=4$	$l=1$	$l=8$	$l=3$	$l=8$	$n=8$	
Revenues	0.002	0.27	0.55	-0.223	-0.216	-0.157	-0.006	0.0016	-0.024	1.00
	(0.13)	(1.74)	(6.10)	(-10.20)	(-2.69)	(-1.84)	(-9.83)	(2.75)	(-0.53)	
				$l=4$	$l=1$	$l=8$	$l=3$	$l=8$	$n=4$	
Public Deficit	0.003	0.29	0.48	-0.305	-0.216	-0.327	-0.189	0.0010	0.071	1.00
	(4.50)	(2.24)	(3.65)	(-4.91)	(-3.53)	(-3.08)	(-2.83)	(3.53)	(1.56)	
				$l=4$	$l=1$	$l=8$	$l=8$	$l=8$	$n=4$	
Trade Openness										
Expenditures	0.007	0.51	0.23	-0.262	-0.204	-0.085	-0.009	0.0002	0.056	1.00
	(7.62)	(3.64)	(2.66)	(-1.19)	(-14.32)	(-1.49)	(-3.67)	(0.28)	(1.57)	
				$l=4$	$l=1$	$l=8$	$l=5$	$l=8$	$n=8$	
Revenues	0.003	0.35	0.53	-0.360	-0.123	-0.075	-0.005	0.0016	-0.043	1.00
	(1.29)	(1.25)	(6.39)	(-4.23)	(-2.08)	(-2.81)	(-9.42)	(2.21)	(-0.72)	
				$l=4$	$l=1$	$l=8$	$l=3$	$l=8$	$n=2$	
Public Deficit	0.008	0.38	0.29	-0.245	-0.164	-0.175	-0.366	0.0014	0.080	1.00
	(6.84)	(3.03)	(3.84)	(-5.52)	(-4.38)	(-2.24)	(-6.68)	(2.98)	(2.04)	
				$l=4$	$l=1$	$l=8$	$l=8$	$l=8$	$n=8$	

Table 17.4 reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_1 h_t^{\frac{s}{2}} + \eta_0 + \sum_{t-1}^{s} h_{t-1}^{\frac{s}{2}} + e_{t-1} + \sum_{t-1}^{s} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_{t-n}$, where $x_{fd,t-l}$ indicates deposits at Banco do Brasil, $x_{pi,t-l}$ is number of cabinet changes, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively. The numbers in parentheses are t statistics.

Table 17.4 Indirect Effect of Deposits at Banco do Brasil, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 18.3 The Short- and Long-run Effects of Commercial Bank Deposits, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	Δ_{fd}	Δ_{pi}	Δ_{pd}	Δ_{to}	Δ_{us}	Δ_{fd}	Δ_{pi}	Δ_{pd}	Δ_{us}	ect	β_0	β_1	β_2	β_3
Exports														
Expenditures	−0.112 (−5.13) $l=6$	−0.034 (−4.01) $l=5$	−0.005 (−2.85) $l=4$	−0.074 (−2.74) $l=5$	0.0003 (0.76) $l=2$	0.054 (0.25)	−0.025 (−3.30)	−0.014 (−10.40)	-2.8×10^{-4} (−16.77)	−0.90 (−14.08)	1.00 (3.05)	0.28 (1.79)	0.136 (1.71) $n=7$	0.80 R^2
Revenues	−0.136 (−2.00) $l=5$	−0.032 (−3.67) $l=5$	−0.008 (−1.42) $l=4$	−0.035 (−1.67) $l=5$	0.0002 (0.94) $l=2$	0.067 (0.79)	−0.018 (−2.91)	−0.016 (−6.52)	-2.5×10^{-4} (−10.76)	−0.83 (−12.05)	1.11 (2.42)	0.31 (1.84)	0.025 (0.54) $n=6$	1.00 R^2
Imports														
Expenditures	−0.099 (−1.96) $l=6$	−0.018 (−2.71) $l=5$	−0.005 (−2.07) $l=6$	−0.029 (−0.44) $l=4$	0.0014 (7.48) $l=5$	0.054 (0.25)	−0.025 (−3.30)	−0.014 (−10.40)	-2.8×10^{-4} (−16.77)	−0.62 (−13.64)	0.89 (2.62)	0.31 (4.16)	−0.005 (−0.06) $n=8$	0.80 R^2
Revenues	−0.133 (−2.40) $l=5$	−0.036 (−4.93) $l=5$	−0.011 (−1.89) $l=4$	−0.133 (−3.07) $l=5$	0.0003 (0.40) $l=2$	0.067 (0.79)	−0.018 (−2.91)	−0.016 (−6.52)	-2.5×10^{-4} (−10.76)	−0.84 (−11.47)	1.09 (2.87)	0.26 (1.83)	0.045 (0.91) $n=6$	1.00 R^2
Trade Openness														
Expenditures	−0.115 (−2.13) $l=6$	−0.024 (−3.54) $l=5$	−0.050 (−2.19) $l=6$	−0.062 (−2.67) $l=5$	0.0014 (0.41) $l=5$	0.054 (0.25)	−0.025 (−3.30)	−0.014 (−10.40)	-2.8×10^{-4} (−16.77)	−0.64 (−20.15)	0.90 (3.52)	0.18 (1.77)	0.133 (1.27) $n=7$	0.80 R^2
Revenues	−0.135 (−2.38) $l=5$	−0.033 (−3.58) $l=5$	−0.013 (−2.60) $l=4$	−0.049 (−1.84) $l=5$	0.0007 (0.90) $l=5$	0.067 (0.79)	−0.018 (−2.91)	−0.016 (−6.52)	-2.5×10^{-4} (−10.76)	−0.85 (−13.86)	1.10 (2.59)	0.33 (2.27)	−0.006 (−0.23) $n=8$	1.00 R^2

Table 18.3 reports parameter estimates for the following model:

$\Delta y_t = \beta_0 + \sum \Delta_{fd} \Delta x_{fd,t-l} + \sum \Delta_{pi} \Delta x_{pi,t-l} + \sum \Delta_{pd} \Delta x_{pd,t-l} + \sum \Delta_{to} \Delta x_{to,t-l} + \sum \Delta_{us} \Delta x_{us,t-l} + \sum \beta_n \Delta y_{t-n} + \beta_1 ect_{t-1} + c + \beta_{fd} x_{fd,t-1} + \beta_{pi} x_{pi,t-1} + \beta_{pd} x_{pd,t-1} + \beta_{us} x_{us,t-1} + u_t$,

$h_t^{\frac{\delta}{2}} = \gamma_0 + \sum \alpha_i |\varepsilon_{t-1}|^{\delta} + \sum \beta_i h_{t-1}^{\frac{\delta}{2}} + \sum \gamma_{t-n}$.

Δ and β capture the short- and long-run effects respectively.

ect indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is commecial bank deposits, $x_{pi,t-l}$ is the number of the coups, $x_{pd,t-l}$ is public deficit (any of the three measures), $x_{to,t-l}$ is trade openness (or one of its elements) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.3 The Short- and Long-run Effects of Commercial Bank Deposits, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 18.4 The Short- and Long-run Effects of Commercial Bank Deposits, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	α_{fd}	α_{pi}	α_{pd}	α_{to}	α_{us}	β_{fd}	β_{pi}	β_{pd}	β_{us}	φ				
Exports														
Expenditures	−0.126 (−1.83) $l=5$	−0.0003 (−1.62) $l=4$	−0.006 (−3.24) $l=4$	−0.036 (−0.89) $l=5$	0.0006 (2.09) $l=5$	0.034 (2.11)	0.005 (0.71)	−0.012 (−6.55)	-4.0×10^{-4} (−15.74)	−1.06 (−17.70)	1.03 (3.33)	0.29 (1.89)	−0.083 (−1.50) $n=3$	0.90 ✓
Revenues	−0.024 (−0.18) $l=4$	−0.0003 (−1.79) $l=4$	−0.007 (−3.70) $l=1$	−0.040 (−1.12) $l=5$	0.0003 (0.97) $l=2$	0.057 (1.78)	−0.110 (−2.99)	−0.003 (−1.58)	-5.4×10^{-4} (−1.58)	−0.60 (−14.94)	1.02 (4.51)	0.16 (2.73)	0.205 (0.76) $n=7$	0.80 ✓
Imports														
Expenditures	−0.164 (−2.02) $l=6$	−0.0006 (−2.36) $l=6$	−0.009 (−5.10) $l=4$	−0.113 (−1.62) $l=5$	0.0013 (2.11) $l=5$	0.034 (2.11)	0.005 (0.71)	−0.012 (−6.55)	-4.0×10^{-4} (−15.74)	−0.62 (−14.51)	0.77 (2.12)	0.40 (3.69)	0.144 (0.40) $n=6$	0.80 ✓
Revenues	−0.291 (−5.37) $l=4$	−0.0005 (−2.15) $l=4$	−0.005 (−2.05) $l=1$	−0.130 (−7.12) $l=5$	0.0011 (3.26) $l=2$	0.057 (1.78)	−0.110 (−2.99)	−0.003 (−1.58)	-5.4×10^{-4} (−1.58)	−0.62 (−13.56)	1.01 (3.83)	0.21 (2.16)	0.146 (0.25) $n=7$	0.80 ✓
Trade Openness														
Expenditures	−0.189 (−2.83) $l=6$	−0.0006 (−2.44) $l=6$	−0.011 (−2.40) $l=4$	−0.047 (−0.79) $l=5$	0.0012 (3.21) $l=5$	0.034 (2.11)	0.005 (0.71)	−0.012 (−6.55)	-4.0×10^{-4} (−15.74)	−0.61 (−9.14)	0.58 (4.15)	0.60 (3.33)	−0.018 (−0.32) $n=7$	0.90 ✓
Revenues	−0.256 (−4.86) $l=4$	−0.0005 (−2.43) $l=4$	−0.007 (−3.09) $l=1$	−0.050 (−1.61) $l=5$	0.0011 (3.21) $l=2$	0.057 (1.78)	−0.110 (−2.99)	−0.003 (−1.58)	-5.4×10^{-4} (−1.58)	−0.62 (−25.05)	0.99 (3.79)	0.21 (2.39)	0.174 (0.93) $n=7$	0.80 ✓

Table 18.4 reports parameter estimates for the following model:

$\Delta y_t = \varphi + \alpha_{fd}\Delta x_{fd,t-l} + \alpha_{pi}\Delta x_{pi,t-l} + \alpha_{pd}\Delta x_{pd,t-l} + \alpha_{to}\Delta x_{to,t-l} + \alpha_{us}\Delta x_{us,t-l} + \varepsilon_{t-1} + c + \beta_{fd}x_{fd,t-1} + \beta_{pi}x_{pi,t-1} + \beta_{pd}x_{pd,t-1} + \beta_{us}x_{us,t-1} + u_t$, $h_t^{\frac{s}{2}} = \gamma_0 + \gamma_1|u_{t-1}|^{\frac{s}{2}} + \gamma_2 h_{t-1}^{\frac{s}{2}} + \varepsilon_{t-n}$. α (

α and β capture the short- and long-run effects respectively.

φ indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is commercial bank deposits, $x_{pi,t-l}$ is number of cabinet changes, $x_{pd,t-l}$ is public deficit (any of the three measures), $x_{to,t-l}$ is trade openness (or one of its elements) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.4 The Short- and Long-run Effects of Commercial Bank Deposits, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Appendix D: Results from Combinations of M1 (Financial development), Political Instabilities, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.5.a Direct Effect of M1, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	
Exports										
Expenditures	0.012 (0.75)	-1.97 (-2.22) $l=6$	-0.017 (-2.25) $l=8$	-0.134 (-3.01) $l=3$	-0.009 (-1.64) $l=4$	0.0013 (0.01) $l=5$	0.36 (0.51)	0.68 (0.92)	-0.069 (-0.74) $n=8$	0.90
Revenues	0.006 (0.15)	-1.70 (-3.41) $l=6$	-0.013 (-3.05) $l=8$	-0.063 (-2.86) $l=3$	-0.006 (-2.76) $l=4$	0.0009 (0.37) $l=2$	0.96 (0.96)	0.30 (0.99)	0.082 (1.65) $n=8$	1.00
Public Deficit	0.006 (0.43)	-1.23 (-2.48) $l=6$	-0.017 (-2.31) $l=8$	-0.041 (-1.80) $l=3$	-0.186 (-3.35) $l=1$	0.0022 (0.94) $l=4$	0.99 (0.43)	0.29 (0.92)	0.066 (0.70) $n=3$	1.00
Imports										
Expenditures	0.007 (0.38)	-1.71 (-2.42) $l=6$	-0.015 (-2.37) $l=8$	-0.038 (-2.10) $l=1$	-0.012 (-3.58) $l=4$	0.0152 (0.15) $l=3$	0.62 (0.33)	0.45 (0.51)	0.034 (0.83) $n=2$	0.90
Revenues	0.008 (0.16)	-1.63 (-2.71) $l=6$	-0.015 (-2.34) $l=8$	-0.042 (-1.84) $l=1$	-0.009 (-2.19) $l=4$	0.0087 (0.76) $l=2$	0.67 (0.51)	0.46 (0.39)	0.121 (0.14) $n=3$	0.9
Public Deficit	0.006 (0.81)	-1.66 (-2.53) $l=6$	-0.014 (-2.31) $l=8$	-0.070 (-2.07) $l=1$	-0.158 (-2.53) $l=1$	0.0171 (1.03) $l=4$	0.83 (0.07)	0.35 (0.88)	0.042 (0.46) $n=3$	1.00
Trade Openness										
Expenditures	0.008 (0.97)	-1.16 (-2.19) $l=6$	-0.009 (-2.12) $l=8$	-0.024 (-1.57) $l=2$	-0.005 (-2.31) $l=4$	0.0223 (1.26) $l=3$	0.70 (0.16)	0.36 (0.02)	0.176 (0.53) $n=6$	0.90
Revenues	0.005 (0.31)	-1.73 (-2.56) $l=6$	-0.014 (-2.26) $l=8$	-0.024 (-2.24) $l=2$	-0.001 (-0.42) $l=4$	0.0157 (1.15) $l=4$	0.87 (0.55)	0.44 (0.64)	0.008 (0.26) $n=7$	1.00
Public Deficit	0.006 (0.50)	-1.54 (-3.18) $l=6$	-0.014 (-2.78) $l=6$	-0.025 (-1.13) $l=3$	-0.180 (-4.05) $l=1$	0.0173 (0.92) $l=4$	1.06 (0.66)	0.22 (0.85)	0.078 (0.16) $n=8$	1.00

Table 16.5.a reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \omega + \beta h_{t-1}^{\frac{\delta}{2}} + \alpha e_{t-1} + \gamma + \beta h_{t-1}^{\frac{\delta}{2}} + \varepsilon_{t-n}$,

parameter estimates $x_{fd,t-l}$ is M1, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pi,t-l}$ is the assassinations, $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.5.a Direct Effect of M1, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.5.b Direct Effect of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	
Exports										
Expenditures	0.005 (1.22)	-1.52 (-2.51) $l=6$	-0.105 (-1.89) $l=1$	-0.105 (-1.65) $l=3$	-0.004 (-1.42) $l=4$	0.0017 (0.08) $l=5$	0.56 (3.49)	0.52 (6.21)	-0.036 (-0.52) $n=8$	0.90
Revenues	0.006 (4.71)	-1.21 (-2.57) $l=6$	-0.049 (-1.83) $l=1$	-0.113 (-1.93) $l=3$	-0.006 (-2.73) $l=4$	0.0011 (0.97) $l=2$	0.81 (3.63)	0.40 (3.73)	0.033 (0.67) $n=8$	1.00
Public Deficit	0.008 (3.19)	-1.27 (-4.65) $l=6$	-0.046 (-0.91) $l=8$	-0.048 (-1.63) $l=3$	-0.104 (-1.87) $l=1$	0.0022 (0.60) $l=4$	0.90 (3.39)	0.20 (2.01)	0.071 (0.83) $n=6$	1.00
Imports										
Expenditures	0.011 (7.85)	-0.95 (-3.96) $l=6$	-0.037 (-1.83) $l=8$	-0.061 (-2.74) $l=1$	-0.014 (-11.77) $l=4$	0.0228 (6.86) $l=3$	0.98 (6.44)	0.16 (2.30)	0.082 (3.96) $n=6$	1.00
Revenues	0.010 (3.81)	-1.36 (-2.96) $l=6$	-0.060 (-1.04) $l=8$	-0.028 (-2.36) $l=1$	-0.005 (-2.35) $l=4$	0.0007 (2.03) $l=2$	0.67 (3.35)	0.40 (3.36)	0.043 (0.68) $n=3$	0.90
Public Deficit	0.006 (3.33)	-1.29 (-3.86) $l=6$	-0.071 (-1.04) $l=8$	-0.088 (-2.75) $l=2$	-0.013 (-0.49) $l=8$	0.0021 (3.65) $l=4$	0.86 (4.75)	0.35 (3.96)	0.057 (1.15) $n=4$	1.00
Trade Openness										
Expenditures	0.004 (3.75)	-1.04 (-2.70) $l=6$	-0.062 (-0.86) $l=8$	-0.016 (-1.71) $l=2$	-0.004 (-2.63) $l=4$	0.0096 (2.73) $l=3$	0.73 (4.03)	0.54 (8.40)	-0.131 (-1.21) $n=1$	1.00
Revenues	0.008 (3.27)	-1.46 (-4.56) $l=6$	-0.060 (-1.28) $l=8$	-0.013 (-1.72) $l=2$	-0.011 (-8.25) $l=5$	0.0228 (6.97) $l=4$	1.04 (6.23)	0.20 (3.57)	0.091 (2.29) $n=8$	1.00
Public Deficit	0.006 (4.36)	-1.26 (-3.28) $l=6$	-0.077 (-1.06) $l=8$	-0.035 (-3.28) $l=2$	-0.008 (-2.05) $l=8$	0.0021 (7.12) $l=4$	0.86 (6.87)	0.38 (6.74)	0.005 (0.10) $n=8$	1.00

Table 16.5.b reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{1}{2}} = \eta + \theta h_{t-1}^{\frac{1}{2}} + e_{t-1} + \theta h_{t-1}^{\frac{1}{2}} + \gamma_{t-n}$,

parameter estimates $x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is the number of the coups

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.5.b Direct Effect of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.5.c Direct Effect of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	γ_{fd}	γ_{pi}	γ_{to}	γ_{pd}	γ_{us}	☺	😐	☹	☠
Exports										
Expenditures	0.004 (0.02)	-1.81 (-2.85) l=6	-0.141 (-2.18) l=8	-0.255 (-3.41) l=4	-0.008 (-1.94) l=4	0.0006 (0.54) l=4	0.67 (0.24)	0.41 (0.51)	0.129 (0.93) n=4	0.90
Revenues	0.005 (0.74)	-1.00 (-3.40) l=6	-0.180 (-5.74) l=8	-0.046 (-2.53) l=3	-0.006 (-3.04) l=4	0.0011 (0.24) l=2	1.14 (0.95)	0.21 (0.58)	-0.049 (-0.59) n=2	1.00
Public Deficit	0.005 (0.59)	-2.01 (-1.75) l=6	-0.126 (-1.86) l=8	-0.209 (-2.33) l=3	0.009 (0.26) l=1	0.0010 (0.54) l=4	0.50 (0.85)	0.57 (0.02)	0.004 (0.036) n=3	0.80
Imports										
Expenditures	0.006 (0.21)	-1.33 (-3.15) l=6	-0.117 (-2.71) l=8	-0.042 (-2.66) l=1	-0.008 (-3.49) l=4	0.0016 (0.20) l=3	0.90 (0.54)	0.31 (-2.04)	0.078 (2.19) n=5	0.90
Revenues	0.004 (0.99)	-1.81 (-2.59) l=6	-0.119 (-2.15) l=8	-0.028 (-1.21) l=1	-0.005 (-2.62) l=4	0.0007 (0.66) l=2	0.88 (0.82)	0.42 (-3.00)	0.033 (0.32) n=2	1.00
Public Deficit	0.013 (0.24)	-1.01 (-4.21) l=6	0.034 (0.52) l=8	-0.398 (-4.17) l=8	-0.015 (-0.25) l=7	0.0002 (0.28) l=4	0.55 (0.94)	0.36 (-4.74)	0.308 (2.47) n=4	1.00
Trade Openness										
Expenditures	0.009 (-3.17)	-1.23 (-3.68) l=6	-0.104 (-2.15) l=8	0.006 (0.29) l=2	-0.005 (-1.89) l=4	0.0015 (0.34) l=3	0.80 (0.78)	0.20 (-2.03)	0.173 (1.59) n=6	0.90
Revenues	0.010 (-4.03)	-1.68 (-2.50) l=6	-0.146 (-2.24) l=8	-0.007 (-0.24) l=2	-0.004 (-1.31) l=4	0.0009 (0.91) l=4	0.63 (0.98)	0.37 (-0.53)	-0.084 (-0.96) n=8	0.90
Public Deficit	0.008 (-2.62)	-0.25 (-0.38) l=6	-0.088 (-2.94) l=8	-0.037 (-0.93) l=2	0.044 (0.56) l=7	0.0007 (-0.23) l=6	0.71 (-0.92)	0.40 (-0.92)	0.208 (1.11) n=4	1.00

Table 16.5.c reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{s}{2}} = \omega + \alpha h_{t-1}^{\frac{s}{2}} |e_{t-1}| + \beta h_{t-1}^{\frac{s}{2}} + \delta y_{t-n}$,

parameter estimates $x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is the number of cabinet changes, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.5.c Direct Effect of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 16.5.d Direct Effect of M1, Number of Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	γ_{fd}	γ_{pi}	γ_{to}	γ_{pd}	γ_{us}	☺	😐	☹	
Exports										
Expenditures	0.006 (0.70)	-0.41 (-2.28) l=6	-1.273 (-11.96) l=6	-0.064 (-3.72) l=3	-0.002 (-1.27) l=4	0.0012 (3.49) l=5	0.79 (3.13)	0.24 (2.56)	0.155 (3.25) n=6	0.80
Revenues	0.007 (0.99)	-0.61 (-2.75) l=6	-2.00 (-5.20) l=6	-0.074 (-4.51) l=3	-0.004 (-3.35) l=4	0.0004 (1.44) l=2	1.16 (3.43)	0.10 (1.87)	0.160 (2.65) n=8	1.00
Public Deficit	0.008 (3.84)	-0.49 (-1.80) l=6	-1.801 (-2.57) l=6	-0.020 (-0.80) l=3	-0.104 (-1.68) l=1	0.0006 (1.65) l=7	0.77 (3.30)	0.26 (2.16)	0.122 (2.50) n=5	1.00
Imports										
Exports	0.004 (1.59)	-1.50 (-4.28) l=6	-0.518 (-4.83) l=6	-0.069 (-1.61) l=3	0.001 (0.41) l=4	0.0016 (1.63) l=5	1.29 (3.24)	0.22 (2.09)	0.049 (0.56) n=2	1.00
Imports	0.006 (3.90)	-0.86 (-2.54) l=6	-2.33 (-23.47) l=6	-0.026 (-0.62) l=3	-0.005 (-2.13) l=4	0.0007 (2.71) l=4	0.83 (4.45)	0.30 (3.09)	0.140 (2.17) n=4	1.00
Trade Openness	0.008 (3.65)	-0.48 (-1.80) l=6	-1.505 (-12.65) l=6	0.009 (0.15) l=3	-0.130 (-1.25) l=8	0.0013 (4.32) l=5	0.88 (3.68)	0.20 (2.58)	0.110 (2.21) n=8	1.00
Trade Openness										
Exports	0.003 (3.88)	-1.65 (-3.38) l=6	-0.64 (-3.57) l=6	-0.027 (-1.67) l=3	-0.004 (-2.64) l=4	0.0011 (2.53) l=7	1.08 (3.88)	0.29 (3.78)	0.098 (3.04) n=3	1.00
Imports	0.002 (3.93)	-0.39 (-1.80) l=6	-2.55 (-4.66) l=6	-0.024 (-2.00) l=3	-0.001 (-0.89) l=4	0.0011 (3.76) l=2	0.97 (3.69)	0.35 (3.08)	0.193 (2.87) n=5	1.00
Trade Openness	0.005 (3.37)	-0.45 (-1.68) l=6	-2.190 (-3.23) l=6	-0.022 (-1.63) l=3	-0.078 (-1.07) l=8	0.0004 (1.32) l=2	0.85 (3.31)	0.29 (2.34)	0.145 (3.36) n=5	1.00

Table 16.5.d reports parameter estimates of direct effect only for the following model:

$y_t = c + k \log(h_t) + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \eta_1 h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \eta_2 h_{t-1}^{\frac{\delta}{2}} + \eta_3 y_{t-n}$,

parameter estimates $x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is the legislative effectiveness, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit (any of the three measures) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 16.5.d Direct Effect of M1, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.5.a Indirect Effect of M1, Assassinations, Trade Openness,
Public Deficit and US Interest Rate on Economic Growth

	k									
Exports										
Expenditures	0.009	0.49	0.28	−1.151	−0.009	−0.148	−0.008	0.0027	0.090	1.00
	(0.20)	(0.77)	(0.14)	(−3.48)	(−5.25)	(−3.32)	(−4.91)	(0.88)	(0.24)	
				l=6	l=7	l=2	l=7	l=8	n=6	
Revenues	0.005	0.19	0.46	−0.970	−0.021	−0.266	−0.025	−0.0005	0.142	1.00
	(0.82)	(0.10)	(0.14)	(−3.74)	(−4.73)	(−2.24)	(−4.91)	(−0.68)	(0.63)	
				l=6	l=7	l=2	l=2	l=3	n=6	
Public Deficit	0.008	0.23	0.38	−0.701	−0.008	−0.274	−0.328	0.0007	−0.026	1.00
	(0.48)	(0.60)	(0.85)	(−1.97)	(−2.57)	(−2.70)	(−2.11)	(0.86)	(−0.45)	
				l=6	l=7	l=2	l=8	l=8	n=8	
Imports										
Expenditures	0.011	0.45	0.16	−1.401	−0.010	−0.367	−0.007	0.0030	0.040	1.00
	(0.05)	(0.99)	(0.68)	(−3.05)	(−5.63)	(−4.18)	(−4.28)	(0.13)	(0.18)	
				l=6	l=7	l=6	l=7	l=8	n=5	
Revenues	0.009	0.69	0.27	−0.934	−0.008	−0.123	−0.011	−0.0003	0.176	1.00
	(1.50)	(0.11)	(0.61)	(−2.35)	(−4.47)	(−0.82)	(−3.29)	(−0.57)	(0.80)	
				l=6	l=7	l=4	l=2	l=4	n=6	
Public Deficit	0.005	0.41	0.31	−1.071	−0.014	−0.155	−0.479	0.0007	0.054	1.00
	(0.82)	(0.71)	(0.84)	(−2.34)	(−5.06)	(−0.94)	(−4.29)	(0.25)	(0.77)	
				l=6	l=7	l=6	l=8	l=8	n=4	
Trade Openness										
Expenditures	0.008	0.46	0.24	−0.728	−0.009	−0.171	−0.010	0.0031	0.124	1.00
	(0.12)	(0.18)	(0.74)	(−1.94)	(−3.85)	(−2.65)	(−5.10)	(0.34)	(0.93)	
				l=6	l=7	l=8	l=7	l=8	n=7	
Revenues	0.005	0.23	0.47	−0.126	−0.007	−0.208	−0.012	0.0011	−0.048	1.00
	(0.06)	(0.09)	(0.69)	(−0.24)	(−1.57)	(−0.85)	(−5.86)	(0.62)	(−1.30)	
				l=5	l=7	l=8	l=2	l=8	n=3	
Public Deficit	0.008	0.31	0.44	−0.222	−0.006	−0.195	−0.349	0.0004	0.103	1.00
	(0.02)	(0.58)	(0.57)	(−1.27)	(−5.34)	(−2.37)	(−2.94)	(0.77)	(0.21)	
				l=6	l=7	l=8	l=8	l=8	n=6	

Table 17.5.a reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_1 h_t^{\frac{\delta}{2}} + \gamma_0 h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \vartheta_{t-n}$,
where $x_{fd,t-l}$ indicates M1, $x_{pi,t-l}$ is the assassinations,
$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit and $x_{us,t-l}$ is US interest rate.
l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 17.5.a Indirect Effect of M1, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.5.b Indirect Effect of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	☺	😐	γ_{fd}	γ_{pi}	γ_{to}	γ_{pd}	γ_{us}	☹	☠
Exports										
Expenditures	0.006 (0.08)	0.15 (0.89)	0.40 (0.34)	−0.841 (−2.49) *l*=6	0.006 (0.59) *l*=7	−0.349 (−6.36) *l*=2	−0.002 (−1.42) *l*=7	0.0034 (0.75) *l*=8	−0.061 (−1.58) *n*=8	1.00 =
Revenues	0.011 (0.85)	0.54 (0.83)	0.31 (0.98)	−1.383 (−6.55) *l*=6	0.005 (0.41) *l*=7	−0.103 (−2.63) *l*=2	−0.018 (−5.47) *l*=3	0.0015 (0.62) *l*=8	0.078 (1.25) *n*=6	1.00 =
Public Deficit	0.004 (0.89)	0.35 (0.36)	0.36 (0.60)	−1.359 (−3.06) *l*=6	−0.030 (−3.62) *l*=8	−0.133 (−6.84) *l*=1	−0.662 (−6.49) *l*=3	0.0010 (0.05) *l*=8	0.131 (2.13) *n*=7	1.00 =
Imports										
Expenditures	0.011 (0.34)	0.46 (0.23)	0.35 (0.84)	−0.936 (−3.09) *l*=6	0.065 (0.67) *l*=8	−0.055 (−1.22) *l*=4	−0.010 (−4.89) *l*=5	0.0015 (0.96) *l*=8	0.016 (0.60) *n*=7	1.00 =
Revenues	0.008 (0.63)	0.34 (0.32)	0.47 (0.81)	−0.984 (−3.72) *l*=6	0.134 (1.34) *l*=8	0.001 (0.01) *l*=4	−0.014 (−8.60) *l*=3	0.0014 (0.58) *l*=8	0.026 (0.73) *n*=7	1.00 =
Public Deficit	0.006 (1.45)	0.59 (0.71)	0.42 (0.11)	−0.438 (−1.86) *l*=6	0.123 (0.99) *l*=8	−0.133 (−2.90) *l*=4	−0.243 (−4.85) *l*=3	0.0006 (0.88) *l*=8	0.041 (1.28) *n*=7	1.00 =
Trade Openness										
Expenditures	0.008 (0.79)	0.33 (0.84)	0.28 (0.04)	−0.345 (−1.22) *l*=6	0.010 (0.62) *l*=7	−0.209 (−1.79) *l*=8	−0.011 (−6.56) *l*=5	0.0028 (0.46) *l*=8	0.008 (0.10) *n*=4	1.00 =
Revenues	0.006 (0.18)	0.47 (0.88)	0.41 (0.69)	−0.721 (−2.67) *l*=6	0.134 (0.57) *l*=8	−0.088 (−2.21) *l*=8	−0.005 (−4.46) *l*=3	0.0024 (0.63) *l*=8	0.025 (0.67) *n*=4	1.00 =
Public Deficit	0.011 (0.89)	0.26 (0.45)	0.58 (0.67)	0.237 (0.84) *l*=6	0.097 (0.28) *l*=8	−0.162 (−1.42) *l*=8	−0.125 (−1.65) *l*=3	0.0006 (0.98) *l*=8	−0.017 (−0.42) *n*=5	1.00 =

Table 17.5.b reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(h_t) + \beta_1 h_t^{\frac{s}{2}} + \gamma_0 + \sum_{i=1}^{s} \gamma_i h_{t-i}^{\frac{s}{2}} + e_{t-1} + \sum \gamma_{fd} x_{fd,t-l} + \sum \gamma_{pi} x_{pi,t-l} + \sum \gamma_{to} x_{to,t-l} + \sum \gamma_{pd} x_{pd,t-l} + \sum \gamma_{us} x_{us,t-l} + \sum \gamma_{t-n}$,
where $x_{fd,t-l}$ indicates M1, $x_{pi,t-l}$ is the number of the coups,
$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit and $x_{us,t-l}$ is US interest rate.
l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 17.5.b Indirect Effect of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.5.c Indirect Effect of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k			γ_{fd}	γ_{pi}	γ_{to}	γ_{pd}	γ_{us}		α
Exports										
Expenditures	0.007	0.28	0.33	-0.885	-0.180	-0.126	-0.022	0.0020	-0.008	1.00
	(0.40)	(0.23)	(0.41)	(-3.55)	(-7.03)	(-2.77)	(-9.17)	(0.40)	(-0.27)	
				l=6	l=1	l=2	l=5	l=8	n=7	
Revenues	0.005	0.35	0.39	-0.538	-0.245	-0.036	-0.012	0.0019	0.005	1.00
	(1.73)	(3.38)	(6.10)	(-1.85)	(-7.24)	(-2.83)	(-3.47)	(0.58)	(0.104)	
				l=6	l=1	l=2	l=3	l=8	n=6	
Public Deficit	0.004	0.24	0.34	-0.791	-0.208	-0.165	-0.464	0.0011	0.051	1.00
	(0.12)	(0.85)	(4.77)	(-2.17)	(-9.52)	(-3.78)	(-5.28)	(0.14)	(1.33)	
				l=6	l=1	l=2	l=3	l=8	n=7	
Imports										
Expenditures	0.007	0.44	0.30	-0.774	-0.226	-0.113	-0.012	0.0016	0.112	1.00
	(2.92)	(3.67)	(6.14)	(-2.40)	(-6.03)	(-2.97)	(-6.55)	(0.99)	(1.93)	
				l=6	l=1	l=6	l=5	l=8	n=5	
Revenues	0.003	0.35	0.45	-0.768	-0.241	-0.023	-0.010	0.0020	-0.003	1.00
	(0.30)	(3.19)	(6.82)	(-3.68)	(-3.64)	(-2.57)	(-3.56)	(0.33)	(-0.02)	
				l=6	l=1	l=2	l=3	l=8	n=2	
Public Deficit	0.004	0.46	0.43	-0.802	-0.227	-0.107	-0.196	0.0012	0.007	1.00
	(7.94)	(3.97)	(6.79)	(-1.97)	(-7.52)	(-3.03)	(-3.92)	(0.06)	(0.216)	
				l=6	l=1	l=6	l=8	l=8	n=8	
Trade Openness										
Expenditures	0.006	0.32	0.32	-0.752	-0.190	-0.111	-0.013	0.0015	0.021	1.00
	(7.73)	(3.73)	(2.39)	(-1.90)	(-3.96)	(-0.94)	(-5.09)	(0.60)	(0.28)	
				l=6	l=1	l=8	l=5	l=8	n=4	
Revenues	0.008	0.41	0.38	-0.517	-0.197	-0.023	-0.007	0.0016	0.040	1.00
	(2.43)	(3.38)	(4.83)	(-1.80)	(-4.70)	(-1.14)	(-5.74)	(0.80)	(0.56)	
				l=6	l=1	l=6	l=3	l=8	n=4	
Public Deficit	0.004	0.18	0.46	-0.784	-0.312	-0.124	-0.357	0.0017	-0.065	1.00
	(3.41)	(2.34)	(6.77)	(-4.25)	(-4.91)	(-5.41)	(-8.41)	(3.96)	(-1.38)	
				l=6	l=1	l=8	l=3	l=8	n=3	

Table 17.5.c reports parameter estimates of indirect effects for the following model: $y_t = c + k \log(h_t) + \beta_1 h_t^{\frac{s}{2}} + \gamma_0 h_{t-1}^{\frac{s}{2}} + e_{t-1} + \alpha + \gamma_{fd} x_{fd,t-l} + \gamma_{pi} x_{pi,t-l} + \gamma_{to} x_{to,t-l} + \gamma_{pd} x_{pd,t-l} + \gamma_{us} x_{us,t-l} + \delta_{t-n}$,
where $x_{fd,t-l}$ indicates M1, $x_{pi,t-l}$ is the number of cabinet changes,
$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit and $x_{us,t-l}$ is US interest rate.
l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 17.5.c Indirect Effect of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 17.5.d Indirect Effect of M1, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

	k	☺	😐	α_{fd}	α_{pi}	α_{to}	α_{pd}	α_{us}	☹	☠
Exports										
Expenditures	0.009 (0.13)	0.51 (4.22)	0.21 (2.79)	−1.362 (−6.27) *l*=6	−1.151 (−2.01) *l*=5	−0.016 (−0.97) *l*=2	−0.009 (−10.36) *l*=5	0.0025 (4.11) *l*=8	0.294 (3.94) *n*=5	1.00 =
Revenues	0.011 (0.57)	0.37 (2.56)	0.41 (3.30)	−0.702 (−3.18) *l*=6	−1.097 (−1.85) *l*=6	−0.069 (−5.03) *l*=2	−0.017 (−6.97) *l*=3	0.0015 (3.53) *l*=8	0.155 (2.22) *n*=7	1.00 =
Public Deficit	0.003 (0.94)	0.18 (0.94)	0.29 (3.20)	−0.870 (−2.44) *l*=6	−0.827 (−1.59) *l*=6	−0.188 (−7.35) *l*=2	−0.665 (−7.28) *l*=3	0.0010 (0.96) *l*=8	0.109 (1.11) *n*=7	1.00 =
Imports										
Expenditures	0.008 (0.67)	0.28 (2.96)	0.22 (2.82)	−1.027 (−3.76) *l*=6	−0.932 (−2.23) *l*=6	−0.335 (−11.24) *l*=2	−0.009 (−8.60) *l*=5	0.0032 (2.69) *l*=8	0.086 (2.69) *n*=7	1.00 =
Revenues	0.008 (0.34)	0.25 (2.49)	0.53 (6.03)	−0.788 (−1.89) *l*=6	−0.560 (−0.56) *l*=6	−0.269 (−2.81) *l*=6	−0.014 (−6.84) *l*=8	0.0015 (2.10) *l*=8	0.060 (1.73) *n*=8	1.00 =
Public Deficit	0.006 (0.26)	0.16 (2.49)	0.22 (3.01)	−0.970 (−2.21) *l*=6	−0.785 (−1.36) *l*=6	−0.283 (−4.57) *l*=6	−0.552 (−7.13) *l*=3	0.0012 (1.69) *l*=8	−0.082 (−1.53) *n*=3	1.00 =
Trade Openness										
Expenditures	0.013 (3.60)	0.19 (2.96)	0.41 (7.39)	−1.889 (−5.95) *l*=6	−1.002 (−2.96) *l*=6	−0.122 (−3.32) *l*=6	−0.018 (−7.85) *l*=5	0.0024 (3.84) *l*=8	0.125 (3.85) *n*=8	1.00 =
Revenues	0.004 (2.38)	0.27 (3.20)	0.57 (6.09)	−0.692 (−2.78) *l*=6	−0.955 (−1.61) *l*=5	−0.100 (−2.46) *l*=6	−0.010 (−6.50) *l*=3	0.0014 (2.49) *l*=8	0.098 (1.63) *n*=7	1.00 =
Public Deficit	0.007 (4.91)	0.16 (3.99)	0.22 (3.62)	−1.139 (−2.89) *l*=6	−1.375 (−1.85) *l*=6	−0.110 (−3.54) *l*=6	−0.461 (−9.70) *l*=3	0.0011 (1.72) *l*=8	0.149 (3.72) *n*=8	1.00 =

Table 17.5.d reports parameter estimates of indirect effects for the following model: $y_t = c + k\log(h_t) + \beta_1 h_t^{\frac{s}{2}} + \gamma_0 + \sum_{i=1}^{s} \gamma_i h_{t-i}^{\frac{s}{2}} + e_t$, $h_t^{\frac{s}{2}} = \omega + \sum_{i=1}^{s} \gamma_i h_{t-i}^{\frac{s}{2}} + \alpha_{fd} x_{fd,t-l} + \alpha_{pi} x_{pi,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \vartheta_{t-n}$, where $x_{fd,t-l}$ indicates M1, $x_{pi,t-l}$ is the legislative effectiveness, $x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is the public deficit and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.
The numbers in parentheses are t statistics.

Table 17.5.d Indirect Effect of M1, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Economic Growth

Table 18.5.a The Short- and Long-run Effects of M1, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	α_{fd}	α_{pi}	α_{pd}	α_{to}	α_{us}	λ_{fd}	λ_{pi}	λ_{pd}	λ_{us}	e_T	γ	γ	γ	γ
Exports														
Expenditures	−1.97 (−3.94) l=6	−0.010 (−3.83) l=8	0.0002 (0.07) l=6	−0.042 (−0.73) l=4	0.0018 (3.51) l=5	0.652 (3.95)	0.001 (0.49)	−0.0002 (−0.33)	−8.81 × 10^{-5} (−4.26)	−1.11 (−12.51)	0.78 (2.94)	0.29 (2.09)	0.045 (0.78) n=7	1.00 —
Revenues	−0.86 (−1.88) l=6	−0.009 (−1.94) l=8	0.0016 (0.50) l=2	−0.045 (−1.39) l=2	0.0006 (1.98) l=5	0.692 (3.31)	−0.002 (−0.11)	0.0006 (0.67)	−9.19 × 10^{-5} (−2.84)	−0.75 (−6.43)	0.67 (1.98)	0.44 (2.48)	0.067 (0.84) n=6	1.00 —
Public Deficit	−1.02 (−2.92) l=6	−0.009 (−1.77) l=8	−0.0089 (−0.12) l=2	−0.014 (−0.40) l=2	0.0016 (0.07) l=5	0.736 (4.54)	0.003 (0.78)	−0.0490 (−2.21)	−3.53 × 10^{-5} (−1.31)	−0.66 (−6.92)	0.74 (2.33)	0.26 (1.84)	0.022 (0.42) n=7	1.00 —
Imports														
Expenditures	−0.90 (−3.58) l=6	−0.014 (−4.52) l=8	−0.0028 (−0.88) l=6	−0.026 (−0.23) l=4	0.0008 (2.25) l=5	0.652 (3.95)	0.001 (0.49)	−0.0002 (−0.33)	−8.81 × 10^{-5} (−4.26)	−0.59 (−6.15)	0.86 (3.72)	0.18 (1.79)	0.013 (0.32) n=6	1.00 —
Revenues	−0.84 (−2.27) l=6	−0.008 (−1.62) l=8	0.0027 (0.84) l=2	−0.040 (−0.28) l=4	0.0017 (0.26) l=5	0.692 (3.31)	−0.002 (−0.11)	0.0006 (0.67)	−9.19 × 10^{-5} (−2.84)	−0.66 (−7.20)	0.79 (2.37)	0.24 (1.68)	0.023 (0.48) n=7	1.00 —
Public Deficit	−0.85 (−2.38) l=6	−0.009 (−1.96) l=8	0.0204 (0.28) l=2	−0.043 (−0.32) l=4	0.0017 (3.55) l=5	0.736 (4.54)	0.003 (0.78)	−0.0490 (−2.21)	−3.53 × 10^{-5} (−1.31)	−0.68 (−7.02)	0.77 (2.64)	0.23 (1.62)	0.019 (0.40) n=7	1.00 —
Trade Openness														
Expenditures	−0.85 (−2.29) l=6	−0.010 (−2.23) l=8	−0.0027 (−0.71) l=6	−0.010 (−0.37) l=3	0.0009 (2.79) l=5	0.652 (3.95)	0.001 (0.49)	−0.0002 (−0.33)	−8.81 × 10^{-5} (−4.26)	−0.67 (−6.17)	0.72 (2.46)	0.31 (2.32)	0.031 (0.59) n=6	1.00 —
Revenues	−0.82 (−2.23) l=6	−0.013 (−2.70) l=8	0.0003 (0.15) l=2	−0.036 (−1.01) l=3	0.0007 (1.98) l=5	0.692 (3.31)	−0.002 (−0.11)	0.0006 (0.67)	−9.19 × 10^{-5} (−2.84)	−0.71 (−6.17)	0.69 (2.56)	0.34 (2.61)	0.045 (0.75) n=6	1.00 —
Public Deficit	−0.56 (−1.63) l=6	−0.009 (−1.88) l=8	0.0016 (0.03) l=2	−0.001 (−0.03) l=4	0.0018 (7.85) l=5	0.736 (4.54)	0.003 (0.78)	−0.0490 (−2.21)	−3.53 × 10^{-5} (−1.31)	−0.68 (−7.88)	0.81 (3.09)	0.27 (2.96)	0.110 (2.05) n=5	1.00 —

Table 18.5.a reports parameter estimates for the following model:

γy_t = γ + $\gamma \alpha_{fd} \gamma x_{fd,t-l}$ + $\gamma \alpha_{pi} \gamma x_{pi,t-l}$ + $\gamma \alpha_{pd} \gamma x_{pd,t-l}$ + $\gamma \alpha_{to} \gamma x_{to,t-l}$ + $\gamma \alpha_{us} \gamma x_{us,t-l}$ + $\gamma e_T y_{t-1}$ + c + $\gamma \lambda_{fd} x_{fd,t-l}$ + $\gamma \lambda_{pi} x_{pi,t-l}$ + $\gamma \lambda_{pd} x_{pd,t-l}$ + $\gamma \lambda_{us} x_{us,t-l}$ + ε_t,

$h_t^{\frac{\gamma}{2}}$ = γ_0 + $\gamma \alpha_1 |u_{t-1}|^{\gamma}$ + $\gamma \beta_1 h_{t-1}^{\frac{\gamma}{2}}$ + $\gamma \beta_2 y_{t-n}$.

α and λ capture the short- and long-run effects respectively. e_T indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is the assassinations, $x_{pd,t-l}$ is the public deficit (any of the three measures), $x_{to,t-l}$ is trade openness (or one of its elements) and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.5.a The Short- and Long-run Effects of M1, Assassinations, Trade Openness, Public Deficit and US Interest Rate on Growth

Table 18.5.b The Short- and Long-run Effects of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	Δ_{fd}	Δ_{pi}	Δ_{pd}	Δ_{to}	Δ_{us}	β_{fd}	β_{pi}	β_{pd}	β_{us}	φ				
Exports														
Expenditures	-0.39 (-1.79) $l=6$	-0.029 (-2.86) $l=1$	0.006 (0.45) $l=6$	-0.049 (-1.66) $l=2$	0.0009 (0.10) $l=5$	0.866 (6.51)	-0.001 (-0.18)	0.0011 (0.59)	-7.81×10^{-5} (-1.74)	-0.62 (-10.07)	0.96 (4.26)	0.17 (2.37)	0.037 (0.69) $n=8$	1.00 (.)
Revenues	-0.68 (-2.25) $l=6$	-0.054 (-3.42) $l=1$	0.004 (0.86) $l=1$	-0.183 (-3.26) $l=3$	0.0011 (2.70) $l=5$	0.661 (7.02)	-0.002 (-0.39)	0.0001 (0.13)	-8.89×10^{-5} (-2.87)	-1.08 (-2.91)	0.67 (3.87)	0.43 (4.40)	-0.017 (-0.60) $n=8$	1.00 (.)
Public Deficit	-0.70 (-1.94) $l=6$	-0.050 (-2.90) $l=1$	-0.035 (-0.40) $l=8$	-0.138 (-1.89) $l=3$	0.0017 (4.29) $l=5$	0.747 (4.54)	0.0007 (0.09)	-0.0467 (-2.34)	-3.81×10^{-5} (-0.84)	-1.08 (-9.74)	0.66 (3.17)	0.38 (2.91)	-0.0003 (-0.01) $n=7$	1.00 (.)
Imports														
Expenditures	-0.51 (-1.68) $l=6$	-0.037 (-1.97) $l=1$	-0.001 (-0.56) $l=6$	0.063 (1.10) $l=1$	0.0016 (4.17) $l=5$	0.866 (6.51)	-0.001 (-0.18)	0.0011 (0.59)	-7.81×10^{-5} (-1.74)	-1.07 (-10.05)	0.68 (3.12)	0.32 (2.12)	-0.011 (-0.26) $n=8$	1.00 (.)
Revenues	-0.47 (-2.28) $l=6$	-0.045 (-2.10) $l=1$	0.003 (0.70) $l=1$	-0.100 (-1.90) $l=1$	0.0004 (1.57) $l=5$	0.661 (7.02)	-0.002 (-0.39)	0.0001 (0.13)	-8.89×10^{-5} (-2.87)	-0.99 (-11.98)	0.68 (3.82)	0.53 (6.18)	-0.001 (-0.04) $n=6$	1.00 (.)
Public Deficit	-0.65 (-2.31) $l=6$	-0.040 (-2.19) $l=1$	-0.052 (-0.56) $l=8$	-0.080 (-1.34) $l=1$	0.0013 (4.27) $l=5$	0.747 (4.54)	0.0007 (0.09)	-0.0467 (-2.34)	-3.81×10^{-5} (-0.84)	-1.07 (-10.40)	0.66 (2.96)	0.34 (2.28)	0.014 (0.43) $n=6$	1.00 (.)
Trade Openness														
Expenditures	-0.57 (-1.80) $l=6$	-0.046 (-3.12) $l=1$	0.002 (0.50) $l=6$	-0.094 (-2.10) $l=3$	0.0020 (4.32) $l=5$	0.866 (6.51)	-0.001 (-0.18)	0.0011 (0.59)	-7.81×10^{-5} (-1.74)	-1.09 (-11.06)	0.70 (3.69)	0.33 (2.85)	0.011 (0.28) $n=8$	1.00 (.)
Revenues	-0.55 (-1.90) $l=6$	-0.040 (-2.05) $l=1$	-0.001 (-0.28) $l=1$	-0.067 (-1.63) $l=3$	0.0007 (2.01) $l=5$	0.661 (7.02)	-0.002 (-0.39)	0.0001 (0.13)	-8.89×10^{-5} (-2.87)	-1.09 (-12.37)	0.74 (3.59)	0.35 (3.06)	0.079 (2.33) $n=5$	1.00 (.)
Public Deficit	-0.38 (-1.67) $l=6$	-0.034 (-3.09) $l=1$	-0.205 (-2.67) $l=8$	-0.062 (-2.00) $l=3$	0.0019 (1.83) $l=5$	0.747 (4.54)	0.0007 (0.09)	-0.0467 (-2.34)	-3.81×10^{-5} (-0.84)	-0.64 (-8.87)	0.95 (4.01)	0.15 (1.75)	0.065 (1.44) $n=5$	1.00 (.)

Table 18.5.b reports parameter estimates for the following model:

$\Delta y_t = \varphi + \Delta_{fd} x_{fd,t-l} + \Delta_{pi} x_{pi,t-l} + \Delta_{pd} x_{pd,t-l} + \Delta_{to} x_{to,t-l} + \Delta_{us} x_{us,t-l} + \varphi y_{t-1} + c + \beta_{fd} x_{fd,t-1} + \beta_{pi} x_{pi,t-1} + \beta_{pd} x_{pd,t-1} + \beta_{us} x_{us,t-1} + \varepsilon_t$,

$h_t^{\frac{\delta}{2}} = \eta_0 + \alpha_1 |\varepsilon_{t-1}|^{\frac{\delta}{2}} + \gamma_1 h_{t-1}^{\frac{\delta}{2}} + \gamma_2 h_{t-n}^{\frac{\delta}{2}}$.

Δ and β capture the short- and long-run effects respectively.

φ indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is the number of coups, $x_{pd,t-l}$ is the public deficit (any of the three measures), $x_{to,t-l}$ is trade openness (or one of its elements) and $x_{us,t-l}$ is US interest rate. l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.5.b The Short- and Long-run Effects of M1, Number of the Coups, Trade Openness, Public Deficit and US Interest Rate on Growth

Table 18.5.c The Short- and Long-run Effects of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	Δ_{fd}	Δ_{pi}	Δ_{pd}	Δ_{to}	Δ_{us}	λ_{fd}	λ_{pi}	λ_{pd}	λ_{us}	ε_T	μ	σ^2	ω	η
Exports														
Expenditures	−1.26 (−3.95) $l=6$	−0.0008 (−2.00) $l=8$	−0.002 (−0.22) $l=7$	−0.003 (−0.16) $l=1$	0.0010 (0.38) $l=5$	0.658 (0.64)	−0.0100 (−3.08)	−0.0001 (−0.17)	-7.28×10^{-5} (−2.91)	−1.08 (−13.60)	0.79 (2.31)	0.29 (1.90)	−0.054 (−1.29) $n=8$	1.00
Revenues	−1.40 (−3.57) $l=6$	−0.0001 (−0.22) $l=8$	−0.003 (−1.94) $l=8$	−0.072 (−1.80) $l=2$	0.0017 (0.13) $l=5$	0.648 (1.26)	−0.0098 (−2.57)	−0.0003 (−0.49)	-8.02×10^{-5} (−3.58)	−0.54 (−9.96)	0.90 (2.96)	0.21 (2.16)	0.086 (0.95) $n=6$	1.00
Public Deficit	−1.17 (−4.25) $l=6$	−0.0006 (−1.69) $l=8$	0.094 (1.51) $l=4$	−0.019 (−0.98) $l=1$	0.0016 (0.94) $l=5$	0.664 (1.14)	−0.0152 (−2.11)	0.0019 (0.19)	-7.17×10^{-5} (−3.02)	−1.07 (−13.85)	0.88 (2.52)	0.27 (2.03)	0.080 (2.49) $n=5$	1.00
Imports														
Expenditures	−1.15 (−3.58) $l=6$	−0.0005 (−1.74) $l=8$	0.002 (0.46) $l=7$	−0.003 (−0.12) $l=1$	0.0009 (0.90) $l=5$	0.658 (0.64)	−0.0100 (−3.08)	−0.0001 (−0.17)	-7.28×10^{-5} (−2.91)	−0.76 (−10.53)	0.84 (2.34)	0.43 (3.17)	0.089 (1.82) $n=5$	1.00
Revenues	−1.50 (−5.07) $l=6$	−0.0010 (−2.67) $l=8$	0.001 (0.62) $l=5$	0.120 (0.86) $l=4$	0.0016 (3.50) $l=5$	0.648 (1.26)	−0.0098 (−2.57)	−0.0003 (−0.49)	-8.02×10^{-5} (−3.58)	−0.51 (−8.32)	0.85 (2.56)	0.34 (3.03)	0.052 (1.05) $n=7$	1.00
Public Deficit	−1.19 (−4.05) $l=6$	−0.0006 (−1.63) $l=8$	0.107 (1.42) $l=4$	−0.015 (−0.48) $l=1$	0.0016 (0.43) $l=5$	0.664 (1.14)	−0.0152 (−2.11)	0.0019 (0.19)	-7.17×10^{-5} (−3.02)	−1.07 (−11.68)	0.82 (2.25)	0.29 (1.92)	0.075 (2.46) $n=5$	1.00
Trade Openness														
Expenditures	−1.07 (−2.86) $l=6$	−0.0008 (−2.43) $l=8$	0.0026 (0.60) $l=7$	−0.181 (−2.42) $l=3$	0.0020 (0.33) $l=5$	0.658 (0.64)	−0.0100 (−3.08)	−0.0001 (−0.17)	-7.28×10^{-5} (−2.91)	−1.05 (−11.16)	0.81 (2.51)	0.35 (2.29)	0.021 (0.66) $n=7$	1.00
Revenues	−1.28 (−3.33) $l=6$	−0.0003 (−0.74) $l=8$	−0.004 (−2.84) $l=5$	−0.039 (−1.36) $l=3$	0.0012 (3.10) $l=5$	0.648 (1.26)	−0.0098 (−2.57)	−0.0003 (−0.49)	-8.02×10^{-5} (−3.58)	−0.57 (−11.75)	0.98 (2.45)	0.27 (1.92)	0.063 (1.12) $n=7$	1.00
Public Deficit	−1.18 (−3.94) $l=6$	−0.0006 (−1.72) $l=8$	0.075 (1.33) $l=4$	−0.015 (−0.60) $l=3$	0.0015 (3.15) $l=5$	0.664 (1.14)	−0.0152 (−2.11)	0.0019 (0.19)	-7.17×10^{-5} (−3.02)	−1.07 (−11.84)	0.84 (2.33)	0.29 (1.96)	0.079 (2.49) $n=5$	1.00

Table 18.5.c reports parameter estimates for the following model:

$\Delta y_t = \mu + \sum \Delta_{fd,t-l} \Delta x_{fd,t-l} + \sum \Delta_{pi} \Delta x_{pi,t-l} + \sum \Delta_{pd} \Delta x_{pd,t-l} + \sum \Delta_{to} \Delta x_{to,t-l} + \sum \Delta_{us} \Delta x_{us,t-l} + \varepsilon_{T,t-1} + c + \lambda_{fd} x_{fd,t-1} + \lambda_{pi} x_{pi,t-1} + \lambda_{pd} x_{pd,t-1} + \lambda_{us} x_{us,t-1} + \omega + \eta_t$,

$h_t^{\frac{1}{2}} = \eta_0 + \sum \alpha_i u_{t-1}^2 + \sum \beta_i h_{t-1}^{\frac{1}{2}} + \varepsilon_{t-n}$.

Δ and λ capture the short- and long-run effects respectively.

ε_T Indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-1}$ is M1, $x_{pi,t-1}$ is the number of cabinet changes, $x_{pd,t-1}$ is the public deficit (any of the three measures),

$x_{to,t-1}$ is trade openness (or one of its elements) and $x_{us,t-1}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.5.c The Short- and Long-run Effects of M1, Number of Cabinet Changes, Trade Openness, Public Deficit and US Interest Rate on Growth

Table 18.5.d The Short- and Long-run Effects of M1, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Growth

x_{it}	α_{fd}	α_{pi}	α_{pd}	α_{to}	α_{us}	β_{fd}	β_{pi}	β_{pd}	β_{us}	φ	ω	ε	η	μ
Exports														
Expenditures	−1.85 (−2.69) l=6	−1.73 (−2.57) l=1	−0.0006 (−0.12) l=6	0.037 (0.21) l=8	0.0016 (3.00) l=5	0.087 (1.03)	1.053 (1.43)	−0.0004 (−0.55)	−1.49 × 10^{-4} (−2.10)	−0.72 (−6.23)	0.47 (2.59)	0.72 (4.63)	−0.102 (−1.30) n=8	1.00 −
Revenues	−1.27 (−2.00) l=6	−2.46 (−2.61) l=5	−0.0011 (−0.46) l=4	−0.025 (−0.35) l=6	0.0006 (1.64) l=5	0.002 (0.06)	0.335 (0.91)	−0.0009 (−0.62)	−3.48 × 10^{-5} (−1.56)	−0.56 (−5.46)	0.58 (3.43)	0.67 (3.92)	−0.076 (−0.93) n=8	1.00 −
Public Deficit	−0.37 (−1.84) l=6	−1.38 (−3.57) l=5	−0.0503 (−2.70) l=1	−0.044 (−2.37) l=4	0.0001 (0.63) l=5	0.747 (9.52)	−0.761 (−6.96)	−0.0264 (−1.20)	−9.26 × 10^{-5} (−0.99)	−0.82 (−10.18)	1.09 (4.06)	0.39 (0.65)	−0.008 (−0.21) n=8	1.00 −
Imports														
Expenditures	−1.64 (−2.12) l=6	−1.35 (−1.82) l=1	0.0002 (0.03) l=6	0.043 (0.14) l=6	0.0016 (2.89) l=5	0.087 (1.03)	1.053 (1.43)	−0.0004 (−0.55)	−1.49 × 10^{-4} (−2.10)	−0.72 (−4.77)	0.24 (0.90)	0.79 (4.78)	−0.090 (−1.25) n=8	1.00 −
Revenues	−1.37 (−2.19) l=6	−2.90 (−2.44) l=5	−0.0029 (−0.84) l=4	0.033 (0.49) l=6	0.0007 (2.08) l=5	0.002 (0.06)	0.335 (0.91)	−0.0009 (−0.62)	−3.48 × 10^{-5} (−1.56)	−0.76 (−5.83)	0.47 (2.27)	0.70 (4.51)	−0.077 (−0.99) n=8	1.00 −
Public Deficit	−0.78 (−1.88) l=6	−1.43 (−1.87) l=5	−0.0535 (−0.74) l=3	−0.044 (−0.32) l=6	0.0008 (0.76) l=5	0.747 (9.52)	−0.761 (−6.96)	−0.0264 (−1.20)	−9.26 × 10^{-5} (−0.99)	−0.65 (−7.47)	0.71 (3.48)	0.49 (0.70)	−0.037 (−0.55) n=8	1.00 −
Trade Openness														
Expenditures	−1.52 (−2.33) l=6	−2.28 (−1.69) l=5	−0.0008 (−0.17) l=6	−0.030 (−1.04) l=2	0.0010 (2.46) l=5	0.087 (1.03)	1.053 (1.43)	−0.0004 (−0.55)	−1.49 × 10^{-4} (−2.10)	−0.64 (−5.69)	0.43 (2.37)	0.71 (0.24)	−0.077 (−0.93) n=8	1.00 −
Revenues	−1.61 (−2.86) l=6	−2.77 (−2.43) l=5	−0.0034 (−0.88) l=4	−0.122 (−2.91) l=3	0.0010 (2.69) l=5	0.002 (0.06)	0.335 (0.91)	−0.0009 (−0.62)	−3.48 × 10^{-5} (−1.56)	−0.78 (−6.62)	0.43 (2.58)	0.73 (3.87)	−0.068 (−1.03) n=8	1.00 −
Public Deficit	−0.60 (−1.92) l=6	−1.47 (−1.84) l=5	−0.0220 (−0.32) l=1	0.006 (0.22) l=4	0.0007 (0.68) l=5	0.747 (9.52)	−0.761 (−6.96)	−0.0264 (−1.20)	−9.26 × 10^{-5} (−0.99)	−0.65 (−7.99)	0.77 (3.45)	0.53 (7.40)	−0.030 (−0.54) n=8	1.00 −

Table 18.5.d reports parameter estimates for the following model:

$\Delta y_t = \varphi + \sum \alpha_{fd} \Delta x_{fd,t-l} + \sum \alpha_{pi} \Delta x_{pi,t-l} + \sum \alpha_{pd} \Delta x_{pd,t-l} + \sum \alpha_{to} \Delta x_{to,t-l} + \sum \alpha_{us} \Delta x_{us,t-l} + \sum \omega_{t-1} + c + \beta_{fd} x_{fd,t-1} + \beta_{pi} x_{pi,t-1} + \beta_{pd} x_{pd,t-1} + \beta_{us} x_{us,t-1} + \varepsilon_t$,

$h_t^{\frac{\eta}{2}} = \mu + \sum \varepsilon_{t-1} |^{\eta} + \sum h_{t-1}^{\frac{\eta}{2}} + \sum \omega_{t-n}$.

α and β capture the short- and long-run effects respectively.

ω indicates the speed of adjustment to the long-run relationship.

$x_{fd,t-l}$ is M1, $x_{pi,t-l}$ is legislative effectiveness, $x_{pd,t-l}$ is the public deficit (any of the three measures),

$x_{to,t-l}$ is trade openness (or one of its elements) and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 18.5.d The Short- and Long-run Effects of M1, Legislative Effectiveness, Trade Openness, Public Deficit and US Interest Rate on Growth

Appendix E: Robustness Tests of Direct Effects on Growth with Standard Deviation in Mean Effect

Table 23 Direct Effect on Economic Growth (with Standard Deviation in Mean)

x_{it}	k					
Panel A: Financial Development						
M1	0.52 (4.78)	-0.559 (-2.02) $l=6$	0.57 (3.00)	0.48 (3.11)	0.022 (0.57) $n=6$	1.00
Commercial Bank Deposits	0.63 (4.03)	0.051 (1.15) $l=2$	0.48 (2.51)	0.41 (2.17)	0.111 (3.68) $n=8$	1.00
Deposits at Banco do Brasil	0.33 (4.58)	-0.120 (-1.66) $l=3$	0.67 (4.00)	0.51 (4.61)	0.001 (0.02) $n=3$	1.00
Panel B: Trade Openness						
Exports	0.24 (3.55)	-0.034 (-1.94) $l=3$	0.79 (4.32)	0.50 (4.98)	-0.014 (-0.19) $n=3$	1.00
Imports	0.48 (6.58)	-0.061 (-2.03) $l=2$	0.59 (3.10)	0.47 (3.09)	0.083 (2.17) $n=8$	1.00
Trade Openness	0.35 (6.65)	-0.045 (-1.83) $l=5$	0.65 (4.00)	0.49 (4.15)	0.048 (0.65) $n=4$	0.80
Panel C: Public Deficits						
Expenditures	0.64 (3.43)	-0.029 (-1.76) $l=1$	0.53 (3.01)	0.40 (2.52)	0.151 (3.76) $n=8$	0.90
Revenues	0.48 (4.20)	-0.030 (-1.66) $l=6$	0.59 (2.70)	0.47 (2.56)	0.030 (0.77) $n=5$	1.00
Public Deficit	0.43 (4.93)	-0.143 (-2.10) $l=6$	0.62 (2.89)	0.46 (2.72)	0.052 (1.28) $n=5$	1.00
Panel D: International Financial Development						
US Interest Rate	0.53 (4.71)	0.013 (2.84) $l=4$	0.61 (3.58)	0.39 (2.94)	0.114 (4.00) $n=8$	1.00

Table 23 reports parameter estimates for the following model:

$y_t = c + k\sqrt{h_t} + \sum x_{i,t-l} + \beta_1 h_t^{\frac{z}{2}} + \eta_0 \varepsilon_{t-1}^{\frac{z}{2}} + e_{t-1} + \sum \varepsilon_{t-1}^{\frac{z}{2}} + \sum y_{t-n}$.

$x_{i,t-l}$ can be either financial development or trade openness or public deficit or US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 23 Direct Effect of Economic Growth with Standard Deviation in Mean (Univariate)

Table 23.1 Direct Effect of M1, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	☠
Exports									
Expenditures	0.400 (6.67)	-0.693 (-3.41) $l=6$	-0.031 (-1.68) $l=3$	-0.078 (-4.65) $l=5$	0.017 (4.57) $l=4$	0.65 (3.65)	0.36 (2.48)	0.201 (3.91) $n=8$	0.80
Revenues	0.400 (6.71)	-0.331 (-1.82) $l=6$	-0.029 (-3.16) $l=2$	-0.039 (-2.40) $l=6$	0.014 (4.63) $l=4$	0.64 (4.18)	0.45 (3.75)	0.009 (0.17) $n=5$	0.80
Public Deficit	0.641 (3.53)	-0.645 (-2.38) $l=6$	-0.040 (-1.57) $l=3$	-0.108 (-1.88) $l=6$	0.015 (1.81) $l=5$	0.52 (3.17)	0.34 (2.08)	0.137 (2.78) $n=8$	0.80
Imports									
Expenditures	0.445 (10.28)	-0.426 (-2.11) $l=6$	-0.079 (-2.72) $l=2$	-0.062 (-3.42) $l=5$	0.015 (3.46) $l=4$	0.58 (4.00)	0.42 (3.42)	0.180 (5.03) $n=8$	0.80
Revenues	0.410 (6.31)	-0.319 (-1.64) $l=6$	-0.055 (-2.32) $l=2$	-0.026 (-1.87) $l=6$	0.012 (3.66) $l=4$	0.66 (4.78)	0.46 (4.44)	-0.028 (-0.58) $n=4$	0.90
Public Deficit	0.369 (5.46)	-0.382 (-2.07) $l=6$	-0.080 (-2.41) $l=2$	-0.053 (-2.02) $l=6$	0.010 (2.21) $l=4$	0.58 (3.53)	0.53 (4.62)	0.029 (0.65) $n=6$	0.90
Trad Openness									
Expenditures	0.291 (4.96)	-0.556 (-2.96) $l=6$	-0.033 (-2.61) $l=2$	-0.050 (-2.85) $l=5$	0.010 (2.09) $l=4$	0.66 (4.26)	0.51 (4.98)	0.010 (0.24) $n=5$	0.90
Revenues	0.386 (6.61)	-0.323 (-1.83) $l=6$	-0.021 (-3.21) $l=2$	-0.034 (-2.05) $l=6$	0.013 (4.34) $l=4$	0.65 (4.40)	0.46 (4.04)	0.006 (0.12) $n=5$	0.80
Public Deficit	0.359 (5.51)	-0.373 (-2.10) $l=6$	-0.033 (-2.18) $l=2$	-0.027 (-1.71) $l=6$	0.010 (2.32) $l=4$	0.59 (4.04)	0.51 (4.69)	0.017 (0.38) $n=5$	0.80

Table 23.1 reports parameter estimates of direct effect only for the following model:

$y_t = c + k\sqrt{h_t} + \alpha_{fd} x_{fd,t-l} + \alpha_{to} x_{to,t-l} + \alpha_{pd} x_{pd,t-l} + \alpha_{us} x_{us,t-l} + \varepsilon_t$

$h_t^{\frac{1}{2}} = \gamma_0 + \gamma_1 h_{t-1}^{\frac{1}{2}} + e_{t-1} + \gamma_2 h_{t-1}^{\frac{1}{2}} + \gamma_3 y_{t-n}$,

$x_{fd,t-l}$ is M1,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 23.1 Direct Effect of M1, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

Table 23.2 Direct Effect of Commercial Bank Deposit, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	☺	😐	☹	🏃
Exports									
Expenditures	0.575 (3.51)	-0.191 (-1.79) $l=2$	-0.311 (-2.38) $l=8$	-0.058 (-2.77) $l=5$	0.018 (3.25) $l=4$	0.51 (4.67)	0.36 (2.78)	0.092 (1.69) $n=5$	0.80 ✓
Revenues	0.180 (1.60)	-0.387 (-1.86) $l=2$	-0.114 (-1.63) $l=8$	-0.059 (-4.19) $l=6$	0.020 (4.91) $l=4$	0.50 (3.72)	0.37 (2.09)	-0.023 (-0.28) $n=3$	0.80 ✓
Imports									
Expenditures	0.194 (4.23)	-0.036 (-2.26) $l=2$	-0.028 (-1.61) $l=2$	-0.020 (-2.79) $l=1$	0.005 (2.89) $l=1$	0.76 (3.01)	0.54 (6.87)	-0.082 (-1.01) $n=2$	1.00 ✓
Revenues	0.341 (3.09)	-0.190 (-2.30) $l=3$	-0.085 (-1.62) $l=2$	-0.093 (-2.85) $l=5$	0.016 (4.02) $l=4$	0.45 (3.45)	0.52 (4.49)	-0.066 (-0.86) $n=3$	0.80 ✓
Trade Openness									
Expenditures	0.333 (4.29)	-0.090 (-1.63) $l=3$	-0.028 (-3.22) $l=2$	-0.043 (-2.29) $l=5$	0.009 (3.05) $l=4$	0.62 (7.12)	0.51 (7.39)	-0.030 (-0.35) $n=5$	0.80 ✓
Revenues	0.629 (2.29)	-0.530 (-4.43) $l=3$	-0.207 (-3.42) $l=8$	-0.077 (-1.78) $l=6$	0.009 (0.74) $l=4$	0.18 (2.40)	0.73 (7.67)	0.061 (1.78) $n=8$	1.00 ✓
Public Deficit	0.486 (4.68)	-0.161 (-3.04) $l=3$	-0.049 (-1.98) $l=2$	-0.097 (-1.67) $l=6$	0.017 (4.35) $l=4$	0.43 (3.55)	0.47 (3.30)	0.070 (1.50) $n=7$	0.80 ✓

Table 23.2 reports parameter estimates of direct effect only for the following model:

$y_t = c + k\sqrt{h_t} + \alpha_{fd}x_{fd,t-l} + \alpha_{to}x_{to,t-l} + \alpha_{pd}x_{pd,t-l} + \alpha_{us}x_{us,t-l} + \varepsilon_t$,

$h_t^{\frac{2}{2}} = \gamma_0 + \gamma_1 h_{t-1}^{\frac{2}{2}} + e_{t-1}^2 + \gamma_2 h_{t-1}^{\frac{2}{2}} + \gamma_3 y_{t-n}$,

$x_{fd,t-l}$ is commercial bank deposits,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 23.2 Direct Effect of Commercial Bank Deposit, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

Table 23.3 Direct Effect of Deposits at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

	k	α_{fd}	α_{to}	α_{pd}	α_{us}	β_1	β_2	β_3	ε
					Imports				
Expenditures	0.435 (0.98)	-0.177 (-2.34) $l=3$	-0.080 (-1.98) $l=2$	-0.061 (-3.31) $l=5$	0.015 (0.52) $l=4$	0.54 (0.61)	0.44 (0.80)	0.161 (0.10) $n=8$	0.80
Revenues	0.391 (0.82)	-0.144 (-1.92) $l=4$	-0.064 (-1.56) $l=3$	-0.068 (-4.26) $l=6$	0.018 (0.62) $l=5$	0.59 (0.21)	0.40 (0.58)	0.137 (0.94) $n=8$	0.80
Public Deficit	0.500 (0.59)	-0.134 (-2.74) $l=3$	-0.017 (-0.74) $l=2$	-0.115 (-2.15) $l=6$	0.011 (0.07) $l=7$	0.54 (0.03)	0.45 (0.11)	0.143 (0.52) $n=7$	0.80
					Exports				
Expenditures	0.437 (0.05)	-0.063 (-2.39) $l=3$	-0.082 (-2.33) $l=2$	-0.056 (-2.81) $l=5$	0.012 (0.11) $l=4$	0.63 (0.05)	0.44 (0.33)	0.122 (0.27) $n=8$	1.00
Revenues	0.369 (0.32)	-0.132 (-2.06) $l=6$	-0.081 (-2.34) $l=2$	-0.068 (-4.10) $l=5$	0.015 (0.86) $l=4$	0.59 (0.64)	0.43 (0.47)	0.181 (0.01) $n=8$	0.80
Public Deficit	0.333 (0.32)	-0.360 (-2.17) $l=6$	-0.151 (-1.70) $l=5$	-0.305 (-4.24) $l=6$	0.018 (1.17) $l=4$	0.52 (0.63)	0.37 (0.68)	0.012 (0.13) $n=4$	0.80
					Trade Openness				
Expenditures	0.506 (0.26)	-0.128 (-1.98) $l=3$	-0.048 (-2.51) $l=2$	-0.046 (-2.68) $l=5$	0.017 (0.32) $l=4$	0.60 (0.93)	0.33 (0.66)	0.165 (0.02) $n=8$	0.80
Revenues	0.366 (0.96)	-0.095 (-1.78) $l=3$	-0.036 (-2.05) $l=2$	-0.072 (-3.75) $l=5$	0.013 (0.05) $l=4$	0.61 (0.65)	0.47 (0.85)	0.084 (0.74) $n=7$	0.80
Public Deficit	0.437 (0.93)	-0.148 (-1.88) $l=6$	-0.031 (-2.05) $l=2$	-0.161 (-2.73) $l=6$	0.014 (0.05) $l=4$	0.56 (0.09)	0.41 (0.66)	0.170 (0.76) $n=8$	0.80

Table 23.3 reports parameter estimates of direct effect only for the following model:

$y_t = c + k\sqrt{h_t} + \alpha_{fd}x_{fd,t-l} + \alpha_{to}x_{to,t-l} + \alpha_{pd}x_{pd,t-l} + \alpha_{us}x_{us,t-l} + \beta_3,$

$h_t^{\frac{s}{2}} = \gamma_0 + \beta_1 h_{t-1}^{\frac{s}{2}} + e_{t-1} + \beta_2 + \beta_1 h_{t-1}^{\frac{s}{2}} + \varepsilon_{t-n},$

$x_{fd,t-l}$ is deposits at Banco do Brasil,

$x_{to,t-l}$ is trade openness (or one of its elements), $x_{pd,t-l}$ is public deficit (any of the three measures), and $x_{us,t-l}$ is US interest rate.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 23.3 Direct Effect of Deposit at Banco do Brasil, Trade Openness, Public Deficit and US Interest Rate on Economic Growth (with Standard Deviation in Mean)

Table 24.a Direct Effect of Informal Political Instability on GDP Growth (with Standard Deviation in Mean)

Informal Political Instability

x_{it}	k	α	β	γ	δ	θ
Anti-government Demonstrations	0.645 (2.84)	-0.071 (-5.34) $l=4$	0.28 (2.24)	0.29 (1.88)	0.225 (1.53) $n=6$	0.80 -
Assassinations	0.452 (6.98)	-0.121 (-1.64) $l=8$	0.59 (3.31)	0.44 (2.84)	0.258 (0.96) $n=4$	0.80 -
General Strikes	0.580 (3.29)	-0.286 (-2.52) $l=2$	0.73 (3.05)	0.41 (2.56)	0.107 (0.64) $n=5$	1.00 -
Guerrilla Warfare	0.843 (3.44)	-0.008 (-0.33) $l=8$	0.40 (2.57)	0.43 (2.66)	0.165 (0.78) $n=3$	1.00 -
Number of Coups d'etat	0.448 (4.38)	-0.146 (-1.63) $l=7$	0.74 (4.11)	0.49 (4.74)	0.019 (0.46) $n=5$	1.00 -
Revolutions	0.464 (4.05)	-0.253 (-2.44) $l=1$	0.53 (2.56)	0.49 (2.92)	0.317 (1.99) $n=6$	0.80 -
Riots	0.558 (1.99)	0.086 (1.39) $l=7$	0.54 (3.08)	0.42 (2.72)	0.084 (1.28) $n=5$	0.80 -

Table 24.a reports parameter estimates for the following model:

$y_t = c + k\sqrt{h_t} + \alpha x_{i,t-l} + \beta_t h_t^{\frac{\delta}{2}} + \gamma \theta h_{t-1}^{\frac{\delta}{2}} + e_{t-1} + \theta h_{t-1}^{\frac{\delta}{2}} + \theta y_{t-n}$.

$x_{i,t-l}$ is an informal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 24.a Direct Effect of Informal Political Instability on GDP Growth (with Standard Deviation in Mean)

Table 24.b Direct Effect of Formal Political Instability on GDP Growth (with Standard Deviation in Mean)

Formal Political Instability

x_{it}	k	σ				
Changes in Effective Executive	0.531 (0.75)	-0.074 (-1.07) $l=3$	0.62 (3.18)	0.41 (2.56)	0.414 (0.144) $n=4$	0.80
Government Crisis	0.735 (3.60)	0.059 (0.92) $l=1$	0.35 (2.45)	0.31 (1.79)	0.207 (1.36) $n=6$	0.90
Legislative Effectiveness	0.387 (2.69)	-2.356 (-2.77) $l=6$	0.74 (3.34)	0.40 (2.63)	0.001 (0.01) $n=3$	0.90
Legislative Selection	0.444 (0.89)	-0.771 (-1.93) $l=1$	0.70 (3.89)	0.51 (3.19)	0.223 (1.26) $n=4$	1.00
Major Constitutional Changes	0.363 (0.10)	-0.090 (-2.38) $l=5$	0.80 (3.26)	0.37 (2.63)	0.224 (1.52) $n=5$	0.90
Number of Cabinet Changes	0.451 (3.63)	-0.106 (-3.76) $l=8$	0.55 (3.10)	0.42 (2.36)	0.377 (1.41) $n=4$	0.80
Purges	0.539 (3.62)	-0.002 (-0.127) $l=6$	0.46 (2.38)	0.48 (2.72)	0.263 (1.16) $n=4$	1.00
Size of the Cabinet	0.440 (2.61)	-0.009 (-1.36) $l=5$	0.49 (3.25)	0.43 (3.23)	0.182 (0.54) $n=4$	0.90

Table 24.b reports parameter estimates for the following model:

$y_t = c + k\sqrt{h_t} + \sum \alpha_{i,t-l} + \beta_1 h_t^{\frac{1}{2}} + \gamma_0 + \sum \theta_{t-1}^{\frac{1}{2}} + e_{t-1} + \sum \theta h_{t-1}^{\frac{1}{2}} + \sum \delta y_{t-n}$.

$x_{i,t-l}$ is a formal political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 24.b Direct Effect of Formal Political Instability on GDP Growth (with Standard Deviation in Mean)

Table 25 Direct Effect of Financial Development and Political Instability on Economic Growth (with Standard Deviation in Mean)

	k	π_{fd}	π_{pi}	☺	😐	☹	💀
			M1				
Assassination	0.343 (4.67)	-1.67 (-2.23) $l=6$	-0.010 (-2.32) $l=8$	0.83 (3.95)	0.42 (3.94)	0.076 (1.18) $n=5$	1.00 -
Number of the Coups	0.505 (7.82)	-0.70 (-2.21) $l=6$	-0.130 (-2.46) $l=7$	0.82 (4.88)	0.39 (3.90)	0.104 (1.68) $n=2$	1.00 -
Number of Cabinet Changes	0.463 (6.76)	-1.62 (-7.02) $l=6$	-0.079 (-2.92) $l=8$	0.82 (3.97)	0.25 (1.87)	0.319 (2.95) $n=4$	0.90 -
Legislative Effectiveness	0.326 (3.49)	-0.81 (-2.42) $l=6$	-2.836 (-20.23) $l=6$	0.61 (2.49)	0.44 (2.04)	-0.062 (-0.61) $n=2$	0.80 -
			Commercial Bank Deposits				
Assassination	0.413 (2.40)	-0.45 (-2.56) $l=4$	0.001 (0.14) $l=8$	0.57 (3.18)	0.43 (2.77)	0.113 (0.52) $n=2$	0.90 -
Number of the Coups	0.335 (3.25)	-0.22 (-1.89) $l=4$	0.079 (1.33) $l=7$	0.56 (3.53)	0.53 (4.77)	0.079 (1.16) $n=6$	0.80 -
Number of Cabinet Changes	0.571 (2.83)	-0.46 (-3.60) $l=3$	0.089 (1.12) $l=7$	0.22 (2.50)	0.77 (4.99)	-0.047 (-0.43) $n=8$	0.80 -
Legislative Effectiveness	0.169 (3.34)	-0.09 (-2.04) $l=3$	-3.019 (-10.08) $l=6$	0.69 (3.27)	0.55 (4.45)	-0.079 (-0.95) $n=3$	0.80 -
			Deposits at Banco do Brasil				
Assassination	0.505 (3.72)	-0.30 (-2.06) $l=4$	-0.013 (-2.01) $l=8$	0.51 (2.93)	0.42 (2.69)	0.191 (0.91) $n=6$	0.80 -
Number of the Coups	0.319 (4.71)	-0.13 (-2.22) $l=4$	-0.083 (-1.63) $l=8$	0.73 (4.49)	0.46 (4.62)	0.189 (2.34) $n=4$	0.90 -
Number of Cabinet Changes	0.258 (4.40)	-0.10 (-2.52) $l=4$	-0.047 (-1.53) $l=4$	0.84 (4.61)	0.45 (3.78)	0.277 (1.35) $n=4$	1.00 -
Legislative Effectiveness	0.330 (0.18)	-0.16 (-2.60) $l=4$	-2.075 (-4.09) $l=8$	0.84 (4.32)	0.37 (2.93)	0.016 (0.26) $n=2$	1.00 -

Table 25 reports parameter estimates of direct effect only for the following model:

$y_t = c + k\sqrt{h_t} + \pi_{fd} x_{fd,t-l} + \pi_{pi} x_{pi,t-l} + \varepsilon_t,$

$h_t^{\frac{2}{2}} = \omega + \alpha h_{t-1}^{\frac{2}{2}} + e_{t-1} + \beta h_{t-1}^{\frac{2}{2}} + \gamma y_{t-n},$

parameter estimates $x_{fd,t-l}$ indicates a financial development variable,

$x_{pi,t-l}$ is a political instability variable.

l and n are the order of the lags of explanatory variables and growth respectively.

The numbers in parentheses are t statistics.

Table 25 Direct Effect of Financial Development and Political Instability on Economic Growth (with Standard Deviation in Mean)